

Principles of International Environmental Law

THIRD EDITION



Philippe Sands and Jacqueline Peel,
with Adriana Fabra and Ruth MacKenzie

CAMBRIDGE

Principles of International Environmental Law

The third edition of this classic textbook offers comprehensive and critical commentary on international environmental law. It fully covers the key topics of the course and is clearly structured to include the history and framework in which international environmental law exists, key areas of regulation and implementation, links to other areas of law and future developments. It has been updated to incorporate all the latest developments in treaty and case law. Extensive feedback on previous editions results in a re-structuring of material, including a new part focused on linkage to other areas of international law including human rights, international trade and foreign investment. There is also a new chapter on future developments charting the directions in which the subject is moving. Specialist authors writing on oceans, seas and fisheries and biodiversity add to the expertise of the two principal authors for an authoritative overview of the subject.

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Foreword

It is with pleasure that I write a foreword to this timely exposition and analysis of the system of environmental law as a whole, and as it stands after the Rio Conference. If it seems a little bold to call environmental law a 'system', it is assuredly not so bold as it would have been before the publication of Philippe Sands' important work. A main purpose of academic writing should be to perceive and portray patterns and relations in a body of legal rules so as to make it manageable, teachable, comprehensible and usable. The present work succeeds in doing this to a remarkable degree.

The author's statement that environmental law has a 'longer history than some might suggest' might be thought to border on understatement. When something is taken up as a modish 'concern', there is often a strong temptation to think of it as a discovery by a newly enlightened generation. It is, therefore, a useful antidote to be reminded that, of the two pioneering decisions, both still leading and much-cited cases, one was the *Bering Sea* arbitration, of a century ago, and the other, the *Trail Smelter* arbitration, of half a century ago. Nevertheless, the present-day need for law to protect the environment and to preserve resources is of a scale and urgency far beyond the imagining of the early pioneers.

Seeing these questions, however, in a proper historical perspective does help to warn against the dangers of treating environmental law as a specialisation, which can be made a separate study; or, on the other hand, of regarding environmental law – and here I borrow Philippe's words – as a 'marginal part of the existing legal order'. A perusal of this book will readily reveal to the reader the fallacy of both of these attitudes. Part I of the book – which is entitled 'The legal and institutional framework' – comprises illuminating treatments of such basic subjects of international law as the legal nature of states, international organisations, non-governmental organisations, treaties and other international acts such as resolutions of the General Assembly and other international bodies, EC regulations and directives, the nature and uses of customary law, the general principles of law, and general problems of compliance, implementation and enforcement, and dispute settlement. These pages amply demonstrate that the environmental lawyer has to be equipped with a good basic knowledge of general international law before he can even get properly started on the study of environmental law. Likewise, the general student of international law will, in these pages, find illumination in plenty on these basic questions of general public international law; and indeed also of EC law. He will also find, in the later pages, valuable light upon such difficult questions as 'sovereignty over natural resources', the *actio popularis*, 'standards' and 'soft law'; techniques to encourage compliance, such as reporting;

the position in war and armed conflict; general principles of liability and reparation, as well as specifically environmental notions such as the so-called 'polluter pays' principle.

It is in Part II of the book that the author broaches the immense task of setting out, and analysing in some detail, the developing substantive law for the protection of the environment and for the conservation of resources, and of biological diversity. Here, again, when it comes to classifying the areas for purposes of exposition, some of the general headings are familiar to every international lawyer: the atmosphere and outer space; oceans and seas; freshwater resources; hazardous substances and activities; waste; the polar regions; and European Community environmental law. It is in itself a valuable lesson to be able thus to see the shape and dimensions of environmental law as a whole. To establish the boundaries of a subject is an important step towards its intellectual comprehension.

It is a trite observation that environmental problems, though they closely affect municipal laws, are essentially international; and that the main structure of control can therefore be no other than that of international law. Yet one result of this study of environmental law as a whole is to show that the environmental factor has already so infiltrated so many of the traditional areas of public international law that it is no longer possible adequately to study many of the main headings of public international law without taking cognisance of the modifying influence in that particular respect of the principles, laws and regulations of environmental law. There are many instances; one that might not be the first possibility that comes to mind is the law concerning foreign investment. Many readers will remember the controversies of the 1960s and 1970s over the efforts to strike some sort of balance between the principle of national sovereignty over a nation's natural resources, and the competing principles limiting the sovereign rights of expropriation without proper compensation for the foreign investment in those resources. At the present time, this is an area of the law which can no longer be appreciated without adding the considerable factor of the need to protect the environment and therefore the need to limit certain kinds of exploitation, whether foreign or domestic, which cause international waste and harm. The problem of the destruction of tropical rainforests is probably the most dramatic and best known example of a national resource itself becoming an international problem.

Another matter that needs to be thought about is how to make the law of the environment more efficient. The existing principles, laws, case law, regulations, standards, resolutions and so on, already constitute a vast and complicated apparatus of paper and of powers conferred upon certain bodies or persons. When it is considered that the existing law is, however, also seemingly quite inadequate to the problem and that much more may be needed, one is bound to ask questions about how much of the world's resources, wealth, energy and intellect is to be spent on this task of regulation and control. Pollution resulting from an excess of the complication and sheer number of laws, regulations and officials is by no means the least of the threats to our living environment. This book is an important first step towards rationalisation, for it does, by its very able and effective exposition, enable one to see the dimensions of the problem and to get some sort of conspectus of the existing legal apparatus.

Another matter of concern is the need to keep laws and regulations in this area reasonably flexible and open when necessary to changes of direction. Good laws on the environment are driven, or should be driven, by the lessons to be learned from the natural sciences and from technology. But scientists are not by any means always in agreement. It is reasonable to assume, moreover, that the enormous sums spent upon further scientific and technological

research imply that the scene of scientific 'fact' is liable to change importantly and even suddenly; for, if not, it is difficult to see what this expensive endeavour is about. For an example of this kind of effect, it is necessary only to mention how new scientific knowledge of the dangers from dioxins have put into a wholly new perspective erstwhile schemes for conserving non-renewable sources of energy using instead the combustion of mixed wastes. We need, therefore, a law of the environment that can change with the changes in the scientific world; otherwise it will quickly and most damagingly be enforcing outmoded science. But to achieve change in international regulations, without thereby merely adding more layers of regulation, is technically by no means an easy task or even always a possible one.

But the matter goes deeper than these preoccupations, important as they are. Humanity is faced with a multifaceted dilemma. There seems to be an urgent need for more and more complex regulation and official intervention; yet this is, in our present system of international law and relations, extremely difficult to bring about in a timely and efficient manner. The fact of the matter surely is that these difficulties reflect the increasingly evident inadequacy of the traditional view of international relations as composed of pluralistic separate sovereignties, existing in a world where pressures of many kinds, not least of scientific and technological skills, almost daily make those separate so-called sovereignties, in practical terms, less independent and more and more interdependent. What is urgently needed is a more general realisation that, in the conditions of the contemporary global situation, the need to create a true international society must be faced. It needs in fact a new vision of international relations and law. This is a matter that takes us beyond the scope of this book. But those who doubt the need for radical changes in our views of, and uses of, international law should read Philippe Sands' book and then tell us how else some of these problems can be solved. After all, this is not just a question of ameliorating the problems of our civilisation but of our survival.

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sometime Whewell Professor of International Law in the University of
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Preface and acknowledgments to the first edition

Principles of International Environmental Law marks the culmination of that aspect of my professional activities which was triggered by the accident at the Chernobyl nuclear power plant, on 26 April 1986. At that time I was a research fellow at the Research Centre for International Law at Cambridge University, working on international legal aspects of contracts between states and non-state actors, and not involved in environmental issues. With the active support of the Research Centre's Director, Eli Lauterpacht, I began to examine the international legal implications of the Chernobyl accident, which indicated that the legal aspects of international environmental issues were of intellectual and political interest, and still in an early phase of development. This led to several research papers, a book and various matters involving the provision of legal advice on international environmental issues. My interest having been aroused, the implications of environmental issues for public international law provided a rich seam which has sustained me for several years, and resulted in my founding, with James Cameron, what is now the Foundation for International Environmental Law and Development (FIELD). That, in turn, has provided me with the fortunate opportunity to participate in a number of international negotiations, most notably those preparatory to UNCED and the Climate Change Convention, and to develop an international legal practice which is varied, unpredictable, entertaining, often challenging and occasionally frustrating.

This book, together with the accompanying volumes of international documents (Volumes IIA and IIB) and EC documents (Volume III), is intended to provide a comprehensive overview of those rules of public international law which have as their object the protection of the environment. I hope that it will be of some use to lawyer and non-lawyer alike, whether working for government, international organisations, non-governmental organisations and the private sector, or having an academic or other perspective. Its structure and approach reflect my belief that international environmental efforts will remain marginal unless they are addressed in an integrated manner with those international economic endeavours which retain a primary role in international law-making and institutional arrangements, and unless the range of actors participating in the development and application of international environmental law continues to expand. In that regard, it is quite clear that international environmental law remains, as a branch of general public international law, at an early stage of practical development, in spite of the large body of instruments and a burgeoning literature. Over the past decade the

body of law has increased dramatically, and only the best equipped researchers will be able to keep up with all developments as they occur. I have sought to state the law as it was on 1 January 1993, although the diligent reader will note that on some aspects more recent developments have also been treated.

Principles of International Environmental Law therefore marks the culmination of an initial phase of my endeavours as an academic and practitioner. Its roots run deep and wide, and it is impossible to acknowledge here all the sources of input and generous support which I have received over the past several years. It seems to me to be quite appropriate, however, to acknowledge those teachers, colleagues and friends who have exercised particular influence, directly or indirectly.

The fact that I became interested in international law at all is largely due to my first teacher of international law, Robbie Jennings, then in his final year at Cambridge before moving to The Hague: I am hugely grateful for his inspiring encouragement and support ever since, particularly for taking the view that the environment was, even several years ago, properly a subject for consideration in its international legal aspect. Eli Lauterpacht gave me my first professional 'break' and taught me, in particular, the value of a practical approach and the importance of rigour. Even at a distance, Philip Allott constantly reminds me of the need to think about the bigger picture. And lest I should slip, David Kennedy has been a critical inspiration in reminding me that there is another way.

Colleagues at London University (particularly Ian Kennedy at King's College and Peter Slinn at the School of Oriental and African Studies) have provided great support in allowing me the flexibility to combine teaching with practical efforts. I would also like to record my debt to Tom Franck for introducing me to New York University Law School, and to Dean John Sexton for giving me a more regular perch from which to base my forays to the United Nations.

I am tremendously indebted to all my colleagues at FIELD. I would like to thank the Board of Trustees, and especially John Jopling, the Chairman, for allowing me to devote considerable time to this project, as well as Marian Bloom, Frances Connelly, Rona Udall and Roger Wilson for their administrative support. Many FIELD interns provided long hours of patient assistance, and I want especially to thank Carolyn d'Agincourt, Mary Beth Basile and Kiran Kamboj for going way beyond the call of duty during their extended internships, and Joanna Jenkyn-Jones, Hugo Jolliffe and Penny Simpson for helping me to get over the final hurdles more easily. But it is to FIELD's lawyers that I extend especially warm thanks for helping me to fulfil my other obligations and for always being available to provide information and critical insights on those areas in which they are expert. James Cameron is an inspirational friend, colleague and co-founder of FIELD, and I feel fortunate to have found a working partner who is able to provide me with the space and support to get on with my own efforts whilst reminding me that I also have, in all senses, broader responsibilities. Greg Rose (now at the Australian Department of Foreign Affairs and Trade), Jake Werksman and Farhana Yamin have been outstanding colleagues and friends. Richard Tarasofsky and Mary Weiss, my collaborators on Volumes II and III, assisted also in the preparation of this volume. FIELD's many supporters have also contributed, indirectly but significantly, to the production of this book, and I would like to thank, in particular, Janet Maughan (Ford Foundation), Mike Northrop (Rockefeller Brothers Fund), Ruth Hennig (John Merck Fund) and Marianne Lais Ginsburg (German Marshall Fund) for

supporting FIELD's efforts and enabling me to participate in some of the important international legal developments since 1989. At my chambers, I want to thank Ailsa Wall for her magnificent typing efforts, and Paul Cooklin for his accommodation of my rather peripatetic needs.

For their efforts on a day-to-day basis my deepest gratitude, however, is reserved for two individuals without whose support it is unimaginable that this book could have been completed. Louise Rands has run my office for the past two and a half years with the greatest efficiency, effectiveness and humour anyone could hope to benefit from, maintaining order (and priorities) in the maelstrom of activities and obligations that frequently engulf FIELD's offices. Natalia Schiffrin has been absolutely fabulous in putting up with the demands that the book placed on our daily routine, and reminding me of what is important in life and what isn't.

I must also acknowledge the assistance of numerous other individuals, who enabled me to obtain access to information or to participate in various meetings, in particular: Andronico Adede (Office of Legal Affairs, United Nations); Raymondo Arnaudo and Genevieve Ball (United States Department of State); Dr John Ashe (Permanent Mission of Antigua and Barbuda to the United Nations); Cath Baker, A. M. Forryan and Susan Halls (UK Foreign and Commonwealth Office); Germaine Barikako (OAU); William Berenson (OAS); Giselle Bird (Department of Foreign Affairs and Trade, Australia); Celine Blais (External Affairs and International Trade, Canada); Dan Bodansky (University of Washington School of Law); Laurence Boisson de Chazournes (Institut des Hautes Etudes, Geneva); M. Borel (Departement Federal des Affaires Etrangeres, Switzerland); Jo Butler and Michael Zammit-Cutajar (Climate Change Convention Interim Secretariat); G. de Proost (Ministere des Affaires Etrangeres, Belgium); Juan-Manuel Dias-Pache Pumareda (Ministerio de Asuntes Exteriores, Spain); Dr Emonds (Bundesministerium fur Umwelt, Naturschutz und Reaktorsicherheit, Germany); Philip Evans (Council of the European Communities); Denis Fada (FAO); Dr Antonio Fernandez (International Commission for the Conservation of Atlantic Tunas); Dr Charles Flemming (Permanent Representative of St Lucia to the United Nations); Nigel Fyfe and Paul Keating (New Zealand Ministry of External Affairs and Trade); Dr R. Gambell (International Whaling Commission); John Gavitt (CITES Secretariat); Professor Gunther Handl (Editor, *Yearbook of International Environmental Law*); Beatrice Larre (OECD); Howard Mann (Environment Canada); Norma Munguia (Mexican Embassy, Washington); Lincoln Myers (formerly Minister of Environment, Trinidad and Tobago); Boldiszar Nagy (Associate Professor, Eotvos Lorand University); Bernard Noble (Deputy Registrar, International Court of Justice); Manoel Pereyra (ICAO); Amelia Porges (GATT); Marie-Louise Quere-Messing (United Nations); N. Raja Chandran (Ministry of Foreign Affairs, Malaysia); Patrick Reyners (OECD-NEA); Keith Richmond (FAO); Stan Sadowski (Paris/Oslo Commissions); Candice Stevens (OECD); Wouter Sturms (IAEA); Patrick Szell (UK Department of Environment); Dr Alexandre Timoshenko (UNEP); Eduardo Valencia Ospina (Registrar, International Court of Justice); Robert van Lierop (formerly Permanent Representative of Vanuatu to the United Nations); Makareta Waqavonova (South Pacific Forum); and Linda Young (IMO).

Finally, I would like to thank Vaughan Lowe for encouraging me to write this textbook (and the supporting volumes of documents), for providing clear intellectual guidance and support, and for introducing me to Manchester University Press. At the Press, Richard Purslow has been as patient and supportive an editor as one could possibly hope to find,

and his colleagues Jane Hammond Foster, Elaine White and Celia Ashcroft have provided enormous assistance. Needless to say, such errors or omissions as might have crept in remain my full responsibility.

Philippe Sands
London
1 November 1994

Preface and acknowledgments to the second edition

The second edition of *Principles of International Environmental Law* indicates that the legal aspects of international environmental issues are of growing intellectual and political interest, and that they have moved beyond the situation I described nearly ten years ago as reflecting ‘an early phase of development’. It is apparent from the new material which this edition treats – new conventions, new secondary instruments, new (or newly recognised) norms of customary law, and a raft of new judicial decisions – that international environmental law is now well established and is a central part of the international legal order. It is also clear that international environmental law has reached new levels of complexity, in particular as it has become increasingly integrated into other social objectives and subject areas, particularly in the economic field. The burgeoning case law, and the increased involvement of practitioners, suggests that it can no longer be said that international environmental law is, as a branch of general public international law, at an early stage of practical development.

Like the first edition, this edition (together with the accompanying volume of international documents for students) is intended to provide a comprehensive overview of those rules of public international law which have as their object the protection of the environment. Those rules have become more numerous and complex, but also more accessible: the advent of the Internet often means that material which was previously difficult to track down – for example, information as to the status, signature and ratification of treaties, and acts and decisions of Conferences of the Parties and subsidiary bodies – is now relatively easy to obtain. But the Internet also increases the danger of becoming overwhelmed by the sheer quantity of material that is now available, a risk which is exacerbated by the very extensive (and growing) secondary literature which is produced every year, only a small proportion of which may really be said to indicate real insights into new developments. This background necessarily means that what is gained on breadth may be lost – at least in some areas – on depth. This comprehensive account cannot address all of the details that now dominate specific areas – trade, fisheries and climate change spring immediately to mind – and the reader will need to refer to more detailed accounts of particular sectors, and the websites of various conventions, to obtain many of the details. Over the past decade, the body of law has again increased dramatically; I have sought to state the law as it was on 1 January 2003.

This second edition has largely been inspired by my endeavours as an academic and practitioner over the last eight years, in particular contact with my academic colleagues at London and New York Universities and professional contact in connection with the various

international cases I have been fortunate to be involved in. Again, it is impossible to acknowledge here all the sources of input and generous support received since 1995. It is appropriate, however, to acknowledge those colleagues and friends who have exercised particular influence, directly or indirectly. At London University, Matt Craven and Michael Anderson have provided great support, as have many other colleagues at SOAS, together with Richard McCrory, Jane Holder and Jeffrey Jowell at my new home at University College London, with help too from Ray Purdue and Helen Ghosh. At New York University, I could not have wished for greater collegiality and friendship than that offered by Dick Stewart, together with the support offered over many years by Tom Franck, Andy Lowenfeld, Eleanor Fox, Iqbal Ishar, Norman Dorsen, Ben Kingsbury, Radu Popa, Vicki Been and Ricky Revesz, as well as Jane Stewart, and for heaps of administrative support from Jennifer Larmour. At the Project on International Courts and Tribunals, Shep Forman, Ruth Mackenzie, Cesare Romano, Thordis Ingadottir and Noemi Byrd have also provided unstinting support. My former colleagues at FIELD have continued to provide support and assistance, including Jake Werksman, Farhana Yamin, Jurgen Lefevre, Alice Palmer and Beatrice Chaytor.

Many of my students and former students at London and New York Universities have provided long hours of patient assistance. Two colleagues have provided particular support, to whom I extend special thanks and appreciation: Jacqueline Peel, now at the Melbourne University Faculty of Law, who has expended great efforts in assisting with research and in drafting of the highest quality and who, I hope, might become the co-author of this book in its third edition; and Paolo Galizzi, now at Imperial College London, who is co-authoring the student edition of basic documents to accompany this volume. Thanks also go to Valeria Angelini, Lauren Godshall, Ed Grutzmacher, Victoria Hallum, Miles Imwalle, Jimmy Kirby, Lawrence Lee, Bruce Monnington, Lillian Pinzon, Katarina Kompari, Denise Ryan, Anna-Lena Sjolund, Eva Stevens-Boenders and Mimi Yang. Thanks also go to Tim Walsh for electronic wizardry, and – once again – to Louise Rands in deepest Devon for helping to bring the manuscript in on time.

In other places – courts and tribunals and conferences – I have benefited inestimably from the learning and experience offered to me by James Crawford and Pierre-Marie Dupuy, and from Boldizsar Nagy, Vaughan Lowe, Chris Thomas, Laurence Boisson de Chazournes and Adriana Fabra. My colleagues at Matrix Chambers have created an environment which encourages ideas to be generated and tested, supportive of both the environmental law and the international law elements which make up this book and the experience it reflects.

Finally, I would like to thank Finola O’Sullivan and Jennie Rubio at Cambridge University Press. Needless to say, such errors or omissions as might have crept in remain my full responsibility.

For her efforts on a day-to-day basis – and every day – my greatest thanks are to Natalia Schiffrin, for all her help, and for continuing to remind me of what is important in life and what isn’t. And of course this time she has had a little help from Leo, Lara and Katya, each of whom has contributed uniquely over the last eight years.

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Preface and acknowledgments to the third edition

This third edition of *Principles of International Environmental Law* provides further confirmation that international environmental law is ‘well established’ and ‘a central part of the international legal order’, as the second edition already recognised. In the intervening decade, our appreciation of the complexity of environmental problems, and their deep interlinkages with other issue areas, particularly in the economic field, has grown. In response, international environmental law has also developed increasing complexity, although largely through the consolidation and expansion of existing regimes rather than through the creation of new instruments. Case law on environmental and natural resource issues continues to be a burgeoning area of international litigation, confronting practitioners and judges with difficult new questions such as how to approach science and expert evidence in factually complex and technical disputes. Despite the myriad of legal developments, the most complex environmental problems facing international law remain some of the most pressing, particularly, climate change, marine pollution and biodiversity loss. In a certain sense, the subject of international environmental law is about to meet the point at which the rubber hits the road: can it deliver real protections, or will its impact be only marginal and cosmetic?

Like the previous editions, this edition is intended to provide a comprehensive overview of those rules of public international law that have as their object the protection of the environment. We have sought to state the law as of July 2011. Necessarily, given the vast breadth of the subject and the level of detail now available on some specific topics (climate change, fisheries, trade, biodiversity are leading examples here), the book’s account of the subject area cannot be exhaustive. We have, however, sought to improve the book’s coverage of key areas such as atmospheric protection and climate change, oceans and fisheries and biodiversity. In respect of the latter two topics, the book has benefited enormously from the serious contributions made by the expert and experienced authors of these revised chapters, Adriana Fabra (Chapter 9) and Ruth Mackenzie (Chapter 10), to whom we extend our deep appreciation. We have also introduced a more critical dimension to our analysis of developments in international environmental law, including the case law, and sought to tie this analysis to central themes or challenges for the field, detailed in Chapter 1. Finally, the book includes a new concluding chapter (Chapter 21) that considers the future directions for and challenges facing international environmental law, matters on which we remain sanguine.

This edition is co-authored, in contrast to previous editions, with the introduction of Jacqueline Peel of Melbourne University, Australia, who builds on her previous role and now comes on board as a second author.

There are many people from both London and Melbourne who deserve particular thanks for their assistance with the work for this edition.

In London, we express our thanks to Raj Bavishi, Remi Reichhold, Josh Roberts and Christine Wortmann for their superb and timely research assistance, and to Liz Milner and Louise Rands for admirable administrative support. Thanks also to Dean Hazel Genn and the Faculty of Law at University College London for the continued support, including financial support to cover the costs of research assistance.

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At Cambridge University Press we would like to thank Finola O'Sullivan and Sinéad Moloney. As ever, such errors or omissions as might have crept in remain our full responsibility.

We express our deep appreciation to Miquel Barceló for permission to reproduce a copy of his etching *Elefandret*, and also to Victoria Comune for her support.

Finally, our greatest thanks are to our families: in Australia, Michael Findlay, Aly and Will; and, in London, Natalia, Katya, Lara and Leo.

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30 November 2011

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Convention on the Prevention of Marine Pollution from Land-Based Sources (Paris) 4 June 1974, in force 6 May 1978, 13 ILM 352 (1974) (1974 Paris Convention) (see also 1992 OSPAR Convention) 83, 111, 127, 216, 219, 349, 360, 375–377, 592

Convention on the Protection of the Marine Environment of the Baltic Sea Area (Helsinki) 22 March 1974, in force 3 May 1980, 13 ILM 546 (1974) (1974 Helsinki Convention) 592

ILO Convention (No. 139) Concerning Prevention and Control of Occupational Hazards Caused by Carcinogenic Substances and Agents (Geneva) 26 June 1974, in force 10 June 1976, IELMT 974:48 533

International Convention for the Safety of Life at Sea (London) 1 November 1974, in force 25 May 1980, 1184 UNTS 2 (1974 SOLAS) 386

Nordic Convention on the Protection of the Environment (Stockholm) 19 February 1974, in force 5 October 1976, 13 ILM 511 (1974) (1974 Nordic Environmental Protection Convention) 14, 156, 161, 163, 606, 628, 637, 644, 647

1975

Convention on the Registration of Objects Launched to Outer Space, 14 January 1975, in force 15 September 1976, 28 UST 695 (1975 Outer Space Registration Convention) 299

1976

Convention for the Protection of the Mediterranean Sea Against Pollution (Barcelona) 16 February 1976, in force 12 February 1978, 15 ILM 290 (1976) (1976 Barcelona Convention) 100, 110, 170, 171, 179, 235, 353, 354, 358–360, 371, 379, 389, 396, 646

Convention for the Protection of the Rhine River Against Chemical Pollution (Bonn) 3 December 1976, in force 1 February 1979, 1124 UNTS 375 (1976 Rhine Chemical Convention) 320

Convention on Conservation of Nature in the South Pacific (Apia) 12 June 1976, in force 28 June 1990, IELMT 976:45 (Apia Convention) 83, 486, 512

Convention on the Protection of the Rhine River Against Pollution by Chlorides (Bonn) 3 December 1976, in force 5 July 1985, 16 ILM 265 (1977) (1976 Rhine Chloride Convention) 321

European Convention for the Protection of Animals Kept for Farming Purposes (Strasbourg) 10 March 1976, in force 10 September 1978, UKTS 70 (1979) Cmnd 7684 80, 161, 551

Protocol for Co-operation in Combating Pollution of the Mediterranean Sea by Oil and Other Harmful Substances in Cases of Emergency (Barcelona) 16 February 1976, in force 12 February 1978 (1976 Barcelona Oil Pollution Protocol) 353, 390

Protocol for the Prevention of Pollution of the Mediterranean Sea by Dumping from Ships and Aircraft (Barcelona) 16 February 1976, in force 12 February 1978 (1976 Barcelona Dumping Protocol) 353, 354, 370, 371, 557, 606

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Convention on Civil Liability for Oil Pollution Damage Resulting from Exploration for and Exploration of Seabed Mineral Resources (London) 1 May 1977, not in force, 16 ILM 1450 (1977) (1977 CLC) 756

Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques (New York) 18 May 1977, in force 5 October 1978, 1108 UNTS 151 (1977 ENMOD Convention) 14, 85, 202, 210, 628, 637, 726, 794

Denmark-Federal Republic of Germany Agreement Relating to Exchange of Information on Construction of Nuclear Installations Along the Border, 4 July 1977, 17 ILM 274 (1978) 542

ILO Convention Concerning the Protection of Workers Against Occupational Hazards in the Working Environment due to Air Pollution, Noise and Vibration (Geneva) 20 June 1977, in force July 1979, 28 IPE 335 (1977 Working Environment Convention) 533

Protocol I (Additional to the 1949 Geneva Conventions) Relating to the Protection of Victims of International Armed Conflicts (Geneva) 8 June 1977, in force 7 December 1978, 16 ILM 1391 (1977) (1977 Additional Protocol I) 85, 793-795

Protocol II (Additional to the 1949 Geneva Conventions) Relating to the Protection of Victims of Non-International Armed Conflicts (Geneva) 8 June 1977, in force 7 December 1978, 16 ILM 1391 (1977) (1977 Additional Protocol II) 85, 794

Treaty on the International Recognition of the Deposit of Micro-organisms for the Purpose of Patent Procedure (Budapest) 28 April 1977, in force 19 August 1980, 17 ILM 285 (1977) 687

1978

Agreement Between the United States and Canada on the Water Quality of the Great Lakes (Ottawa) 22 November 1978, in force 22 November 1978, 30 UST 1383 (1978 Great Lakes Water Quality Agreement); Protocol signed and in force 16 October 1983, TIAS 10798 328

Convention on Future Multilateral Co-operation in the North-West Atlantic Fisheries (Ottawa) 24 October 1978, in force 1 January 1979, 2 SMTE 60 (1978 North-West Atlantic Fisheries Convention) 85

Convention on the Protection of the Archaeological, Historical and Artistic Heritage of the American Nations (Santiago) 16 June 1976, in force 30 June 1978, 15 ILM 1350 (1976) 510

Federal Republic of Germany and Luxembourg Agreement on the Exchange of Information in Case of Accidents Which Could Have Radiological Consequences, 2 March 1978, 29 IPE 251 542

Kuwait Protocol Concerning Co-operation in Combating Pollution by Oil and Other Harmful Substances in Cases of Emergency (Kuwait) 23 April 1978, in force 1 July 1979, 17 ILM 526 (1978) (1978 Kuwait Emergency Protocol) 355, 394, 395

Kuwait Regional Convention for Co-operation on the Protection of the Marine Environment from Pollution (Kuwait) 23 April 1978, in force 1 July 1979, 1140 UNTS 133 (1978 Kuwait Convention) 209, 216, 355, 358-360, 379, 389, 396, 606, 646, 701

Protocol Relating to the Convention for the Prevention of Pollution from Ships (London) 17 February 1978, in force 2 October 1983, 17 ILM 246 (1978) (MARPOL 73/78) 34, 72, 73, 97, 123, 143, 160, 170, 202, 261, 348, 349, 363, 370, 379, 381–384, 589, 591, 592, 647

Treaty for Amazonian Cooperation (Brasilia) 3 July 1978, in force 2 February 1980, 17 ILM 1045 (1978) (1978 Amazonian Treaty) 198, 213, 214, 216, 484, 485

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Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (New York) 5 December 1979, in force 11 July 1984, 18 ILM 1434 (1979) (1979 Moon Treaty) 66, 141, 299–301, 727

Convention for the Conservation and Management of the Vicuna (Lima) 20 December 1979, in force 19 March 1982, IELMT 979:94 (1979 Vicuna Convention) 506

Convention on Long-Range Transboundary Air Pollution (Geneva) 13 November 1979, in force 16 March 1983, 18 ILM 1442 (1979) (1979 LRTAP Convention) 14, 34, 40, 46, 67, 84, 98, 100, 103, 124, 160, 161, 198, 202, 246–249, 254, 257, 320, 524, 592, 628, 631, 637, 646, 658, 681, 707, 729

Convention on the Conservation of European Wildlife and Natural Habitats (Berne) 19 September 1979, in force 1 June 1982, UKTS 56 (1982) Cmnd 8738 (1979 Berne Convention) 24, 34, 80, 84, 120, 153, 170, 487–489, 628, 630, 822, 823

Convention on the Conservation of Migratory Species of Wild Animals (Bonn) 23 June 1979, in force 1 November 1983, 19 ILM 15 (1980) (1979 Bonn Convention) 34, 85, 202, 210, 213, 218, 234, 424, 429, 502, 503, 505, 631

South Pacific Forum Fisheries Convention (Honiara) 10 July 1978, in force 9 August 1979, IEL 979:57 85

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Agreement Between Spain and Portugal on Co-operation in Matters Affecting the Safety of Nuclear Installation in the Vicinity of the Frontier, 31 March 1980, in force 13 July 1981 542, 634

Athens Protocol for the Protection of the Mediterranean Sea Against Pollution from Land-Based Resources (Athens) 17 May 1980, in force 17 June 1983, 19 ILM 869 (1980) (1980 Athens LBS Protocol) 354, 375–378, 637, 682

Convention Creating the Niger Basin Authority (Faranah) 21 November 1980, in force 3 December 1982, IELMT 980:86 334

Convention on Future Multilateral Co-operation in the North-East Atlantic Fisheries (London) 18 November 1980, in force 17 March 1982, 2 SMTE 107 (1980 North-East Atlantic Fisheries Convention) 85

Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons Which May Be Deemed to Be Excessively Injurious or to Have Indiscriminate Effects, 10 April 1980, 19 ILM 1523 (1980) (1980 Inhuman Weapons Convention) 793

Convention on the Conservation of Antarctic Marine Living Resources (Canberra) 20 May 1980, in force 7 April 1982, 19 ILM 841 (1980) (1980 CCAMLR) 170, 202, 213, 221, 578, 580, 581, 606, 646

Convention on the Physical Protection of Nuclear Material (Vienna and New York) 3 March 1980, in force 8 February 1987, 18 ILM 1419 (1979) 537

European Outline Convention on Transfrontier Co-operation Between Territorial Communities or Authorities (Madrid) 21 May 1980, in force 22 December 1981, ETS 106 80

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African Charter on Human and Peoples' Rights (Banjul) 27 June 1981, in force 21 October 1986, 21 ILM 59 (1982) (1981 African Charter) 81, 157, 777, 780, 781, 787

Agreement on Regional Co-operation in Combating Pollution of the South-East Pacific by Hydrocarbon or Other Harmful Substances in Cases of Emergency (Lima) 12 November 1981, in force 14 July 1986, IELMT 981:85 355, 356

Convention for Co-operation in the Protection and Development of the Marine and Coastal Environment of the West and Central African Region (Abidjan) 23 March 1981, in force 5 August 1984, 20 ILM 746 (1981) (1981 Abidjan Convention) 213, 235, 355, 358–360, 379, 389, 396, 606

Convention for the Protection of the Marine Environment and Coastal Area of the South-East Pacific (Lima) 12 November 1981, in force 19 May 1986, IELMT 981:85 (1981 Lima Convention) 198, 213, 355, 358–360, 379, 396, 606

ILO Convention Concerning Occupational Safety and Health and the Working Environment (Geneva) 22 June 1981, in force 11 August 1983, 2 SMTE 126 (1981 ILO Occupational Safety Convention) 638, 647

Protocol Concerning Co-operation in Combating Pollution in Cases of Emergency (Abidjan) 23 March 1981, in force 5 August 1984, 20 ILM 756 (1981) (1981 Abidjan Emergency Protocol) 355

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Austria-Czechoslovakia Agreement on Questions of Common Interest in Relation to Nuclear Facilities, 18 November 1982, 1365 UNTS 273, in force 1 June 1984 634

Benelux Convention on Nature Conservation and Landscape Protection and Natural Resources (Brussels) 8 June 1982, in force 1 October 1983, 2 SMTE 163 (1982 Benelux Conservation Convention) 627

Convention for the Protection of Salmon in the North Atlantic Ocean (Reykjavik) 2 March 1982, in force 1 October 1983, OJL378, 31 December 1982, 25 (1982 North Atlantic Salmon Conservation Convention) 85, 213

Protocol Concerning Mediterranean Specially Protected Areas (Geneva) 3 April 1982, in force 23 March 1986, IELMT 982:26 (1982 Geneva SPA Protocol) 354, 438, 638, 658

Protocol Concerning Regional Co-operation in Combating Pollution by Oil and Other Harmful Substances in Case of Emergency (Jeddah) 14 February 1982, in force 20 August 1985, IELMT 982:14 (1982 Jeddah Emergency Protocol) 356, 394, 395

Regional Convention for the Conservation of the Red Sea and Gulf of Aden Environment (Jeddah) 14 February 1982, in force 20 August 1985, 9 EPL 56 (1982) (1982 Jeddah Convention) 162, 209, 213, 356, 358–360, 379, 389, 396, 606, 701

United Nations Convention on the Law of the Sea (Montego Bay) 10 December 1982, in force 16 November 1994, 21 ILM 1261 (1982) (1982 UNCLOS) 12, 46, 84, 97, 100, 103, 105, 106, 113, 131, 138, 141, 152, 161, 170, 175, 178, 198, 202, 204, 205, 208, 211, 212, 214, 225, 234–236, 349, 365, 373, 378, 398, 403, 578, 591, 592, 594, 606, 607, 628, 637, 638, 640, 646, 658, 701, 707, 729, 771, 820, 823

1983

Agreement for Co-operation in Dealing with Pollution of the North Sea by Oil and Other Harmful Substances (Bonn) 13 September 1983, in force 1 September 1989, Misc 26 (1983) 9104 360, 394

Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region (Cartagena de Indias) 24 March 1983, in force 11 October 1986, 22 ILM 221 (1983) (1983 Cartagena Convention) 170, 356, 358–360, 377, 606, 682

International Tropical Timber Agreement (Geneva) 18 November 1983, in force 1 April 1985, UN Doc. TD/TIMBER/II/Rev.1 (1984) (1983 ITTA) 637

Protocol Concerning Co-operation in Combating Oil Spills in the Wider Caribbean Region (Cartagena de Indias) 24 March 1983, in force 11 October 1986, 22 ILM 240 (1983) (1983 Cartagena Oil Spills Protocol) 209, 213, 356, 394–396, 627, 701

Protocol for the Protection of the South East Pacific Against Pollution from Land Based Sources (Quito) 22 July 1983, in force 23 September 1986, IELMT 983:54 356, 394

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International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (London) 7 July 1978, in force 28 April 1984, UKTS 50 (1984) Cmnd 9266 386

Protocol for Long Term Financing of the Co-operative Programmes for Monitoring and Evaluating the Long-Range Transmission of Air Pollutants in Europe (EMEP) (Geneva) 28 September 1984, in force 28 January 1988, 2 SMTE 285 (1984 EMEP Protocol) 646

1985

Agreement of Co-operation Between the United States of America and the United Mexican States Regarding Pollution of the Environment Along the Inland International Boundary by Discharges of Hazardous Substances, 18 July 1985, in force 29 November 1985, 26 ILM 19 (1987) 517

Association of South East Asian Nations Agreement on the Conservation of Nature and Natural Resources (Kuala Lumpur) 9 July 1985, 15 EPL 64 (1985) (1985 ASEAN Agreement) 211, 490–492, 499, 606, 637, 638, 640, 658

Convention for the Protection of the Ozone Layer (Vienna) 22 March 1985, in force 22 September 1988, 26 ILM 1529 (1985) (1985 Vienna Convention) (see also 1987 Montreal Protocol) 6, 15, 60, 84, 97–100, 102, 103, 105, 107, 108, 159–162, 164, 170, 172, 198, 202, 204, 219, 235, 239, 263–265, 276, 516, 607, 628, 646, 682, 683, 707

Convention for the Protection, Management and Development of the Marine and Coastal Environment of the East African Region (Nairobi) 21 June 1985, in force 30 May 1996, IELMT 985:46; amended 31 March 2010, not in force (1985 Nairobi Convention) 210, 213, 357–360, 379, 389, 396, 479, 606, 638, 682

ILO Convention (No. 155) Concerning Occupational Health Services (Geneva) 22 June 1985, in force 17 February 1988, 2 SMTE 126 533

Protocol Concerning Co-operation in Combating Pollution in Cases of Emergency (Nairobi) 21 June 1985, 30 May 1996, IELMT 985:48 (1985 Nairobi Emergency Protocol) 357, 394, 395

Protocol Concerning Protected Areas and Wild Fauna and Flora in the Eastern African Region (Nairobi) 21 June 1985, 30 May 1996, IELMT 985:47 (1985 Nairobi Protocol) 357, 438

Protocol to the 1979 Convention on LRTAP on the Reduction of Sulphur Emissions or Their Transboundary Fluxes by at Least 30 Per Cent (Helsinki) 8 July 1985, in force 2 September 1987, 27 ILM 1077 (1987) (1985 LRTAP Sulphur Protocol) 248, 249

South Pacific Nuclear Free Zone Treaty (Rarotonga) 6 August 1985, in force 11 December 1986, 24 ILM 1142 (1985) (1985 Rarotonga Treaty) 83, 372, 486, 545, 563

1986

Canada-US Agreement Concerning the Transboundary Movement of Hazardous Waste (Ottawa) 28 October 1986, in force 8 November 1986, TIAS 11099 559, 574

Convention for the Protection of the Natural Resources and Environment of the South Pacific Region (Noumea) 25 November 1986, in force 22 August 1990, 26 ILM 38 (1987) (1986 Noumea Convention) 83, 170, 202, 357–360, 371, 379, 389, 396, 430, 486, 563, 566, 606, 609, 682, 701, 791

Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency (Vienna) 26 September 1986, in force 26 February 1987, 25 ILM 1377 (1986) (1986 IAEA Assistance Convention) 391, 638, 650

Convention on Early Notification of Nuclear Accidents (Vienna) 26 September 1986, in force 27 October 1986, 25 ILM 1370 (1986) (1986 Notification Convention) 542, 642–644

ILO Convention (No. 162) Concerning Safety in the Use of Asbestos (Geneva) 24 June 1986, in force 16 June 1989, 2 SMTE 359 (1986 ILO Asbestos Convention) 647, 658

Mexico-United States Agreement for Co-operation on Environmental Programmes and Transboundary Problems (Washington), 12 November 1986, in force 29 January 1987, 26 ILM 25 (1987) 574

Protocol Concerning Co-operation in Combating Pollution Emergencies (Noumea) 25 November 1986, in force 22 August 1990, IELMT 986:87B (1986 Noumea Pollution Emergencies Protocol) 83, 357, 394, 395

Protocol for the Prevention of Pollution of the South Pacific Region by Dumping (Noumea) 25 November 1986, in force 22 August 1990, IELMT 986:87A (1986 Noumea Dumping Protocol) 83, 357, 370–372, 638

1987

Agreement on the Action Plan for the Environmentally Sound Management of the Common Zambezi River System (Harare) 28 May 1987, in force 28 May 1987, 27 ILM 1109 (1987 Zambezi Action Plan Agreement) 211

Finland and USSR Agreement on Early Notification of a Nuclear Accident and on Exchange of Information Relating to Nuclear Facilities, 7 January 1987, IAEA LegSer No. 15 542

Protocol on Substances that deplete the Ozone Layer (Montreal) 16 September 1987, in force 1 January 1989, 26 ILM 154 (1987) (1987 Montreal Protocol) 6, 8, 40, 53, 56, 60, 84, 89, 97, 98, 101–103, 105–109, 123, 127, 143, 148, 163, 164, 202, 214, 235, 239, 245, 263, 265, 267, 270–272, 274, 302, 516, 523, 567, 607, 628, 631, 648, 658, 676, 678, 682, 801, 804, 805, 854, 888

1988

Additional Protocol to the American Convention on Human Rights in the Area of Economic, Social and Cultural Rights (San Salvador) 17 November 1988, 16 November 1999, 28 ILM 161 (1989), OAS Treaty Series 69 777, 781

Canada-US Free Trade Agreement (Ottawa) 2 January 1988, in force 1 January 1989, 27 ILM 281 (1988) 852

Convention Concerning Safety and Health in Construction (Geneva) 20 June 1988, in force 11 January 1991, 2 SMTE 440 534

Convention on Jurisdiction and Enforcement of Judgments in Civil and Commercial Matters (Lugano) 16 September 1988, in force 1 January 1992, OJ L319, 25 November 1988, 9 157

Convention on the Regulation of Antarctic Mineral Resource Activities (Wellington) 2 June 1988, not in force, 27 ILM 868 (1988) (1988 CRAMRA) 35, 103, 138, 141, 152, 153, 578, 582, 586, 597, 606, 614, 637, 646, 647, 701, 707, 712, 733, 760, 791, 792

Joint Protocol Relating to the Application of the Vienna Convention and the Paris Convention (Vienna) 21 September 1988, in force 27 April 1992, 42 Nuclear Law Bulletin 56 (1988) (1988 Joint Protocol) 741, 745

Protocol Concerning the Control of Emissions of Nitrogen Oxides or Their Transboundary Fluxes (Sofia) 31 October 1988, in force 14 February 1991, 28 ILM 214 (1988) (1988 NO_x Protocol) 249, 250

Sweden-USSR Agreement on Early Notification of a Nuclear Accident and on Exchange of Information Relating to Nuclear Facilities, 1 January 1988, IAEA LegSer No. 15, 407 543

1989

African, Caribbean and Pacific States-European Community: Fourth Lomé Convention (Lomé) 15 December 1989, in force 1 September 1991, 29 ILM 783 (1990) (1989 Lomé Convention) 35, 207, 559, 572, 667

Convention for the Prohibition of Fishing with Long Driftnets in the South Pacific (Wellington) 24 November 1989, in force 17 May 1991, 29 ILM 1454 (1990) (1989 Wellington Convention) 430

Convention on Civil Liability for Damage Caused During Carriage of Dangerous Goods by Road, Rail and Inland Navigation Vessels (Geneva) 10 October 1989, not in force, UN Doc. ECE/TRANS/79 (1989 CRTD) 725, 759

Convention on the Control of Transboundary Movement of Hazardous Wastes and Their Disposal (Basel) 22 March 1989, in force 1992, 28 ILM 657 (1989) (1989 Basel Convention) 46, 60, 85, 97, 98, 102–104, 107, 124, 138, 139, 143, 148, 159, 164, 170, 172, 192, 213, 255, 525, 527, 557, 559, 561, 566–569, 572, 578, 591, 606, 625, 631, 632, 638, 640, 658, 674, 738, 757, 772, 802, 803, 805, 851, 854, 876, 895

Convention on the Rights of the Child (New York) 20 November 1989, in force 2 September 1990, 29 ILM 1340 (1990) 782

International Convention on Salvage (London) 28 April 1989, in force 6 September 1991, IMO/LEG/Conf.7/27 392

Protocol Concerning Marine Pollution resulting from Exploration and Exploitation of the Continental Shelf (Kuwait) 29 March 1989, in force 17 February 1990 (1989 Kuwait Exploration Protocol) 355, 389

Protocol for the Conservation and Management of Protected Marine and Coastal Areas of the South-East Pacific (Paipa) 21 September 1989, in force 1994, IELMT 989:71 (1989 Paipa SPA Protocol) 356, 438

Protocol for the Protection of the South-East Pacific Against Radioactive Contamination (Paipa) 21 September 1989, in force 25 January 1995, IELMT 989:70 (1989 Paipa Radioactive Contamination Protocol) 356

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Adjustments and Amendments to the 1987 Montreal Protocol (London) 29 June 1990, in force 10 August 1992, 30 ILM 537 (1991) (1990 Montreal Amendments and Adjustments) 142, 214, 665, 674, 675, 683, 805, 854

Agreement Establishing the European Bank for Reconstruction and Development (London) 29 May 1990, in force 1991, 29 ILM 1077 (1990) 630

Agreement on Conservation of Seals in the Wadden Sea Area (Bonn) 16 October 1990, in force 1 October 1991 504

Convention of the International Commission for the Protection of the Elbe (Magdeburg) 8 October 1990, IELMT 990:75 319

ILO Convention (No. 170) Concerning Safety in the Use of Chemicals at Work (Geneva) 25 June 1990, in force 4 November 1993, 1753 UNTS 189 522, 534

International Convention on Oil Pollution Preparedness, Response and Co-operation (London) 30 November 1990, in force 13 May 1995, 30 ILM 733 (1991) (1990 Oil Pollution Preparedness Convention) 73, 103, 232, 592

Protocol Concerning Pollution from Land-Based Sources (Kuwait) 20 February 1990, in force 2 January 1993 (1990 Kuwait LBS Protocol) 355, 375–378

Protocol Concerning Specially Protected Areas and Wildlife in the Wider Caribbean Region (Kingston) 18 January 1990, in force 18 June 2000, 1 Yearbook of International Environmental Law 441 (1990) (1990 Kingston SPA Protocol) 356, 438

1991

Agreement Between the Government of the United States of America and the Government of Canada on Air Quality (Ottawa) 13 March 1991, in force 13 March 1991, 30 ILM 676 (1991) 257

Agreement on the Conservation of Populations of European Bats (London) 4 December 1991, 1863 UNTS 101, in force 16 January 1994 504

Convention on Environmental Impact Assessment in a Transboundary Context (Espoo) 25 February 1991, in force 10 September 1997, 30 ILM 802 (1991) (1991 Espoo Convention); as amended by Decision II/14 (27 February 2001) and Decision III/7 (4 June 2004) 15, 35, 67, 85, 103, 148, 163, 202, 516, 520, 565, 566, 606, 610, 614, 634, 637, 650

Convention on the Ban of Import into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes within Africa (Bamako) 29 January 1991, in force April 1998, 30 ILM 775 (1991) (1991 Bamako Convention) 81, 85, 124, 139, 220, 361, 527, 545, 557, 559, 561, 563, 565, 567, 568, 570–572, 638, 757, 802, 804

Convention on the Protection of the Alps (Salzburg) 7 November 1991, 6 March 1995, 1917 UNTS 135 (1992) (1991 Alpine Convention) 202, 204, 232, 489, 548, 551

Protocol on Environmental Protection to the Antarctic Treaty (Madrid) 4 October 1991, in force 14 January 1998, 30 ILM 1461 (1991) (1991 Madrid Protocol) 202, 586

Protocol on the Control of Emissions of Volatile Organic Compounds and Their Transboundary Fluxes (Geneva) 18 November 1991, in force 29 September 1997, 31 ILM 568 (1992) 251

Treaty Establishing the African Economic Community (Abuja) 3 June 1991, in force 12 May 1994, 30 ILM 1241 (1991) 861

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Adjustments and Amendments to the 1987 Montreal Protocol (Copenhagen) 23–25 November 1992, in force 19 June 1994, 32 ILM 874 (1993) 214, 804

Agreement on the Conservation of Small Cetaceans of the Baltic and North Seas (New York) 17 March 1992, in force 29 March 1994, 1772 UNTS 217 (1992 ASCOBANS); amended Esbjerg, 22 August 2003, in force 3 February 2008 424, 428

Agreement on the European Economic Area (Oporto) 2 May 1992, in force 1 January 1994, 1801 UNTS 3 (1992 EEA Agreement) 206, 231

Agreement on the North Atlantic Marine Mammals Conservation Organization (NAMMCO) (Nuuk, Greenland) 9 April 1992, in force 7 July 1992, 1945 UNTS 3 424, 428

Convention for the Conservation of Anadromous Fish Stocks in the North Pacific Ocean (Moscow) 11 February 1992, in force 16 February 1993, TIAS No. 11465 414

Convention for the Protection of the Marine Environment of the North-East Atlantic (Paris) 22 September 1992, in force 25 March 1998, 32 ILM 1068 (1993) (1992 OSPAR Convention) 15, 46, 83, 84, 87, 97, 111, 124, 139, 153, 161, 170, 188, 202, 211, 221, 223, 232, 349, 350, 360, 367, 370, 373, 375, 377, 378, 390, 403, 557, 565, 631, 632, 645, 646, 649, 650, 652

Convention on Biological Diversity (Rio de Janeiro) 5 June 1992, in force 29 December 1993, 31 ILM 822 (1992) (1992 Biodiversity Convention) 8, 15, 24, 46, 53, 60, 85, 88, 97–99, 103, 104, 107, 109, 125, 142, 159–162, 170, 172, 178, 188, 189, 192, 198, 203, 204, 210, 211, 214–217, 220, 234, 235, 451–453, 615, 628, 631, 640, 647, 658, 678, 683, 688, 689, 694–696, 802, 822, 823

Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Helsinki) 17 March 1992, in force 6 October 1996, 31 ILM 1312 (1992) (1992 Watercourses Convention) 15, 35, 67, 84, 103, 170, 172, 188, 220, 322, 323, 340, 606, 634, 646, 658, 701, 709, 770

Convention on the Protection of the Black Sea Against Pollution (and Protocols) (Bucharest) 21 April 1992, in force 15 January 1994, 32 ILM 1101 (1992) (1992 Black Sea Convention) 124, 202, 371, 372, 375, 377, 437, 606, 757

Convention on the Protection of the Marine Environment of the Baltic Sea Area (Helsinki) 9 April 1992, in force 17 January 2000, BNA 35: 0401 (1992 Baltic Sea Convention) 221, 232, 349, 362, 390

International Convention on Civil Liability for Oil Pollution Damage (Brussels) 27 November 1992, in force 30 May 1996 (1992 CLC), IMO LEG/CONF.9.15 73, 348, 746–750, 755, 756, 759, 791

North American Free Trade Agreement (Washington, Ottawa, Mexico City) 17 December 1992, in force 1 January 1994; 32 ILM 289 (1993) and 32 ILM 605 (1993) (NAFTA) 806, 854–859, 871, 872, 874–884

Protocol to Amend the 1971 Oil Pollution Fund Convention (London) 27 November 1992, in force 30 May 1996, BNA 21: 1751 (1992 Oil Pollution Fund Protocol) 84, 161

UNECE Convention on the Transboundary Effects of Industrial Accidents (Helsinki) 17 March 1992, in force 19 April 2000, 31 ILM 1330 (1992) (1992 Industrial Accidents Convention) 35, 67, 85, 172, 188, 232, 325, 516, 519, 606, 610, 625, 634, 637, 640, 650, 701, 709

United Nations Framework Convention on Climate Change (New York) 9 May 1992, in force 24 March 1994, 1771 UNTS 107 (1992 Climate Change Convention) 6, 8, 10, 15, 46, 51, 53, 55, 56, 77, 84, 89, 97–100, 103, 104, 107, 123, 125, 128, 142, 143, 153, 159–161, 170, 172, 188, 189, 192, 198, 203, 204, 210, 211, 215–217, 21, 233–235, 239, 275, 276, 294, 296, 302, 607, 628, 631–633, 646, 648, 650, 658, 678, 685, 707, 709, 734, 802, 807, 852, 896

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Agreement Concerning the Establishment of a Border Environment Cooperation Commission and a North American Development Bank (Mexico City) 18 November 1993, in force 1 January 1994, 32 ILM 1545 (1993); 2372 UNTS 179 617, 860

Agreement for the Establishment of the Indian Ocean Tuna Commission (Rome) 25 November 1993, in force 27 March 1996, 1927 UNTS 329 413

Agreement for the Establishment of the Near East Plant Protection Organization (Rabat) 18 February 1993, in force 8 January 2009, UNTS I – 46043 507

Agreement to Promote Compliance with International Conservation and Management Measures by Fishing on the High Seas, November 1993 (FAO Res. 15/93) 410

Convention for the Conservation of Southern Bluefin Tuna (Canberra) 10 May 1993, in force 30 May 1994, 1819 UNTS 360 420

Convention on Civil Liability for Damage Resulting from Activities Dangerous to the Environment (Lugano) 21 June 1993, not in force, 32 ILM 1228 (1993) (1993 Lugano Convention) 46, 103, 123, 140, 232, 516, 651, 706, 707, 709, 725, 738, 766, 767, 769–771

ILO Convention (No. 174) on the Prevention of Major Industrial Accidents (Geneva) 22 June 1993, in force 3 January 1996, 1967 UNTS 231 (1993 ILO Accidents Convention) 516

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Abbreviations

AAU	assigned amount unit	CRTD	1989 Geneva Convention on Civil Liability for Damage Caused During Carriage of Dangerous Goods by Road, Rail and Inland Navigation Vessels
ACAP	Arctic Council Action Plan (to Eliminate Pollution of the Arctic)	CSCC	Conference on Security and Co-operation in Europe
ACHR	1969 American Convention on Human Rights	CSD	Commission on Sustainable Development
ACP	African–Caribbean–Pacific	CTE	Committee on Trade and the Environment (WTO)
ADB	Asian Development Bank	CTS	<i>Consolidated Treaty Series</i>
ADR	1957 European Agreement Concerning the International Carriage of Goods by Road	DPCIA	Dolphin Protection Consumer Information Act (US)
AEPS	Arctic Environmental Protection Strategy	DR	<i>Decisions and Reports of the European Commission on Human Rights</i>
AIA	advance informed agreement	DSB	Dispute Settlement Body (WTO)
ASEAN	Association of South East Asian Nations	DSU	Dispute Settlement Understanding (WTO)
ASIL	American Society of International Law	EBRD	European Bank for Reconstruction and Development
ATCM	Antarctic Treaty Consultative Meeting	EC	European Community
BFSP	<i>British and Foreign State Papers</i>	ECA	Economic Commission for Africa (UN)
BISD	<i>Basic Instruments and Selected Documents</i> (GATT)	ECE	Economic Commission for Europe (UN)
BIT	bilateral investment treaty	ECHR	European Convention on Human Rights
CCAMLR	1980 Convention on the Conservation of Antarctic Marine Living Resources	ECJ	European Court of Justice
CCSBT	1993 Convention for the Conservation of Southern Bluefin Tuna	ECOSOC	Economic and Social Council (UN)
CDM	Clean Development Mechanism	ECR	<i>European Court Reports</i>
CERs	certified emission reductions	ECSC	European Coal and Steel Community
CFC	chlorofluorocarbon	EEA	European Economic Area
CGIAR	Consultative Group on International Agricultural Research	EEC	European Economic Community
CITES	1973 Convention on International Trade in Endangered Species of Wild Fauna and Flora	EEZ	exclusive economic zone
CLC	1969 Convention on Civil Liability for Oil Pollution	EFTA	European Free Trade Area
CMLR	<i>Common Market Law Reports</i>	EGTT	Expert Group on Technology Transfer (WTO)
Cmnd	Command Paper (UK)	EHRR	<i>European Human Rights Reports</i>
CO ₂	carbon dioxide	EIA	environmental impact assessment
COP	Conference of the Parties	EMEP	European Monitoring and Evaluation Programme (UNECE/UNEP/WMO)
COPUOS	Committee on Peaceful Uses of Outer Space	EMG	Environment Management Group (UN)
CRAMRA	1988 Convention on the Regulation of Antarctic Mineral Resource Activities	EPA	Environmental Protection Agency (US)
		EPO	European Patent Office
		EPPO	European and Mediterranean Plant Protection Organization

- ERU emission reduction unit
 ESC 1961 European Social Charter
 ESCAP UN Economic and Social Commission on Asia and the Pacific
 ETS *European Treaty Series*
 EU European Union
 EURATOM European Atomic Energy Agency
 FAO Food and Agriculture Organization
 FIELD Foundation for International Environmental Law and Development
 FTA free trade area
 GAOR *General Assembly Official Records*
 GATS General Agreement on Trade in Services
 GATT General Agreement on Tariffs and Trade
 GEF Global Environment Facility
 GEMS Global Environmental Monitoring System
 GESAMP Group of Experts on the Scientific Aspects of Marine Environmental Protection
 GHS Globally Harmonized System of Classification and Labelling of Chemicals
 GMO genetically modified organism
 GPA 1995 Global Programme of Action (for the Protection of the Marine Environment from Land-Based Activities)
 HCFC hydrochlorofluorocarbon
 HELCOM Baltic Marine Environment Protection Commission
 HNS hazardous and noxious substances
 IACSD Inter-Agency Committee on Sustainable Development
 IAEA International Atomic Energy Agency
 IATTC Inter-American Tropical Tuna Commission
 IBRD International Bank for Reconstruction and Development
 ICAO International Civil Aviation Organization
 ICCAT International Commission for the Conservation of Atlantic Tunas
 ICCPR 1966 International Covenant on Civil and Political Rights
 ICES International Council for the Exploration of the Sea
 ICESCR 1966 International Covenant on Economic, Social and Cultural Rights
 ICJ International Court of Justice
 ICRP International Commission on Radiological Protection
 ICSID International Centre for Settlement of Investment Disputes
 ICSU International Council of Scientific Unions
 IDA International Development Agency
 IDI Institut de Droit International
 IELMT *International Environmental Legal Materials and Treaties*
 IFC International Finance Corporation
 IFCS Intergovernmental Forum on Chemical Safety (WHO)
- ILA International Law Association
 ILC International Law Commission
 ILM *International Legal Materials*
 ILO International Labour Organization
 ILR *International Law Reports*
 IMDG Code International Maritime Dangerous Goods Code
 IMF International Monetary Fund
 IMO International Maritime Organization
 INC/FCCC Intergovernmental Negotiating Committee for a Framework Convention on Climate Change
 INFOTERRA International Referral System for Sources of Environmental Information (UNEP)
 IOC International Oceanographic Commission
 IOPC Fund International Oil Pollution Compensation Fund
 IOTC Indian Ocean Tuna Commission
 IPCC Intergovernmental Panel on Climate Change
 IPE B. Ruster and B. Simma, *International Protection of the Environment: Treaties and Related Documents* (vols. I–XXXI, 1975–83)
 IPOA–IUU International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing
 IRPTC International Register of Potentially Toxic Chemicals
 ISAR International Standards on Accounting and Reporting
 ISO International Standards Organization
 ITLOS International Tribunal for the Law of the Sea
 ITTA International Tropical Timber Agreement
 ITTC International Tropical Timber Council
 ITTO International Tropical Timber Organization
 IUCN International Union for the Conservation of Nature
 IUU illegal, unreported and unregulated fishing
 IWC International Whaling Commission
 JARPA Japanese Whale Research Programme under Special Permit in the Antarctic
 LBS land-based source
 LBSA land-based sources and activities
 LDC 1972 London Dumping Convention
 LMO living modified organism
 LMO-FFP living modified organism intended for use as food or feed, or for processing
 LNTS *League of Nations Treaty Series*
 LRTAP long range transboundary air pollution
 LULUCF land-use, land-use change and forestry
 MAI multilateral agreement on investment
 MARPOL International Convention for the Prevention of Pollution from Ships

- MEA multilateral environmental agreement
 MEPC Marine Environment Protection Committee (IMO)
 MGA melengestrol acetate
 MIGA Multilateral Investment Guarantee Agency
 MMPA 1972 Marine Mammal Protection Act (US)
 MOP Meeting of the Parties
 MOU Memorandum of Understanding
 MOX mixed oxide
 MPA marine protected area
 NAFO North Atlantic Fisheries Organization
 NAFTA North American Free Trade Agreement
 NAMMCO North Atlantic Marine Mammals Conservation Organization
 NAPE National Agency for the Protection of the Environment (Denmark)
 NATO North Atlantic Treaty Organization
 NEAFC North-East Atlantic Fisheries Commission
 NGO non-governmental organisation
 NOX nitrogen oxide
 O₃ ozone
 OAS Organization of American States
 OAU Organization of African Unity
 OECD Organization for Economic Co-operation and Development
 OJ *Official Journal of the European Union*
 OJ EPO *Official Journal of the European Patent Office*
 OPEC Organization of Petroleum Exporting Countries
 OPOL 1974 Oil Companies Offshore Pollution Liability Agreement
 OPRC 1990 London International Convention on Oil Pollution Preparedness, Response and Co-operation
 OSCE Organization for Security and Co-operation in Europe
 OSCOM Commission of the 1972 Oslo Convention for the Prevention of Marine Pollution by Dumping from Ships and Aircraft
 OSPAR 1992 Convention for the Protection of the Marine Environment of the North-East Atlantic
 PARCOM Commission of the 1974 Paris Convention for the Prevention of Marine Pollution from Land-Based Sources
 PCA Permanent Court of Arbitration
 PCB polychlorinated biphenyl
 PCIJ Permanent Court of International Justice
 PIC prior informed consent
 POP persistent organic pollutant
 REDD/ reducing emissions from deforestation
 REDD+ and forest degradation
 RFMO regional fishery management organisation
 RIAA *Reports of International Arbitral Awards*
 RID 1985 Regulations Concerning the International Carriage of Dangerous Goods by Rail
 RMU removal unit
 ROPME Regional Organization for the Protection of the Marine Environment
 SADC Southern African Development Community
 SCAR Scientific Committee on Antarctic Research
 SCOR *Security Council Official Records*
 SDRs special drawing rights
 SEAFO South-East Atlantic Fisheries Organization
 SMTE *Selected Multilateral Treaties on the Environment* (A. Kiss (ed.), vol. 1, 1983; I. Rummel-Bulska and S. Osafa (eds.), vol. 2, 1991)
 SO₂ sulphur dioxide
 SOLAS 1974 Convention for the Safety of Life at Sea
 SO_x oxides of sulphur
 SPA specially protected areas
 SPREP South Pacific Regional Environment Programme
 SPRFMO South Pacific Regional Fisheries Management Organization
 SPS sanitary and phytosanitary
 TAC total allowable catch
 TBT technical barriers to trade
 TED turtle excluder device
 TIAS *Treaties and Other International Acts*
 TRIPs Agreement on Trade-Related Aspects of Intellectual Property Rights (WTO)
 UDHR Universal Declaration of Human Rights
 UKTS *United Kingdom Treaty Series*
 UNCC United Nations Compensation Commission
 UNCCUR 1949 United Nations Conference on the Conservation and Utilisation of Resources
 UNCED United Nations Conference on Environment and Development
 UNCITRAL United Nations Commission for International Trade Law
 UNCLOS 1982 United Nations Convention on the Law of the Sea
 UNCTAD United Nations Conference on Trade and Development
 UNCTC United Nations Centre for Transnational Corporations
 UNDP United Nations Development Programme
 UNECE United Nations Economic Commission for Europe
 UNEP United Nations Environment Programme
 UNESCO United Nations Educational, Scientific and Cultural Organization
 UNFCCC United Nations Framework Convention on Climate Change

UNFF	United Nations Forum on Forests	WCED	World Commission on Environment and Development
UNGA	United Nations General Assembly	WCMC	World Conservation Monitoring Centre
UNIDO	United Nations Industrial Development Organization	WCPFC	Western and Central Pacific Fisheries Commission
UNTS	<i>United Nations Treaty Series</i>	WHO	World Health Organization
UPOV	International Union for the Protection of New Varieties of Plants	WIPO	World Intellectual Property Organization
USC	United States Code	WLR	<i>Weekly Law Reports</i>
USSR	Union of Soviet Socialist Republics	WMO	World Meteorological Organization
UST	<i>US Treaties and Other International Agreements</i>	WRI	World Resources Institute
VOC	volatile organic compound	WSSD	World Summit on Sustainable Development (2002)
WBAT	World Bank Administrative Tribunal	WTO	World Trade Organization
		WWF	World Wide Fund for Nature

PART I

The legal and institutional framework

1

The environment and international society: issues, concepts and definitions

Given that the land – and the sea – and the air-spaces of planet Earth are shared, and are not naturally distributed among the states of the world, and given that world transforming activities, especially economic activities, can have effects directly or cumulatively, on large parts of the world environment, how can international law reconcile the inherent and fundamental interdependence of the world environment? How could legal control of activities adversely affecting the world environment be instituted, given that such activities may be fundamental to the economies of particular states?¹

THE ENVIRONMENTAL CHALLENGE

It is widely recognised that the planet faces serious environmental challenges that can only be addressed through international co-operation. Acid rain, ozone depletion, climate change, loss of biodiversity, toxic and hazardous products and wastes, pollution of rivers and depletion of freshwater resources are amongst the issues that international law is being called upon to address, and since the mid-1980s the subject of international environmental law has emerged as a discrete field of public international law, although one that is closely related to many other areas. The conditions contributing to the emergence of international environmental law are easily identified: environmental issues are accompanied by a recognition that ecological interdependence does not respect national boundaries and that issues previously considered to be matters of domestic concern have international implications – at the bilateral, sub-regional, regional or global levels – that can frequently only be addressed by international law and regulation.

The growth of international environmental issues is evidenced by the large body of principles and rules of international environmental law that apply bilaterally, regionally and globally, and reflects international interdependence in a ‘globalising’ world.² Progress in developing international legal control of activities has been gradual and piecemeal, and frequently reactive to particular incidents or the availability of new scientific evidence

¹ P. Allott, *Eunomia: A New Order for a New World* (1990), para. 17.52.

² P. Sands, ‘Turtles and Torturers: The Transformation of International Law’, 33 *New York University Journal of International Law and Politics* 527–58 (2001).

(such as the Chernobyl accident or the discovery of the hole in the ozone layer). It was not until the late nineteenth century that communities and states began to recognise the transboundary consequences of activities affecting shared rivers or leading to the destruction of wildlife, such as fur seals, in areas beyond national jurisdiction. In the 1930s, the transboundary consequences of air pollution were acknowledged in the litigation leading to the award of the arbitral tribunal in the *Trail Smelter* case. In the 1950s, the international community legislated on international oil pollution in the oceans. By the 1970s, the regional consequences of pollution and the destruction of flora and fauna were obvious, and by the late 1980s global environmental threats were part of the international community's agenda as scientific evidence identified the potential consequences of ozone depletion, climate change and loss of biodiversity. Local issues were recognised to have transboundary, then regional, and ultimately global, consequences. In 1996, the International Court of Justice recognised, for the first time, that there existed rules of general international environmental law, and that a 'general obligation of States to ensure that activities within their jurisdiction and control respect the environment of other States or of areas beyond national control is now part of the corpus of international law relating to the environment'.³ Since then, specific treaty rules have become more complex and technical and environmental issues have been increasingly integrated into other subject areas (including trade, investment, intellectual property, human rights and the law governing armed conflict). In addition, international environmental jurisprudence has become less exceptional as the case law of international courts and tribunals expands, even if the jurisprudence continues to reflect a reluctance to give a hard edge to norms of environmental protection.

The 1992 UN Conference on Environment and Development (UNCED) provided an opportunity for the international community to prioritise environmental issues and consolidate a vast and unwieldy patchwork of international legal commitments. The treaties and other international acts adopted before, at and since UNCED reflect the growing range of economic activities that concern the international community and are subject to international legal regulation. UNCED agreed environmental priorities that were essentially divided into two categories: those relating to the protection of various environmental media, and those relating to the regulation of particular activities or products. The first category identified the following priorities for the protection and conservation of particular environmental media:

- protection of the atmosphere, in particular by combating climate change, ozone depletion and ground-level and transboundary air pollution;
- protection of land resources;
- halting deforestation;
- conservation of biological diversity;
- protection of freshwater resources; and
- protection of oceans and seas (including coastal areas) and marine living resources.

³ (1996) ICJ Reports 226 at 242.

The second category of major issues identified the products and by-products of human technological and industrial innovation which are considered to be particularly harmful to the environment, and which therefore require international regulation. These include:

- biotechnology;
- toxic chemicals, including their international trade;
- agricultural practices;
- hazardous wastes, including their international trade;
- solid wastes and sewage-related issues; and
- radioactive wastes.

For both categories, which continue to have currency today, the international legal issues are complex, and cannot be considered or addressed properly without taking account of political, cultural, economic and scientific concerns. What level of environmental protection should standards seek to establish? Should the standards be set on a uniform basis or should they be differentiated to take account of political, economic and ecological circumstances? What regulatory and other techniques exist to apply those standards? How are the standards to be enforced domestically and internationally? What happens if a dispute arises over non-compliance?

In addressing these questions, it is clear that the environment represents a complex system of interconnections, that to understand the evolution and character of a particular environment it is necessary to consider a broad range of apparently unrelated factors, and that these factors should be understood as interacting with each other in a number of ways that do not permit them to be treated as discrete.⁴ The interdependence of environmental issues poses legal challenges: how to develop and apply a comprehensive and effective set of legal requirements aimed at preventing environmental damage by addressing the sources without taking measures that will cause harm elsewhere? Current efforts to develop environmentally sound energy policies, for example, reflect the full extent of this challenge: the limited efforts to address climate change reflect the extent to which developments in the law depend upon political will, economic factors and technological capacity.

THE BASIS FOR DECISION-MAKING: SCIENCE, ECONOMICS AND OTHER VALUES

Like other areas of law, international environmental law is influenced by many non-legal factors. The likelihood of achieving agreement increases with: greater scientific consensus about the cause and seriousness of a problem; increased public concern; a perception on the part of the negotiating states that other partners are doing their 'fair' share to address the problem; an increase in short-term political benefits; and the existence of previous, related multilateral agreements.⁵ Factors that lessen the likelihood of reaching agreement include the economic costs of environmental controls and the number of states negotiating a treaty. Other considerations include the choice of forum for the negotiation of the

⁴ A. Goudie, *The Nature of the Environment* (3rd edn, 1993), 367–8.

⁵ R. Hahn and K. Richards, 'The Internationalisation of Environmental Regulation', 30 *Harvard International Law Journal* 421 at 433–40 (1989).

agreement and the nature of arrangements for dealing with non-compliance. Of all these factors, two are particularly influential: the impact of science, and perceived economic impacts.

Science

The strong concern of states to ensure that their economic interests are taken into account in the development and application of international environmental law has been matched by an equally firm view that environmental regulations should only be adopted where there is compelling scientific evidence that action is required to prevent environmental damage. Increasingly, this brings diplomats and international lawyers together with the scientific community. The ease with which an international lawyer is able to present a cogent case for international legislation often turns on the ability to show that the lack of action by the international community is likely to result in significant adverse effects. Within the past decade the task may have been made substantially less onerous by growing acceptance of a precautionary approach, requiring action in the face of significant scientific uncertainty. The 1985 Vienna Convention (and its 1987 Montreal Protocol), the 1992 Climate Change Convention (and its 1997 Kyoto Protocol), the 1995 Fish Stocks Agreement and the 2000 Cartagena Protocol on Biosafety are examples of treaties establishing obligations in the face of scientific uncertainty and in the absence of an international consensus on the existence of environmental harm.⁶ To these may be added a series of international judicial decisions informed by ‘prudence and caution’.⁷ The current debate about the science of climate change, however, indicates the brake that uncertainty (or at least the perception of scientific discord) may have on legal developments.⁸

Since the first edition of this book, the place of science in international environmental decision-making has been the subject of vigorous debate, largely focusing around competing claims concerning the lawfulness of restrictions on the use of, and international trade in, modified crops and foodstuffs, including genetically modified organisms.⁹ Disputes under various World Trade Organization (WTO) agreements (relating to beef hormones¹⁰ and GMOs¹¹) and efforts to negotiate new rules on climate change¹² have provided opportunities for an airing of states’ views as to the degree of scientific evidence and certainty that is required to justify restrictions.¹³ As to science, in large part the issues have been driven by differences of perspective between the United States and the European Union, with the former strongly in favour of decision-making based on ‘hard science’ and strictly limiting the

⁶ See Chapter 6, pp. 217–28, below on the precautionary principle.

⁷ ITLOS decisions in *Southern Bluefin Tuna*, *Land Reclamation* and *MOX Provisional Measures* cases. See Chapter 6, pp. 224–5, below.

⁸ Kevin Trenberth, ‘More Knowledge, Less Certainty’, 4 *Nature Reports Climate Change* 20 (2010), available at www.nature.com/climate/2010/1002/pdf/climate.2010.06.pdf; D. Henderson, ‘The Climate Change Debate Today: COP15, the CRU Affair, and the Basis for Policy’, 21(3) *Energy and Environment* 279 (2010).

⁹ J. Peel, *Science and Risk Regulation in International Law* (Cambridge University Press, Cambridge, 2010).

¹⁰ See Chapter 19, pp. 832–8, below. ¹¹ See Chapter 19, pp. 844–7, below.

¹² See Chapter 7, pp. 293–9, below.

¹³ For an excellent overview, see T. Christoforou, ‘Science, Law and Precaution in Dispute Resolution on Health and Environmental Protection: What Role for Scientific Experts?’, in J. Bourrinet and S. Maljean-Dubois (eds.), *Le Commerce international des organismes génétiquement modifiés* (2002).

circumstances in which restrictions may be permitted in the face of uncertainty as to consequences. The extent of the difference is reflected in views expressed by one official of the US State Department:

[T]he increasing efforts from within the EU ... could weaken the scientific basis for regulatory decisions that affect trade. This trend poses a challenge not only to US interests but also to the rules-based, global trading system that we have spent the past 50 years building.¹⁴

The contrary position – often adopted by the European Union – would allow decision-makers a greater ‘margin of appreciation’ in the face of scientific uncertainty.¹⁵ The tension continues, and this imposes on international adjudicators some acute difficulties. The approaches of the International Court of Justice (most recently in the *Pulp Mills* case), the International Tribunal for the Law of the Sea (in the *Advisory Opinion on Responsibilities and Obligations in the Area*) and the WTO Dispute Settlement Body (in the *GMO* case) merit attention and comparison, indicating a range of views on the need for precautionary measures.¹⁶ In parallel with such judicial developments has been the recognition of a greater role for early ‘risk assessment’, beyond traditional use of environmental impact assessment.¹⁷

Economics

The progress of international environmental law reflects a close relationship between environmental protection and economic development. Over the short term, laws adopted to protect the environment can impose potentially significant economic costs. Moreover, certain technologically developed countries may be better placed to benefit from the adoption of stringent environmental standards, while others will be concerned about the threat to their economic competitiveness resulting from the failure of other countries to adopt similarly stringent standards and may want to relax (or at least not strengthen) their environmental standards.¹⁸

Only rarely do environmental treaties provide for financial resources to be made available to compensate for the additional costs of protective measures. The Convention on the International Trade in Endangered Species (CITES), for example, did not provide compensation

¹⁴ Quoted in M. Geistfeld, ‘Reconciling Cost–Benefit Analysis with the Principle That Safety Matters More Than Money’, 76 *New York University Law Review* 114 at 176 (2001). The same article quotes an editorial in the *Wall Street Journal* (on 10 February 2000): ‘The precautionary “principle” is an environmentalist neologism, invoked to trump scientific evidence and move directly to banning things they don’t like – biotech, wireless technology, hydrocarbon emissions.’

¹⁵ Chapter 6, pp. 217–28, below.

¹⁶ Respectively, at Chapter 8, pp. 330–3, below; Chapter 9, pp. 388–9, below; and Chapter 19, pp. 844–7, below.

¹⁷ See e.g. 2000 Biosafety Protocol, Chapter 10, pp. 465–71, below; 1998 Chemicals Convention, Chapter 11, pp. 530–2, below; and 2001 POPs Convention, Chapter 11, pp. 524–6, below.

¹⁸ See D. Esty, ‘Revitalizing Environmental Federalism’, 95 *Michigan Law Review* 570 (1996). For a compelling alternative view, see R. Revesz, ‘Rehabilitating Interstate Competition: Rethinking the “Race to the Bottom” Rationale for Federal Environmental Regulation’, 67 *New York University Environmental Law Review* 1210 (1992); and R. Revesz, ‘The Race to the Bottom and Federal Environmental Regulation: A Response to Critics’, 82 *Minnesota Law Review* 535 (1997). In the context of the NAFTA rules on direct foreign investment, and the failed OECD negotiation for a Multilateral Agreement on Investment, see Chapter 20, pp. 874–6, below.

to African states for the loss of revenue resulting from the 1989 ban on international trade in ivory. This may have limited the desire of many developing countries to support similar measures subsequently. There is also concern that moves towards harmonisation might lead to a lowering of environmental standards to ensure that economic costs can be borne, as reflected in efforts to introduce a principle of ‘cost-effectiveness’ to guide decision-making under some environmental agreements.¹⁹ Accordingly, some treaties, such as the EU Treaty (as amended since 1992), required certain EU secondary legislation to include a safeguard clause that allows member states to adopt provisional measures for ‘non-economic environmental reasons’.

It is hardly surprising, therefore, that environmental concerns are now closely connected with economic considerations. Aside from the question of the potential use of economic instruments to achieve environmental objectives,²⁰ two issues are particularly acute. Developing countries have sought to make acceptance of certain environmental obligations dependent upon the provision of financial assistance; relatedly, other countries have sought to ensure that environmental treaties establish effective mechanisms to verify compliance, to prevent the competitive economic advantages which might flow from non-compliance.

These two features have caused environmental treaties to break new ground in the development of international legal techniques. Treaties such as the 1987 Montreal Protocol, the 1992 Climate Change Convention, the 1992 Biodiversity Convention and the 2001 POPs Convention provide for ‘compensatory’ finance to be made available to developing countries to enable them to meet certain ‘incremental costs’ of implementing their obligations, and provide for subsidiary bodies to verify compliance and implementation. This linkage has in turn led to the creation of specialised funding arrangements within existing institutions, in particular the World Bank and the regional development banks, such as the Global Environment Facility (GEF).²¹

The integration of environmental protection and economic development has added authority to international environmental law, drawing it out of the margins of international law. Mainstreaming, however, has come at a price, as the development of new norms has slowed down and concerns arise that these arrangements may merely serve to subsume environmental considerations and perpetuate an approach to international economic practices and arrangements that compounds environmental problems. This concern refers to the integration of environment and development which has led to the emergence of the concept of sustainable development, now reflected in many international instruments²² and, increasingly, decisions of international courts.²³

Other social objectives

Science and economics are not the only factors to influence international environmental decision-making, or the settlement of environmental disputes. In recent years, there has been increasing recognition of a place for social and other values as legitimate factors influencing

¹⁹ 1992 Climate Change Convention, Art. 3. ²⁰ Chapter 4, pp. 124–31, below.

²¹ Chapter 16, pp. 674–8, below. ²² Chapter 6, pp. 206–16, below.

²³ E.g. the ICJ in the *Case Concerning the Gabčíkovo-Nagymaros Project* (1997) ICJ Reports 7, at para. 140 (Chapter 8, pp. 313–19, below); the WTO Appellate Body, in the *Shrimp/Turtle* case, Chapter 19, pp. 818–24, below.

environmental decision-making. The 2000 Biosafety Protocol, for example, allows parties, in reaching decisions under the Protocol, to

take into account, consistent with their international obligations, socio-economic considerations arising from the impact of living modified organisms on the conservation and sustainable use of biological diversity, especially with regard to the value of biological diversity to indigenous and local communities.²⁴

In a similar vein, in its decision in the *Asbestos* case, also in 2000, the WTO Appellate Body confirmed that an importing state was entitled to take into account (among other factors) consumer tastes and habits in respect of a particular product in order to determine whether it was 'like' another product.²⁵ Despite such developments, provisions in international environmental treaties requiring public participation in decision-making remain limited, with the notable exception of the Aarhus Convention adopted under the auspices of the United Nations Economic Commission for Europe.

Sustainable development

The concept of sustainable development is found in many environmental treaties and other instruments, including several concluded in the period prior to the publication of the Brundtland Report in 1987.²⁶ Nevertheless, the Brundtland Report is commonly viewed as the point at which sustainable development became a broad global policy objective and set the international community on the path that led to 'international law in the field of sustainable development'.²⁷ Is there any difference between international law in the field of sustainable development and international environmental law?

The Brundtland Report defined sustainable development as 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs'. It contains two key concepts: the concept of needs, in particular the essential needs of the present generation, and the idea of limits imposed by the state of technology and social organisation on the environment's ability to meet present and future needs.²⁸ The Brundtland Report identified critical objectives for environment and development policies reflected in the concept of sustainable development:

- reviving growth and changing its quality;
- meeting essential needs for jobs, food, energy, water and sanitation;
- ensuring a sustainable level of population;
- conserving and enhancing the resource base;
- reorienting technology and managing risk; and
- merging environment and economics in decision-making.²⁹

²⁴ Art. 26(1); see R. H. Khawa, 'Socio-Economic Considerations', in C. Bail, R. Falkner and H. Marquard (eds.), *The Cartagena Protocol on Biosafety* (2002), 361.

²⁵ Chapter 19, pp. 824–8, below. ²⁶ Chapter 6, pp. 206–16, below.

²⁷ Rio Declaration, Principle 27; Agenda 21, Chapter 39, para. 39.1.

²⁸ WCED, *Our Common Future* (1987), 43. ²⁹ *Ibid.*, 49–65.

Subsequent developments have fleshed out these principles, although many ambiguities remain. Sustainable development was recognised as an international legal term by the ICJ in the *Gabčíkovo-Nagymaros* case, and as having practical legal consequences by the WTO Appellate Body in the *Shrimp/Turtle* case.³⁰ Since then, other cases have sought to give effect to the concept, including the *Iron Rhine* arbitration and the ICJ decision in *Pulp Mills*.³¹ The international law of sustainable development encompasses but is not limited to international environmental law; it also includes the social and economic dimension of development, the participatory role of major groups, and financial and other means of implementation.³² As will be seen in subsequent chapters, the integration of environmental considerations with other social objectives has led to the development of a human rights/environment jurisprudence,³³ and the integration of environment into matters such as international trade and investment, and armed conflict and criminal law (reflected, in a limited way, in the Statute of the International Criminal Court).³⁴

THE INTERNATIONAL LEGAL ORDER

Environmental issues pose significant challenges for the traditional international legal order, in at least three ways. They pose challenges, first, for the legislative, administrative and adjudicative functions of international law; second, for the manner in which international legal arrangements are currently organised (i.e. along territorial lines); and, third, for the various actors who are considered to be members of the international community and participants in the various processes and practices of the international legal order.³⁵ The ability of the international legal order to address these three aspects, in the context of environmental issues, will determine whether international law can be marshalled to promote effective environmental protection, or whether it will become ‘the faithful friend of a family overtaken by time’.³⁶ It remains to be seen whether a diminishing conception of sovereignty in the face of an emerging international judiciary, together with a more inclusive, accessible and diverse international legal order, leads to any greater protection of the environment.³⁷

The functions of international law

International law and institutions serve as the principal framework for international co-operation and collaboration between members of the international community in their efforts to protect the local, regional and global environment. At each level, the task becomes progressively more complex as new actors and interests are drawn into the legal process: whereas just two states negotiated the nineteenth-century fishery conservation conventions, more than 150 states negotiated the 1992 Climate Change Convention and the 2000 Biosafety Protocol, and

³⁰ Chapter 6, pp. 193–4, below. See generally P. Sands, ‘International Courts and the Application of the Concept of “Sustainable Development”’, 3 *Max Planck Yearbook of United Nations Law* 389–407 (1999).

³¹ Chapter 6, pp. 200–1, below. ³² Sections I, III and IV of Agenda 21.

³³ Chapter 18, pp. 775–98, below. ³⁴ Chapter 17, pp. 726–7, below.

³⁵ For a more complete exploration of these issues, see P. Sands, *Vers une Transformation du Droit International? Institutionnaliser le Doute* (Editions A. Pedone, Paris, 2000).

³⁶ Allott, *Eunomia*, para. 16.3.

³⁷ P. Sands, ‘Turtles and Torturers: The Transformation of International Law’, 33 *New York University Journal of International Law and Politics* 527 at 558 (2001).

the numbers have grown even larger with the negotiations now taking place amongst the 194 states parties to the Climate Change Convention.

In all cases, however, the principles and rules of international law serve similar functions: to provide a framework within which the various members of the international community may co-operate, establish norms of behaviour and resolve their differences. The proper functions of international law are legislative, administrative and adjudicative functions. The legislative function, which is considered in Chapter 4, provides for the creation of legal principles and rules that impose binding obligations requiring states and other members of the international community to conform to certain norms of behaviour. These obligations place limits upon the activities that may be conducted or permitted because of their actual or potential impact upon the environment. The impact might be felt within the borders of a state, or across the boundaries of two or more states, or in areas beyond the jurisdiction and control of any state.

The administrative function of international law allocates tasks to various actors to ensure that the standards imposed by the principles and rules of international environmental law are applied. The adjudicative function of international law aims to provide mechanisms or fora to prevent and peacefully settle differences or disputes which arise between members of the international community involving the use of natural resources or the conduct of activities which will impact upon the environment. As will be seen, since the mid-1990s, the adjudicative function has assumed increasing importance in interpreting and applying – and even developing – the rules of international law in the field of the environment.

Sovereignty and territory

The international legal order regulates the activities of an international community comprising states, international organisations and non-state actors. States have the primary role in the international legal order, as both international law-makers and holders of international rights and obligations. Under international law, states are sovereign and have equal rights and duties as members of the international community, notwithstanding differences of an economic, social, political or other nature.³⁸ The doctrine of the sovereignty and equality of states has three principal corollaries, namely, that states have:

- (1) a jurisdiction, *prima facie* exclusive, over a territory and a permanent population living there;
- (2) a duty of non-intervention in the area of exclusive jurisdiction of other states; and
- (3) the dependence of obligations arising from customary law and treaties on the consent of the obligor.³⁹

The sovereignty and exclusive jurisdiction of the 200 or so states over their territory means, in principle, that they alone have the competence to develop policies and laws in respect of the natural resources and the environment of their territory, which comprises:

³⁸ Declaration on Principles of International Law Concerning Friendly Relations and Co-operation Among States in Accordance with the Charter of the United Nations, UNGA Res. 2625 (XXV) (1970).

³⁹ I. Brownlie, *Principles of Public International Law* (1990, 4th edn), 287.

- (1) the land within its boundaries, including the subsoil;
- (2) internal waters, such as lakes, rivers and canals;⁴⁰
- (3) the territorial sea, which is adjacent to the coast, including its seabed, subsoil and the resources thereof;⁴¹ and
- (4) the airspace above its land, internal waters and territorial sea,⁴² up to the point at which the legal regime of outer space begins.⁴³

Additionally, states have limited sovereign rights and jurisdiction over other areas, including: a contiguous zone adjacent to the territorial seas;⁴⁴ the resources of the continental shelf, its seabed and subsoil;⁴⁵ certain fishing zones;⁴⁶ and the 'exclusive economic zone'.⁴⁷ It follows that certain areas fall outside the territory of any state, and in respect of these no state has exclusive jurisdiction. These areas, which are sometimes referred to as the 'global commons', include the high seas and its seabed and subsoil, outer space and, according to a majority of states, the Antarctic. The atmosphere is also sometimes considered to be a part of the global commons. This apparently straightforward international legal order worked satisfactorily as an organising structure until technological developments permeated national boundaries. This structure does not, however, co-exist comfortably with an environmental order that consists of a biosphere of interdependent ecosystems, which do not respect artificial national territorial boundaries. Many natural resources and their environmental components are ecologically shared. The use by one state of natural resources within its territory will invariably have consequences for the use of natural resources and their environmental components in another state.⁴⁸ This is evident where a river runs through two or more countries, or where living resources migrate between two or more sovereign territories. What has only recently become clear is that apparently innocent activities in one country, such as the release of chlorofluorocarbons or greenhouse gases or (possibly) genetically modified organisms, can have significant effects upon the environment of other states or in areas beyond national jurisdiction. Ecological interdependence poses a fundamental challenge for international law, and explains why international co-operation and the development of international environmental standards are increasingly indispensable: the challenge for international law in the world of sovereign states is to reconcile the fundamental independence of each state with the inherent and fundamental interdependence of the environment.

An additional but related question arises as a result of existing territorial arrangements that leave certain areas outside any state's territory: how can international law ensure the protection of areas beyond national jurisdiction? While it is clear that under international law each state may have environmental obligations to its citizens and to other states which may be harmed by its activities, it is less clear whether such an obligation is owed to the international community as a whole.⁴⁹

⁴⁰ 1982 UNCLOS, Art. 8.

⁴¹ 1982 UNCLOS, Art. 2. On archipelagic waters as national territory, see 1982 UNCLOS, Art. 48.

⁴² R. Jennings and A. Watts (eds.), *Oppenheim's International Law* (1992, 9th edn), vol. 1, 650–61.

⁴³ *Ibid.*, 826–45.

⁴⁴ 1982 UNCLOS, Art. 33. ⁴⁵ UNCLOS, Arts. 76 and 77.

⁴⁶ *Fisheries Jurisdiction* cases (1974) ICJ Reports 3, at para. 52.

⁴⁷ 1982 UNCLOS, Arts. 55 and 56; Chapter 5, pp. 141–2, below; and Chapter 9, pp. 404–5, below.

⁴⁸ On 'shared natural resources', see Chapter 2, p. 36, below.

⁴⁹ On the enforcement of international rights owed to the international community as a whole, see Chapter 5, pp. 144–51, below.

International actors

A second salient issue concerns the membership of the international community and the participation of actors in the development and application of the principles and rules of international environmental law. In the environmental field it is clear that international law is gradually moving away from an approach which treats international society as comprising a community of states, and is increasingly encompassing the persons (both legal and natural) within and among those states. This is reflected in developments in relation to both law-making and law-enforcement. This feature is similar to that which applies in the field of international human rights law, where non-state actors and international organisations also have an expanded role. This reality is reflected in many international legal instruments. The Rio process recognised the need for the further development of the role of international organisations and non-state actors in virtually all aspects of the international legal process that relate to environment and development.⁵⁰ The 1998 Aarhus Convention provides, for the first time, clear rules on the rights of participation of non-state actors, in relation to access to information and justice, and the right to participate in environmental decision-making.⁵¹ Although the Convention's requirements are intended to apply at the national level, there is no reason why this rationale should not equally apply at the international level.

THE ENVIRONMENT AND INTERNATIONAL LAW: DEFINING TERMS

International environmental law comprises those substantive, procedural and institutional rules of international law that have as their primary objective the protection of the environment. The concept of 'environment' has evolved significantly over time under the influence of a diverse range of inputs, including philosophy, religion, science and economics.⁵² Legal definitions of 'environment' conventionally take dictionaries as their starting point, which define 'environment' as 'the objects or the region surrounding anything'.⁵³ Taking this approach, the term encompasses both the features and the products of the natural world and those of human civilisation. On this definition, the environment is broader than, but includes, 'nature', which is typically seen to be concerned only with features of the natural world itself.⁵⁴ 'Ecology', on the other hand, is a science related to the environment and to nature that is concerned with animals and plants, and is 'that branch of biology which deals with the relations of living organisms to their surroundings, their habits and modes of life'.⁵⁵ The 'ecosystem' is 'a unit of ecology ... which includes the plants and animals occurring together plus that part of their environment over which they have an influence'.⁵⁶ The modern practice of ecological science is increasingly concerned not just with the inter-relationship between plants and animals and their surroundings, but also encompasses human interactions with, and interventions in, natural systems.

The legal definition of the 'environment' and related concepts is important at two levels. At a general level, it defines the scope of the legal subject and the competence of, say, international organisations. Thus, the failure of the 1946 International Whaling Convention to define the term 'whale' led to disputes over whether the International Whaling Commission has

⁵⁰ Chapter 3, pp. 86–7, below. ⁵¹ Chapter 5, pp. 140–1, below.

⁵² L. Godden and J. Peel, *Environmental Law: Scientific, Policy and Regulatory Dimensions* (2010), Chapter 2.

⁵³ *Compact Oxford English Dictionary* (1991, 2nd edn), 523. ⁵⁴ *Ibid.*, 1151. ⁵⁵ *Ibid.*, 494. ⁵⁶ *Ibid.*

competence over dolphins;⁵⁷ and the text of CITES was unclear as to whether its provisions applied to artificially propagated plants grown under controlled conditions in a 'non-natural environment'.⁵⁸ More specifically, the definition of the 'environment' assumes particular significance in relation to efforts to establish rules governing liability for damage to the environment.⁵⁹

Legal definitions of the 'environment' reflect scientific categorisations and groupings, as well as political acts that incorporate cultural and economic considerations. A traditional scientific approach divides environmental issues into 'compartments' (although this has been challenged by the discipline of ecology). These compartments include the atmosphere, atmospheric deposition, soils and sediments, water quality, biology and humans.⁶⁰ Scientific definitions are transformed by the political process into the legal definitions found in treaties; although 'environment' does not have a generally accepted usage as a term of art under international law, many agreements identify the various media included in the term.

The approaches to defining the 'environment' do nevertheless vary. Early treaties tended to refer to 'flora and fauna' rather than the environment,⁶¹ thus restricting the scope of their application. Article XX(b) and (g) of the General Agreement on Tariffs and Trade (GATT) refer not to the environment but to 'human, animal or plant life or health' and to the 'conservation of exhaustible natural resources', and these terms are considered by some to have limited the scope of permissible exceptions to the rules of free trade, particularly in the context of the narrow construction given to the terms used by GATT dispute settlement panels.⁶² Although the 1972 Stockholm Declaration did not define the environment, Principle 2 refers to the natural resources of the Earth as including 'air, water, land, flora and fauna and . . . natural ecosystems'. The Stockholm Declaration also recognises, as the Preamble makes clear, that the environment of natural resources should be distinguished from the man-made environment, which includes, in particular, the living and working environment. The 1982 World Charter for Nature similarly does not define the 'environment', but addresses the need to respect nature through principles which are applicable to all life forms, habitats, all areas of the Earth, ecosystems and organisms, and land, marine and atmospheric resources.

Those treaties that do refer to the environment and seek to include some form of working definition tend to adopt broad definitions. Under the 1974 Nordic Convention, 'environmentally harmful activities' are those that result in discharges 'into water courses, lakes or the sea, and the use of land, the sea bed, buildings or installations'.⁶³ Under the 1977 ENMOD Convention, 'environmental modification' refers to changing the 'dynamics, composition or structure of the earth, including its biota, lithosphere, hydrosphere and atmosphere, or of outer space'.⁶⁴ As used in the 1979 LRTAP Convention, the environment includes 'agriculture, forestry, materials, aquatic and other natural ecosystems and visibility'.⁶⁵ Under the 1991

⁵⁷ Chapter 9, p. 425, below. ⁵⁸ CITES Conf. Res. 8.17 (1992).

⁵⁹ The definitions of 'environment' and 'environmental resources' are also important for economists. In 1974, the Norwegian Department of Natural Resources developed and introduced a system of natural resource accounting and budgeting which divided resources into two categories: material resources and environmental resources. Material resources included minerals (minerals, hydrocarbons, stone, gravel and sand), biological resources (in the air, water, on land and in the ground) and inflowing resources (solar radiation, the hydrological cycle, wind and ocean currents). Environmental resources are air, water, soil and space. See D. W. Pearce, A. Markandya and E. B. Barbier (eds.), *Blueprint for a Green Economy* (1989).

⁶⁰ UNEP, *Environmental Data Report* (1992), 3. ⁶¹ Chapter 2, pp. 22–9, below.

⁶² Chapter 19, pp. 808–30, below. ⁶³ Art. 1. ⁶⁴ Art. II. ⁶⁵ Art. 7(d).

Esposo Convention and the 1992 Watercourses Convention, the ‘environment’, which is defined in terms of impacts, includes ‘human health and safety, flora, fauna, soil, air, water, climate, landscape and historical monuments or other physical structures or the interaction among these factors’.⁶⁶ In similar terms, the 1991 Antarctic Environment Protocol protects: the climate and weather patterns; air and water quality; atmospheric, terrestrial (including aquatic), glacial or marine environments; fauna and flora; and areas of biological, scientific, historic, aesthetic or wilderness significance.⁶⁷ Other agreements that use the term ‘environment’ do not define it. The 1982 United Nations Convention on the Law of the Sea does not define ‘marine environment’, although it appears to include ecosystems, habitats, threatened or endangered species and other forms of marine life, and atmospheric pollution.⁶⁸

More specific international legal terms are also being used and are subject to carefully negotiated definition. Recent examples include definitions of biological resources,⁶⁹ the climate system,⁷⁰ and the ozone layer.⁷¹ Other terms frequently used in international agreements relating to environmental matters and for which specific legal definitions have been established include ‘pollution’,⁷² ‘conservation’,⁷³ ‘damage’,⁷⁴ ‘adverse effects’⁷⁵ and ‘sustainable use’ or ‘management’.⁷⁶

CHALLENGES FOR INTERNATIONAL ENVIRONMENTAL LAW

Responding to the interdependence of ecosystems and defining the scope of the ‘environment’ protected are not the only challenges to confront international environmental law: other challenges cut across the various areas of international environmental regulation discussed in the book.

First, there are questions over the adequacy of the legislative process in international environmental law. These questions relate to substance (whether international law can be marshalled effectively to promote environmental protection) and questions of law-making procedure (whether multilateral processes based upon securing consensus amongst states are feasible). A related issue is the extent to which international environmental law continues to be underpinned by general principles for guidance on how to achieve central objectives, including sustainable development. Legislative developments and international environmental jurisprudence since UNCED have done little to flesh out the practical significance of such principles for reconciling environmental protection with economic development.

Second, even where international environmental rules exist, there are difficulties of enforcement, particularly where environmental protection objectives come into conflict with clear

⁶⁶ 1991 Espoo Convention, Art. 1(vii); and 1997 Watercourses Convention, Art. 1(2). ⁶⁷ Art. 3(2).

⁶⁸ Art. 194(3)(a) and (5). Cf. the 1992 OSPAR Convention, which appears to distinguish between the ‘marine environment’ and the ‘flora and fauna which it supports’: Preamble.

⁶⁹ ‘[G]enetic resources, organisms or parts thereof, populations, or any other biotic component of ecosystems with actual or potential use or value for humanity’: 1992 Biodiversity Convention, Art. 2; see also the definition of biological diversity, Chapter 10, p. 449, below.

⁷⁰ ‘[T]he totality of the atmosphere, hydrosphere, biosphere and geosphere and their interactions’: 1992 Climate Change Convention, Art. 1(3).

⁷¹ ‘[T]he layer of atmospheric ozone above the planetary boundary layer’: 1985 Vienna Convention, Art. 1(1).

⁷² Chapter 7, p. 247, below; Chapter 9, pp. 351–8, below; and Chapter 17, p. 707, below.

⁷³ Chapter 6, p. 212, below; Chapter 10, p. 445, below. ⁷⁴ Chapter 17, pp. 706–8, below.

⁷⁵ Chapter 17, p. 709, below.

⁷⁶ Chapter 6, pp. 210–13, below; Chapter 9, p. 364, below; and Chapter 10, p. 452, below.

economic interests. The steady increase in international environmental jurisprudence over the past decade might indicate that prospects for enforcement are improving, but the reality is that few international courts or tribunals have shown themselves to be willing to give a hard edge to norms of environmental protection.

Third, many of the rules of international environmental law depend for their effectiveness on domestic implementation. Ambitious environmental protection goals at the international level will not be meaningful unless they are implemented at the national level, and this requires greater attention to be given to the reasons why international rules on environmental protection suffer from inadequate domestic implementation.

Fourth, although the importance of scientific knowledge to international environmental regulation is widely acknowledged, questions remain around how best to marshal scientific advice in the legislative, administrative and adjudicative processes of international environmental law. It is plain that, in many instances, powerful political and economic factors cause states – and other international law- and policy-makers such as the European Commission – to take inadequate account of clear scientific advice. This is the case for matters such as climate change, biodiversity conservation and fisheries protection. In other areas, such as those at the interface between international environmental and trade law, the concern is that a limited range of expert, scientific views is allowed to be privileged over other information or values that shape public perceptions of environmental risk.

Fifth, the growth of international environmental law in the last few decades, and its penetration into a variety of other international areas including trade and human rights, raises important challenges of integration and interlinkage. One aspect of this problem relates to coordinating different international environmental rules relating to connected or overlapping environmental issues. Another aspect concerns how to ensure that different areas of international law are complementary, rather than conflictual, in seeking to deal with a common global issue, whether this is the dissemination of genetically modified foodstuffs and crops, or providing for peoples displaced by the adverse effects of climate change on their homelands. The extent to which international environmental law can meet this challenge of integration and interlinkage will ultimately determine its capacity to respond to the issue posed at the beginning of this chapter: that of reconciling international law with the inherent and fundamental interdependence of the world environment.

FURTHER READING

There exists an extensive literature on general and specialised aspects of international environmental law. The list that follows is intended to be indicative only, and any omissions should not be taken to indicate a qualitative judgment on that work.

INTERNATIONAL ENVIRONMENTAL LAW: TEXTS, ARTICLES AND HISTORY

An extensive literature on international environmental law developed in the mid-1980s, although the first treatises appeared only in 1989 (Alexandre Kiss) and 1992 (Patricia Birnie and Alan Boyle), followed in 1994 by the first edition of this book. Earlier works addressed

specific aspects of international environmental protection and the conservation of natural resources, and little of the early literature addressed economic aspects.

- L. B. Sohn, 'The Stockholm Declaration on the Human Environment', 14 *Harvard International Law Journal* 423 (1973)
- Academie de Droit International de la Haye, Colloque, *The Protection of the Environment and International Law* (1973)
- J. Barros and D. M. Johnston, *The International Law of Pollution* (1974)
- L. A. Teclaff and A. E. Utton (eds.), *International Environmental Law* (1974)
- R. A. Falk, 'The Global Environment and International Law: Challenge and Response', 23 *Kansas Law Review* 385 (1975)
- A. L. Springer, 'Towards a Meaningful Concept of Pollution in International Law', 26 *International and Comparative Law Quarterly* 531 (1977)
- J. Schneider, *World Public Order of the Environment: Towards an Ecological Law and Organization* (1979)
- R. S. Bock, *International Protection of the Environment* (1983)
- A. L. Springer, *The International Law of Pollution: Protecting the Global Environment in a World of Sovereign States* (1983)
- S. Lyster, *International Wildlife Law: An Analysis of International Treaties Concerned with the Conservation of Wildlife* (1985) (2010, 2nd edn, by M. Bowman, P. Davies and C. Redgwell)
- UN World Commission on Environment and Development, R. D. Munro and J. G. Lammers (eds.), *Environmental Protection and Sustainable Development: Legal Principles and Recommendations* (1987)
- P. Sands, 'The Environment, Community and International Law', 30 *Harvard International Law Journal* 393 (1989)
- M. Bothe and L. Gundling, *Neuere Tendenzen des Umweltrechts im Internationalen Vergleich* (1990)
- P. Sand, *Lessons Learned in Global Environmental Governance* (1990)
- O. Schachter, 'The Emergence of International Environmental Law', 44 *Journal of International Affairs* 457 (1991)
- W. Lang, H. Neuhold and K. Zemanek (eds.), *Environmental Protection and International Law* (1991)
- D. B. Magraw (ed.), *International Law and Pollution* (1991)
- P. Sand (ed.), *The Effectiveness of International Environmental Agreements – A Survey of Existing Legal Instruments* (1992)
- P. Sands (ed.), *Greening International Law* (1993)
- C. Stone, *The Gnat Is Older Than Man: Global Environment and Human Agenda* (1993)
- E. Brown Weiss (ed.), *Environmental Change and International Law* (1993)
- A. Kiss, *Droit International de l'Environnement* (1994, 2nd edn)
- A. Kiss and F. Burhenne-Guilmin (eds.), *A Law for the Environment: Essays in Honour of Wolfgang E. Burhenne* (1994)
- S. Murase, 'Perspectives from International Economic Law on Transnational Environmental Issues', 253 *Recueil des Cours* 283 (1995)
- P. Dupuy, 'Ou en Est le Droit International de l'Environnement à la Fin du Siecle?', *Revue General de Droit International Public* 873 (1997)
- A. Boyle and D. Freestone, *International Law and Sustainable Development* (1999)
- A. Kiss and D. Shelton, *International Environmental Law* (1999, 2nd edn; 2003, 3rd edn)
- J. Juste Ruiz, *Derecho Internacional del Medio Ambiente* (1999)
- A. Gillespie, *International Environmental Law, Ethics and Policy* (2001)
- D. Hunter, J. Salzman and D. Zaelke (eds.), *International Environmental Law and Policy (Casebook)* (2001, 2nd edn; 2007, 3rd edn; 2011, 4th edn)
- M. Fitzmaurice, 'International Protection of the Environment', 293 *Recueil des Cours* 9 (2001)
- P. Birnie and A. Boyle, *International Law and the Environment* (2002, 2nd edn; 2009, 3rd edn, with C. Redgwell)

- T. Kuokkanen, *International Law and the Environment: Variations on a Theme* (2002)
- D. French, *International Law and Policy of Sustainable Development* (2005)
- A. Gillespie, *Protected Areas and International Environmental Law* (2007)
- D. Bodansky, J. Brunnée and E. Hey (eds.), *The Oxford Handbook of International Environmental Law* (2007)
- A. Kiss and D. Shelton, *Guide to International Environmental Law* (2007)
- M. Fitzmaurice, *Contemporary Issues in International Environmental Law* (2009)
- D. Bodansky, *The Art and Craft of International Environmental Law* (2010)
- M. Fitzmaurice, D. M. Ong and P. Merkouris (eds.), *Research Handbook on International Environmental Law* (2010)
- D. Hunter, *International Environmental Law and Policy* (2010)
- D. Leary and B. Pisupati (eds.), *The Future of International Environmental Law* (2010)
- R. S. Axelrod, S. D. VanDeveer and D. L. Downie (eds.), *The Global Environment: Institutions, Law and Policy* (2011, 3rd edn)

Sources of international environmental law

Primary materials

Beyond the general sources of international law (see the works cited in Chapter 4, pp. 94 *et seq.*, below), a specialised literature addresses the primary sources of international environmental law. The Internet is now the leading source of treaties, acts of international organisations (including Conferences of the Parties), case law of international courts and tribunals, and other primary materials. Apart from the useful collections of selected materials, the works edited by Burhenne and by Rüter and Simma provide comprehensive sources of information on treaties and other international acts. Certain primary sources nevertheless remain obscure: early bilateral agreements are frequently only available directly from the countries or organisations involved in their promulgation.

- W. E. Burhenne (ed.), *International Environmental Law: Multilateral Treaties* (looseleaf, 1974–)
- B. Rüter and B. Simma, *International Protection of the Environment: Treaties and Related Documents* (looseleaf, 1990–)
- UNEP, *Selected Multilateral Treaties in the Field of the Environment* (vol. 1, A. C. Kiss (ed.), 1983; vol. 2, I. Rummel-Bulska and S. Osafo (eds.), 1991)
- H. Hohmann (ed.), *Basic Documents of International Environmental Law* (1992)
- E. Brown Weiss, P. C. Szasz and D. B. Magraw, *International Environmental Law – Basic Instruments and References* (1992)
- W. E. Burhenne (ed.), *International Environmental Soft Law: Collection of Relevant Instruments* (1993)
- P. Birnie and A. Boyle, *Basic Documents on International Law and the Environment* (1995)
- L. Boisson de Chazournes, R. Desgagné and C. Romano (eds.), *Protection Internationale de l'Environnement: Recueil d'Instruments Juridiques* (1998; 2005, 2nd edn)
- D. Hunter, J. Salzman and D. Zaelke (eds.), *International Environmental Law and Policy: Treaty Supplement* (2001; 2007, 3rd edn)
- P. Sands and P. Galizzi, *Basic Documents in International Environmental Law* (2003)

INTERNATIONAL ENVIRONMENTAL JURISPRUDENCE

- C. Robb (ed.), *International Environmental Law Reports 1: Early Decisions* (1999)
- C. Robb (ed.), *International Environmental Law Reports 2: Trade and Environment* (2001)
- C. Robb (ed.), *International Environmental Law Reports 3: Human Rights and Environment* (2002)
- A. Palmer and C. Robb (eds.), *International Environmental Law Reports 4: International Environmental Law in National Courts* (2005)

- K. Lee (ed.), *International Environmental Law Reports 5: International Environmental Law in International Tribunals* (2007)
- T. Stephens, *International Courts and Environmental Protection* (2009)

JOURNALS

A number of academic and practitioner journals provide sources of information on important international legal developments, and articles on specific aspects of international environmental law. The *Yearbook of International Environmental Law* is an especially useful source for annual developments, including materials on municipal practice (including the implementation of international legal obligations).

INTERNATIONAL LAW GENERALLY

- African Journal of International and Comparative Law*
American Journal of International Law
Asian Journal of International Law
European Journal of International Law
International and Comparative Law Quarterly
International Legal Materials
Leiden Journal of International Law
Melbourne Journal of International Law
Revue General de Droit International Public

INTERNATIONAL ENVIRONMENTAL LAW

- Colorado Journal of International Environmental Law and Policy*
Ecology Law Quarterly
Environmental Law and Policy
Georgetown International Environment Law Review
Harvard Environmental Law Review
International and Comparative Environmental Law
International Environment Reporter
International Journal of Marine and Coastal Law
Journal of Environment and Natural Resources Law
Journal of Environmental Law
McGill International Journal of Sustainable Development Law and Policy
Natural Resources Journal
New York University Environmental Law Journal
Review of European Community and International Environmental Law
Transnational Environmental Law
Yearbook of International Environmental Law

INTERNATIONAL ENVIRONMENTAL CO-OPERATION AND POLICY

- R. Carson, *Silent Spring* (1963)
- R. Falk, *This Endangered Planet: Prospects and Proposals for Human Survival* (1971)

- B. Ward and R. Dubos, *Only One Earth: The Care and Maintenance of a Small Planet* (1972)
- J. Passmore, *Man's Responsibility for Nature: Ecological Problems and Western Traditions* (1980)
- D. Kay and H. Jacobson (eds.), *Environmental Protection: The International Dimension* (1982)
- M. Nicholson, *The New Environmental Age* (1987)
- UN World Commission on Environment and Development, *Our Common Future* (1987)
- L. K. Caldwell, *International Environmental Policy: Emergence and Dimensions* (1990, 2nd edn; 1996, 3rd edn)
- H. Cleveland, *The Global Commons: Policy for the Planet* (1990)
- B. Commoner, *Making Peace with the Planet* (1990)
- J. MacNeill, P. Winsemius and T. Yakushiji, *Beyond Interdependence: The Meshing of the World's Economy and the Earth's Ecology* (1991)
- IUCN, UNEP and WWF, *Caring for the Earth* (1991)
- S. Johnson (ed.), *The Earth Summit: The United Nations Conference on Environment and Development (UNCED)* (1993)
- N. Middleton and P. O'Keefe, *Rio Plus Ten: Politics, Poverty and the Environment* (2003)
- P. Haas (ed.), *International Environmental Governance* (2008)
- UNDP, *Human Development Report* (2010)
- World Bank, *World Development Report* (2011)

SCIENCE AND THE STATE OF THE ENVIRONMENT

- G. H. Dury, *An Introduction to Environmental Systems* (1981)
- B. L. Turner, W. C. Clark, R. Kates et al., *The Earth as Transformed by Human Action: Global and Regional Changes Over the Past 300 Years* (1990)
- WCMC, *Global Biodiversity 1992: The Status of the Earth's Living Resources* (1992)
- S. Andresen, T. Skodvin, A. Underdal and J. Wettestad (eds.), *Science and Politics in International Environmental Regimes* (2000)
- A. Goudie, *The Nature of the Environment* (2001, 4th edn)
- D. Botkin, *Environmental Science: Earth as a Living Planet* (2002)
- A. Goudie, *The Human Impact on the Natural Environment* (2006, 6th edn)
- UNEP, *Global Environment Outlook 4 (GEO 4)* (2007)
- WCMC, *The World's Protected Areas: Status, Value and Prospects in the 21st Century* (2008)
- UNEP, *Climate Change Science Compendium 2009* (2009)
- WRI, *World Resources 2008: Roots of Resilience* (2009) (published bi-annually)
- UNEP-WCMC, *Global Biodiversity Outlook 3 (GBO 3)* (2010)
- WHO, *World Health Statistics 2010* (2010)
- Worldwatch Institute, *State of the World 2011: Innovations That Nourish the Planet* (2011) (published annually)
- For a more sceptical view, see B. Lomborg, *The Skeptical Environmentalist* (2001).

ENVIRONMENTAL ECONOMICS AND DEVELOPMENT

- C. Howe, *Natural Resource Economics* (1979)
- P. Bartelmus, *Environment and Development* (1986)
- R. Goodland and G. Ledec, 'Neo-classical Economics and Principles of Sustainable Development', *38 Ecological Modelling* 36 (1987)
- M. Redclift, *Sustainable Development* (1987)
- R. K. Turner (ed.), *Sustainable Environmental Management* (1988)

- D. W. Pearce, A. Markandya and E. Barbier, *Blueprint for a Green Economy* (1989)
- O. R. Young, *International Co-operation: Building Regimes for Natural Resources and the Environment* (1989)
- W. M. Adams, *Green Development: Environment and Sustainability in the Third World* (1990)
- D. W. Pearce, E. Barbier and A. Markandya, *Sustainable Development: Economics and Environment in the Third World* (1990)
- R. Eckersley, *Environmentalism and Political Theory* (1992)
- D. Pearce and E. Barbier, *Blueprint for a Sustainable Economy* (2000)
- M. Cordonier Segger and A. Khalfan, *Sustainable Development Law: Principles, Practices and Prospects* (2004)
- H. E. Daly and J. Farley, *Ecological Economics: Principles and Applications* (2004)
- T. Tietenberg, *Environmental Economics and Policy* (2007)
- T. Tietenberg, *Environmental and Natural Resource Economics* (2009, 8th edn)
- C. D. Kolstad, *Environmental Economics* (2011)

WEBSITES

Every international organisation and most international environmental agreements have their own websites. These are indicated in the text at appropriate sections.

There is no single website which provides one-stop shopping for international environmental law. Of particular use, however, is www.google.com, which provides easy access to international environmental agreements, decisions and other acts of international organisations, and municipal and international court decisions. It also provides some guidance on literature sources.

2

History

INTRODUCTION

Modern international environmental law can be traced directly to international legal developments that took place in the second half of the nineteenth century. Thus, although the current form and structure of the subject emerged in the mid-1980s, a proper understanding of modern principles and rules requires a historic sense of earlier scientific, political and legal developments.¹ International environmental law has evolved over four distinct periods, reflecting developments in scientific knowledge, the application of new technologies and an understanding of their impacts, changes in political consciousness and the changing structure of the international legal order and institutions.²

A first period began with bilateral fisheries treaties in the nineteenth century, and concluded with the creation of the new international organisations in 1945. During this period, peoples and nations began to understand that the process of industrialisation and development required limitations on the exploitation of certain natural resources (flora and fauna) and the adoption of appropriate legal instruments. The second period commenced with the creation of the UN and culminated with the UN Conference on the Human Environment, held in Stockholm in June 1972. Over this period, a range of international organisations with competence in environmental matters was created, and legal instruments were adopted, at both the regional and the global levels, which addressed particular sources of pollution and the conservation of general and particular environmental resources, such as oil pollution, nuclear testing, wetlands, the marine environment and its living resources, the quality of freshwaters and the dumping of waste at sea. The third period ran from the 1972 Stockholm Conference and concluded with the UN Conference on Environment and Development (UNCED) in June 1992. During this period, the UN tried to put in place a system for co-ordinating responses to international environmental issues, regional and global conventions were adopted, and for the first time the production, consumption and international trade in certain products were banned at the global level. The fourth period was set in motion by UNCED, and may be characterised as a period of integration:

¹ See also D. Hunter, J. Salzman and D. Zaelke, *International Environmental Law and Policy* (2011, 4th edn), Chapter 4; Peter Sand, 'The Evolution of International Environmental Law', in D. Bodansky, J. Brunnée and E. Hey (eds.), *The Oxford Handbook of International Environmental Law* (2007), Chapter 2; D. Bodansky, *The Art and Craft of International Environmental Law* (2010), Chapter 2.

² For another approach, identifying traditional, modern and post-modern eras, see T. Kuokkanen, *International Law and the Environment: Variations on a Theme* (2002).

when environmental concerns should, as a matter of international law and policy, be integrated into all activities. This has also been the period in which increased attention has been paid to compliance with international environmental obligations, with the result that there is now a well-developed body of international jurisprudence.

In tracing the development of the subject, a number of themes are discernible. First, the development of principles and rules of international environmental law – through treaties, other international acts and custom – has tended to react to events or incidents or the availability of scientific evidence, rather than anticipate general or particular environmental threats and put in place an anticipatory legal framework. Second, developments in science and technology have played a significant catalytic role: without the availability of scientific evidence, new rules of law are unlikely to be put in place. Third, as is reflected throughout this book, the principles and rules of international law have developed as a result of a complex interplay between governments, non-state actors and international organisations. The extent to which a particular area is subject to legal rules will depend upon pressure being imposed by non-state actors, the existence of appropriate institutional fora in which rules can be developed, and sufficient will on the part of states to transform scientific evidence and political pressures into legal obligations. And, fourth, it is only very recently – within the past decade – that issues of international environmental law have become a regular subject of international adjudication, and that international courts have begun to contribute to the definition and application of the subject.

FROM EARLY FISHERIES CONVENTIONS TO THE CREATION OF THE UNITED NATIONS

Early attempts to develop international environmental rules focused on the conservation of wildlife (fisheries, birds and seals) and, to a limited extent, on the protection of rivers and seas. International legal developments followed the research efforts of scientists in the late eighteenth and nineteenth centuries, including: the work of Count Buffon which contrasted the appearance of inhabited life with uninhabited life; the studies by Fabre and Surréll of flooding, siltation, erosion and the division of watercourses brought about by deforestation in the Alps; and the conclusions of de Saussure and von Humboldt that deforestation had lowered water levels of lakes in the Alps and in Venezuela.³ By the mid-eighteenth century, the relationship between deforestation and the drying-up of water basins was widely observed. In the island of Ascension,

there was an excellent spring situated at the foot of the mountain originally covered with wood; the spring became scanty and dried up after the trees which covered the mountain had been felled. The loss of the spring was rightly ascribed to the cutting down of the timber. The mountain was therefore planted anew. A few years afterwards the spring reappeared by degrees, and by and by flowed with its former abundance.⁴

³ A. Goudie, *The Human Impact: Man's Role in Environmental Change* (1981), 2. See also A. Goudie, *The Human Impact on the Natural Environment* (2006, 6th edn).

⁴ J. B. Boussingault, *Rural Economy* (1845, 2nd edn), cited in Goudie, *The Human Impact: Man's Role in Environmental Change*, 3.

Concern for flora and fauna coincided with industrialisation and the use of mineral resources. This led to the adoption of early environmental legislation at the national level.

The adoption of treaties was *ad hoc*, sporadic and limited in scope. Bilateral fisheries conventions were adopted in the mid-nineteenth century to halt over-exploitation. Examples include a convention to conserve oysters by prohibiting fishing outside certain dates,⁵ and instruments to protect fisheries, usually in rivers or lakes or in or around territorial waters, from over-exploitation.⁶ The first whaling convention was adopted in 1931.⁷

Migratory birds also required international co-operation to ensure their conservation. In 1872, Switzerland proposed an international regulatory commission for the protection of birds. This led to consideration of the matter by the non-governmental International Ornithological Congress and the creation in 1884 of an International Ornithological Committee, which formulated a treaty proposal,⁸ and the adoption in 1902 of the Convention to Protect Birds Useful to Agriculture.⁹ The Convention relied upon regulatory techniques still used today, such as the grant of absolute protection to certain birds, a prohibition on their killing or the destruction or taking of their nests, eggs or breeding places, and the use of certain methods of capture or destruction. The 1902 Birds Convention allowed exceptions, such as scientific research and repopulation, which continue to be reflected in more modern instruments, such as the 1979 Berne Convention and the 1992 Biodiversity Convention. In 1916, the first bilateral treaty for the protection of migratory birds was adopted.¹⁰ The founding in 1922 of the International Committee (later Council) for Bird Protection (later Preservation) (ICBP) reflected the recognition that substantive rules needed to be accompanied by new institutional arrangements. The ICBP was created to strengthen links between American and European bird protection groups, and its aim of encouraging 'transnational co-ordination rather than international integration' reflected a reluctance to go too far in impinging upon the sovereignty of states.¹¹

The first treaty aimed at the protection of wildlife in a particular region was the 1900 Convention Destinée à Assurer la Conservation des Diverses Espèces Animales Vivant à l'Etat Sauvage en Afrique qui sont Utiles à l'Homme ou Inoffensive.¹² It sought to ensure the conservation of wildlife in the African colonies of European states, including the use of trade restrictions on the export of certain skins and furs,¹³ reflecting a desire to combine regulatory techniques with economic incentives.¹⁴ The 1900 Convention was replaced by the 1933 Convention on the Preservation of Fauna and Flora in their Natural State,¹⁵ which was itself superseded by a new instrument in 1968 following the attainment of independence by these

⁵ Convention Between France and Great Britain Relative to Fisheries, Art. XI, Paris, 11 November 1867, 21 IPE 1.

⁶ North Sea Fisheries (Overfishing Convention), 1882, UN Doc. ST/LEG/SER.B/6, 1957, 695; Convention Concernant l'Exploitation et la Conservation des Pêcheries dans la Partie-Frontière du Danube, Belgrade, 15 January 1902. For other examples, see 9 IPE 4319–792.

⁷ Convention for the Regulation of Whaling, Geneva, 24 September 1931, 155 LNTS 351.

⁸ L. K. Caldwell, *International Environmental Policy* (1990, 2nd edn), 32. See also L. K. Caldwell, *International Environmental Policy: from the Twentieth to the Twenty-First Century* (1996, 3rd edn).

⁹ Paris, 19 March 1902.

¹⁰ Convention Between the United States and Great Britain for the Protection of Migratory Birds in the United States and Canada, Washington, 7 December 1916, 4 IPE 1638.

¹¹ C. McCormick, *Reclaiming Paradise* (1989), 23.

¹² London, 19 May 1900, 4 IPE 1607. ¹³ Art. II.

¹⁴ On trade and environmental law, see Chapter 19, pp. 799–868, below.

¹⁵ London, 8 November 1933, 172 LNTS 242.

former colonial territories of Africa.¹⁶ Like other early conventions, the 1933 Convention did not create any institutional arrangements for administering its provisions, monitoring compliance or ensuring implementation. During this first period, the only other region to adopt a treaty for the protection of wildlife was the Americas.¹⁷

It was not only fisheries and wildlife that attracted the attentions of international legislators. The 1909 Water Boundaries Treaty between the United States and Canada was the first to commit its parties to preventing pollution,¹⁸ and under the auspices of its International Joint Commission a draft treaty on pollution prevention was drawn up in 1920, but not adopted. Another draft instrument prepared in this period, also not adopted, sought to prevent oil pollution of the seas.¹⁹ Treaties were adopted to limit the spread of phylloxera²⁰ and epizootic diseases,²¹ and to prevent damage from corrosive and poisonous substances.²² Developments relating to the creation of international environmental organisations were limited. The first international institution to address nature protection arose from the 1909 meeting of the International Congress for the Protection of Nature, in Paris, which proposed the creation of an international nature protection body.²³ In 1913, an Act of Foundation of a Consultative Committee for the International Protection of Nature was signed in Berne by seventeen countries, with the task of collecting, classifying and publishing information on the international protection of nature.²⁴ The outbreak of the First World War laid the Commission to rest. Rudimentary international organisations were created at this time to address locust infestation²⁵ and contagious animal diseases.²⁶

It is evident that many of the developments during this period were inspired by the efforts of private individuals, scientists and environmental organisations in Europe and the United States.²⁷ Lawyers were also active: in 1911, the Institut de Droit International, a private association of lawyers, adopted International Regulations Regarding the Use of International Watercourses for Purposes Other than Navigation. Although these were not binding, they declared that ‘neither [riparian] state may, on its own territory, utilise or allow the utilisation of the water in such a way as seriously to interfere with its utilisation by the other state or by individuals, corporations, etc. thereof.’²⁸

During this period, two environmental disputes were submitted to international arbitration. Both awards set forth principles that influenced subsequent developments and included regulatory provisions governing the conduct of future activities. In the *Pacific Fur Seal* arbitration, the dispute between the United States and Great Britain concerned the latter’s alleged over-

¹⁶ See 1968 African Nature Convention; see Chapter 10, pp. 480–3, below.

¹⁷ 1940 Western Hemisphere Convention; see Chapter 10, p. 484, below. ¹⁸ 11 IPE 5704.

¹⁹ Final Act and Draft Convention of the Preliminary Conference on Oil Pollution of Navigable Waters, Washington, June 1926, 19 IPE 9585; Draft Convention and Draft Final Act on Pollution of the Sea by Oil, 21–25 October 1935, 19 IPE 9597.

²⁰ International Phylloxera Convention, with a Final Protocol, Berne, 23 June 1882, 4 IPE 1571.

²¹ Convention Designed to Remove the Danger of Epizootic Diseases in the Territories of Austria-Hungary and Italy, Rome, 7 December 1887, 4 IPE 1586.

²² Convention Between the Riverine States of the Rhine Respecting Regulations Governing the Transport of Corrosive and Poisonous Substances, Mannheim, 11 May 1900, 25 IPE 214.

²³ McCormick, *Reclaiming Paradise*, 22. ²⁴ Berne, 19 November 1913, 4 IPE 1631.

²⁵ Convention Between France and Great Britain Relative to Fisheries, Art. XI, Paris, 11 November 1867, 21 IPE 1.

²⁶ International Agreement for the Creation of an International Office for Dealing with Contagious Diseases of Animals, Paris, 25 January 1924, 4 IPE 1646.

²⁷ McCormick, *Reclaiming Paradise*, 1–23. ²⁸ 20 April 1911, 11 IPE 5702.

exploitation of fur seals in areas beyond national jurisdiction.²⁹ The award rejected the argument that states had the right to assert jurisdiction over natural resources outside their jurisdiction to ensure their conservation, and set forth regulations for the ‘proper protection and preservation’ of fur seals outside jurisdictional limits. The regulations reflected earlier treaty provisions,³⁰ and provided a basis for a convention prohibiting pelagic sealing in the North Pacific Ocean and the importation of sealskins.³¹ The episode provided early evidence of the potential for disputes over valuable natural resources lying beyond the national jurisdiction of any state, as well as evidence of the role international law might play in resolving disputes and establishing a framework for the conduct of activities.

The second arbitral award of this period is the better known. The *Trail Smelter* case arose out of a dispute between the United States and Canada over the emission of sulphur fumes from a smelter situated in Canada, which caused damage in the state of Washington.³² The Tribunal applied the principle that under international law ‘no state has the right to use or permit the use of its territory in such a manner as to cause injury by fumes in or to the territory of another or the properties or persons therein, when the case is of serious consequence and the injury is established by clear and convincing evidence’.³³ The award of the Tribunal and its finding on the state of international law on air pollution in the 1930s has come to represent a crystallising moment for international environmental law, which has influenced subsequent developments in a manner that undoubtedly exceeds its true value as an authoritative legal determination.

These two arbitral awards, together with the treaties and organisations that were brought into being, established early foundations. Institutional arrangements to address environmental matters were limited, and international rules were sparse in terms of both the subject matter they addressed and the regions they covered. However, there was a growing awareness that the exploitation of natural resources could not occur on an unlimited basis, that industrialisation and technological developments brought with them pollution and associated problems, and that international measures were needed to address these matters.

FROM THE CREATION OF THE UNITED NATIONS TO STOCKHOLM: 1945–72

The second phase in the development of international environmental law began with the creation of the UN and its specialised agencies in 1945.³⁴ It was a period characterised by two features: international organisations at the regional and global level began to address environmental issues; and the range of environmental concerns addressed by international regulatory activity broadened to include a focus on the causes of pollution resulting from

²⁹ 1 *Moore’s International Arbitral Awards* (1893) 755; see Chapter 9, pp. 399–400, below.

³⁰ Agreement Between the Government of the United States of America and the Government of Her Britannic Majesty for a Modus Vivendi in Relation to Fur Seal Fisheries in the Bering Sea, Washington, 15 June 1891, 8 IPE 3655; Convention Between the Government of the United States of America and the Government of Her Britannic Majesty for the Renewal of the Existing Modus Vivendi in the Bering Sea, Washington, 18 April 1892, 4 IPE 3656.

³¹ Convention Between the United States of America, the United Kingdom of Great Britain and Northern Ireland, and Russia, for the Preservation and Protection of Fur Seals, Washington, 7 July 1911, 8 IPE 3682, Arts. I–III.

³² 3 RIAA 1905 (1941); see Chapter 7, pp. 239–40, below.

³³ 35 *American Journal of International Law* 716 (1941); 9 ILR 317.

³⁴ On the structure of the UN, see Chapter 3, pp. 56–77, below.

certain ultrahazardous activities. A third feature was the limited recognition of the relationship between economic development and environmental protection.

Despite attempts by certain individuals to push conservation onto the international agenda following the Second World War, the UN Charter did not include provisions on environmental protection or the conservation of natural resources.³⁵ Nevertheless, the UN's purposes include the achievement of international co-operation in solving international problems of an economic, social, cultural or humanitarian character, and this has provided the basis for the subsequent environmental activities of the UN.³⁶ No environment or nature conservation body was established among the specialised agencies. However, the constituent instruments of the Food and Agriculture Organization (FAO) and the United Nations Educational, Scientific and Cultural Organization (UNESCO) included provisions with an environmental or conservationist aspect, and the instrument establishing the General Agreement on Tariffs and Trade (GATT) permits certain measures relating to 'the conservation of exhaustible natural resources' as exceptions to the rules establishing free trade obligations.³⁷

In October 1948, governments and non-governmental actors established the first major international organisation to address environmental issues. A conference convened with the assistance of UNESCO, which was attended by representatives of eighteen governments, seven international organisations and 107 national organisations, established the International Union for the Protection of Nature (now the International Union for Conservation of Nature, or IUCN), to promote the preservation of wildlife and the natural environment, public knowledge, education, scientific research and legislation.³⁸ The IUCN is a unique organisation whose members are governments and non-governmental actors, and which has played an important role in developing treaties to protect wildlife and conserve natural resources.

UNCCUR

The seeds of intergovernmental environmental action were sown in 1947 by the UN, with the Economic and Social Council (ECOSOC) resolution convening the 1949 United Nations Conference on the Conservation and Utilisation of Resources (UNCCUR). The origins of this resolution have been traced to the initiative of Presidents Franklin D. Roosevelt and Harry S. Truman.³⁹ The resolution reflected an awareness of the need for international action to establish a balanced approach to the management and conservation of natural resources. The resolution emphasised the importance of the world's natural resources and their importance to the reconstruction of devastated areas; it also recognised the need for the 'continuous development and widespread application of the techniques of resource conservation and utilisation'.⁴⁰ The resolution determined the competence of the UN over environmental matters and ultimately resulted in the 1972 Stockholm Conference and the 1992 UNCED, as well as other UN action on the environment.

³⁵ For reasons, see McCormick, *Reclaiming Paradise*, 25–7.

³⁶ UN Charter, San Francisco, 26 June 1945, in force 24 October 1945, 1 UNTS xvi, Art. 1(3); see Chapter 3, pp. 56–7, below.

³⁷ See respectively Chapter 3, pp. 71–2, below; and Chapter 19, p. 809, below.

³⁸ 1977 Statutes, 18 IPE 8960; on the creation of the IUCN, see McCormick, *Reclaiming Paradise*, 31–6. In 1956, the IUPN was renamed the International Union for the Conservation of Nature and Natural Resources (IUCN).

³⁹ Caldwell, *International Environmental Policy*, 42. ⁴⁰ ECOSOC Res. 32 (IV) (1947), Preamble.

UNCCUR provided a modest start. It had a limited scope, having been convened to exchange information on 'techniques in this field, their economic costs and benefits, and their interrelations' and being devoted to the exchange of ideas and experience.⁴¹ It had no mandate to adopt any recommendations. Held from 17 August to 6 September 1949 in New York State, it was attended by over 1,000 individuals from more than fifty countries, some 500 having been selected by the UN Secretary General upon the nomination of governments, non-governmental organisations and the Preparatory Committee. UNCCUR addressed six issues: minerals; fuels and energy; water; forests; land; and wildlife and fish. The topics addressed included the interdependence, use and conservation of resources, and the integrated development of river basins.⁴² If UNCCUR's accomplishments were limited, the topics were similar to those addressed at UNCED nearly half a century later. Even at this early stage, the relationship between conservation and development was a central theme, with discussions focusing on the relationship between conservation and use, on the need to develop standards to ensure conservation and on the relationship between conservation and development.⁴³

Following the 1949 UNCCUR, environmental action by the UN and its specialised agencies addressed issues relating to the conservation of flora and fauna. In 1954, the General Assembly convened a major Conference on the Conservation of the Living Resources of the Sea,⁴⁴ which led to the conservation rules adopted in the 1958 Geneva Conventions. The major new development was the attention given by the General Assembly to atmospheric nuclear tests and oil pollution, a shift of emphasis away from the protection of flora and fauna and towards international action on industrial and military activity. In 1955, the General Assembly adopted the first of a number of resolutions on the use of atomic energy and the effects of atomic radiation,⁴⁵ which led to the adoption of the Test Ban Treaty in 1963.⁴⁶ This was the context for Australia and New Zealand to bring actions before the ICJ calling on France to stop all atmospheric nuclear tests.⁴⁷

In 1954, under the auspices of the International Maritime Organization (IMO), the first global convention for the prevention of oil pollution was adopted (building on the text of the earlier drafts of 1926 and 1935),⁴⁸ to be followed fifteen years later by treaties permitting intervention to combat the effects of oil pollution,⁴⁹ establishing rules of civil liability for oil pollution damage⁵⁰ and creating an oil pollution compensation fund.⁵¹ These were adopted in response to specific incidents resulting in large-scale oil pollution, which caused damage to the marine environment and to people and property. Other global conventions were the 1958 High Seas Fishing and Conservation Convention, which established innovative provisions on the conservation of marine living resources,⁵² and the 1958 Convention on the High Seas, which

⁴¹ *Ibid*

⁴² *Yearbook of the UN* (1948–9), 481–2. See also UNCCUR Proceedings, vol. 1: Plenary Meetings (E/Conf.7/7).

⁴³ *Ibid* ⁴⁴ See UNGA Res. 900 (IX) (1954). The Conference Report is at 8 IPE 3696.

⁴⁵ See e.g. UNGA Res. 912 (X) (1955); Res. 913 (X) (1955); Res. 1147 (XII) (1957); Res. 1252 (XIII) (1958); Res. 1379 (XIV) (1959); Res. 1402 (XIV) (1959); Res. 1649 (XVI) (1961).

⁴⁶ See Chapter 7, p. 240, below; and Chapter 11, p. 544, below.

⁴⁷ See Chapter 7, pp. 240–2, below (and New Zealand's subsequent application in 1995, at Chapter 5, p. 146, below).

⁴⁸ 1954 International Convention for the Prevention of Pollution of the Sea by Oil, London, 12 May 1954, in force 26 July 1958, 327 UNTS 3.

⁴⁹ See Chapter 9, p. 348, below. ⁵⁰ See Chapter 17, pp. 745–8, below.

⁵¹ See Chapter 17, pp. 748–51, below. ⁵² See Chapter 9, pp. 348, 401, below.

committed contracting parties to preventing oil pollution and the dumping of radioactive wastes.⁵³ The 1971 Ramsar Convention was the first environmental treaty to establish rules addressing the conservation of a particular type of ecosystem.⁵⁴

At this time, notable regional developments were occurring to prohibit or regulate activities previously beyond the scope of international law. The 1959 Antarctic Treaty committed parties to peaceful activities in that region, and prohibited nuclear explosions or the disposal of radioactive waste.⁵⁵ The United Nations Economic Commission for Europe (UNECE) promulgated harmonising regulations on emissions from motor vehicles,⁵⁶ and the Committee of Ministers of the Council of Europe adopted the first international act dealing with general aspects of air pollution.⁵⁷ In 1967, the then European Community (EC) adopted its first environmental act, on the packaging and labelling of dangerous goods, despite the absence of express environmental provisions in the 1957 Treaty of Rome.⁵⁸ In relation to wildlife conservation, the 1968 African Nature Convention went beyond the limited approach to conservation of fauna and flora by aiming at the ‘conservation, utilisation and development of soil, water, flora and fauna resources in accordance with scientific principles and with due regard to the best interests of the people’.⁵⁹ In early 1972, shortly before the Stockholm Conference, the Oslo Dumping Convention became the first treaty to prohibit the dumping of a wide range of hazardous substances at sea.⁶⁰ During this period, treaties sought to protect the quality of rivers⁶¹ and, under the auspices of the International Labour Organization (ILO), the quality of the working environment.⁶²

Other developments were noteworthy. In 1949, the ICJ confirmed ‘every state’s obligation not to allow knowingly its territory to be used for acts contrary to the rights of other states’, a *dictum* that contributed to the emergence of Principle 21 of the Stockholm Conference.⁶³ In 1957, in the *Lac Lanoux* arbitration, the Tribunal affirmed principles concerning limitations on the right of states in their use of shared rivers and informing the meaning of co-operation in international law.⁶⁴ Against this background loomed the broader issue of the relationship between environment and development, first identified by the 1949 UNCCUR; in 1962, the General Assembly adopted a resolution on the relationship between economic development and environmental protection.⁶⁵

By 1972, there was, therefore, an emerging body of international environmental rules at the regional and global levels, and international organisations were addressing international environmental issues. Limitations on the right of states to treat their natural resources as they wished were being established. Nevertheless, these treaty and institutional developments were developing in a piecemeal fashion, and the lack of co-ordination hampered efforts to develop a coherent international environmental strategy. Moreover, no international organisation had overall responsibility for co-ordinating international environmental policy and law, and few had a specific environmental mandate. International procedures for ensuring the

⁵³ See Chapter 9, p. 348, below.

⁵⁴ See Chapter 10, pp. 492–4, below. ⁵⁵ See Chapter 13, pp. 579–80, below.

⁵⁶ See Chapter 7, p. 246, fn. 42, below. ⁵⁷ Resolution (66) 23 Air Pollution (1966), 15 IPE 7521.

⁵⁸ Chapter 11, p. 532, below. ⁵⁹ Chapter 10, pp. 480–3, below. ⁶⁰ Chapter 9, p. 348, below.

⁶¹ Protocol Concerning the Constitution of an International Commission for the Protection of the Mosel Against Pollution, Paris, 20 December 1961, in force July 1962, 940 UNTS 211; Agreement Concerning the International Commission for the Protection of the Rhine Against Pollution, Berne, 29 April 1963, 914 UNTS 3.

⁶² Chapter 3, p. 73, below; and Chapter 11, pp. 532–6, below. ⁶³ (1949) ICJ Reports 4.

⁶⁴ Chapter 8, pp. 307–8, below. ⁶⁵ UNGA Res. 1831 (XVII) (1962).

implementation of, and compliance with, international environmental standards were virtually non-existent. The regulatory techniques available for addressing a growing range of issues were limited, and no rules had yet been developed on procedural obligations, such as environmental impact assessment or the dissemination of and access to environmental information. The 1972 Stockholm Conference must be seen in this context.

The origins of the 1972 Stockholm Conference can be traced to an Intergovernmental Conference convened by UNESCO in 1968 (the 1968 Biosphere Conference). The Conference considered the impact of human activities on the biosphere, including the effects of air and water pollution, over-grazing, deforestation and the drainage of wetlands, and adopted twenty recommendations reflecting themes adopted at the 1972 Stockholm Conference.⁶⁶ The scale of the task facing the international community was reflected in the final report of the 1968 Biosphere Conference:

Until this point in history the nations of the world have lacked considered, comprehensive policies for managing the environment. Although changes have been taking place for a long time, they seem to have reached a threshold recently that has made the public aware of them. This awareness is leading to concern, to the recognition that to a large degree, man now has the capability and the responsibility to determine and guide the future of his environment, and to the beginnings of national and international corrective action . . . It has become clear, however, that earnest and bold departures from the past will have to be taken nationally and internationally if significant progress is to be made.⁶⁷

The 1972 United Nations Conference on the Human Environment⁶⁸

The Stockholm Conference was convened in December 1968 by the United Nations General Assembly.⁶⁹ This followed the adoption in July 1968 of a resolution, first proposed by Sweden, noting 'the continuing and accelerating impairment of the quality of the human environment', and recommending that the General Assembly consider the desirability of convening a UN conference.⁷⁰ The Conference was held in Stockholm on 5–16 June 1972, under the chairmanship of Maurice Strong, a Canadian, and was attended by 114 states and a large number of international institutions and non-governmental observers. The Conference adopted three non-binding instruments: a resolution on institutional and financial arrangements, a Declaration containing twenty-six Principles, and an Action Plan containing 109 Recommendations.⁷¹

⁶⁶ See *Yearbook of the UN* (1968), 958; UNESCO, *Use and Conservation of the Biosphere: Proceedings of the Intergovernmental Conference of Experts on the Scientific Basis for Rational Use and Conservation of the Resources of the Biosphere* (1970); and McCormick, *Reclaiming Paradise*, 88–90.

⁶⁷ Cited in Caldwell, *International Environmental Policy*, 45.

⁶⁸ *Report of the UN Conference on the Human Environment*, Stockholm, 5–16 June 1972, UN Doc. A/CONF.48/14/Rev.1; A. C. Kiss and J. D. Sciault, 'La Conference des Nations Unies sur l'Environnement', *Annuaire Français de Droit International* 603 (1972); L. Sohn, 'The Stockholm Declaration on the Human Environment', 14 *Harvard International Law Journal* 423 (1973).

⁶⁹ UNGA Res. 2398 (XXIII) (1968).

⁷⁰ ECOSOC Res. 1346 (XLV) (1968). Two months earlier, ECOSOC had taken note of a report by the World Health Organization (WHO) on environmental pollution and its control, and a report by UNESCO and FAO on the conservation and rational utilisation of the environment: ECOSOC Res. 1310 (XLIV) (1968).

⁷¹ *Report of the UN Conference on the Human Environment*, UN Doc. A/CONF.48/14 at 2–65, and Corr.1 (1972), 11 ILM 1416 (1972). For an excellent account of the Conference and the Declaration, see Louis B. Sohn, 'The Stockholm Declaration on the Human Environment', 14 *Harvard International Law Journal* 423 (1973).

The Conference did not adopt any binding obligations, and formal decisions had to await the twenty-seventh session of the UN General Assembly the following autumn. The Conference was generally considered to have been successful, largely because the preparatory process had allowed agreement to be reached on most issues prior to the Conference.⁷² According to one commentator, 'Stockholm enlarged and facilitated means toward international action previously limited by inadequate perception of environmental issues and by restrictive concepts of national sovereignty . . . There were significant elements of innovation in (1) the redefinition of international issues, (2) the rationale for co-operation, (3) the approach to international responsibility, and (4) the conceptualisation of international organisational relationships.'⁷³ Although the infusion of new international law was not dramatic, trends underway before Stockholm relating to marine pollution, transboundary air and water pollution, and the protection of endangered species were reinforced by the Stockholm resolutions.⁷⁴ From a legal perspective, the significant developments were the recommendations for the creation of new institutions and the establishment of co-ordinating mechanisms among existing institutions (the Action Plan), the definition of a framework for future actions to be taken by the international community (the Recommendations), and the adoption of a set of general guiding principles (the Principles).

The recommendation on institutional and financial arrangements proposed that action be taken by the UN General Assembly to establish four institutional arrangements: an intergovernmental Governing Council for Environmental Programmes to provide policy guidance for the direction and co-ordination of environmental programmes; an Environment Secretariat headed by an Executive Director; an Environment Fund to provide financing for environmental programmes; and an inter-agency Environmental Co-ordinating Board to ensure co-operation and co-ordination among all bodies concerned in the implementation of environmental programmes in the United Nations system. The Action Plan comprised 109 recommendations. These were generally accepted by consensus, and reflected an agenda which identified six main subject areas:

- (1) planning and management of human settlements for environmental quality;
- (2) environmental aspects of natural resources management;
- (3) identification and control of pollutants and nuisances of broad international significance;
- (4) educational, informational, social and cultural aspects of environmental issues;
- (5) development and environment; and
- (6) international organisational implications of action proposals.⁷⁵

The Action Plan included proposals on environmental assessment (by the establishment of Earthwatch, which was to include a Global Environmental Monitoring System (GEMS) and an International Referral System (subsequently INFOTERRA)); on natural resources management; and on supporting measures related to training and education and the provision of information. Consensus was virtually complete, although some reservations were made. The United States would not accept the principle of additionality, according to which an increase in its foreign aid budget would be required to cover costs imposed by environmental protection measures on

⁷² *Ibid.*, 424.

⁷³ Caldwell, *International Environmental Policy*, 55 and 60.

⁷⁴ *Ibid.*, 60.

⁷⁵ *Ibid.*, 61.

development projects (Recommendation 109),⁷⁶ and Japan refused to observe the recommendation calling for a ten-year moratorium on commercial whaling (Recommendation 33).⁷⁷

The Declaration of Principles for the Preservation and Enhancement of the Human Environment was based on a draft Declaration prepared by the Preparatory Committee. It was intended to provide ‘a common outlook and . . . common principles to inspire and guide the peoples of the world in the preservation and enhancement of the human environment’.⁷⁸ The twenty-six Principles reflected a compromise between those states which believed it should stimulate public awareness of, and concern for, environmental issues, and those states which wanted the Declaration to provide specific guidelines for future governmental and intergovernmental action.

From a legal perspective, the most relevant provisions are Principles 24, 21, 22 and 23. Principle 24 called for international co-operation ‘to effectively control, prevent, reduce and eliminate adverse environmental effects resulting from activities conducted in all spheres, in such a way that due account is taken of the sovereignty and interests of all states’. Principle 21 affirmed the responsibility of states to ensure that activities within their jurisdiction or control do not cause damage in another state or beyond national jurisdiction, such as in outer space or on the high seas. This responsibility is said to extend also to activities under a state’s ‘control’, such as those carried out by its nationals or by or on ships or aircraft registered in its territory.⁷⁹

Principle 22 required states to co-operate in developing international environmental law. This is a substantially weakened version of an earlier proposal, which would have required states to pay compensation for all environmental damage caused by activities carried on within their territory. The earlier proposal failed because of concerns that it implied acceptance of a no-fault or ‘strict’ standard of liability for environmental harm. Certain states made clear their view that liability to pay compensation would only exist where there had been negligence attributable to the state concerned.⁸⁰ Principle 23 foresaw a limited role for international regulation and suggested that certain standards would ‘have to be determined nationally’ on the basis of the value systems applying in each country and their social costs, and in accordance with the need for different environmental standards in different countries. The Stockholm Principles are weak on techniques for implementing environmental standards, such as environmental impact assessment, access to environmental information and the availability of administrative and judicial remedies. Principle 24 simply calls for international organisations to play a co-ordinated, efficient and dynamic role.

The other Stockholm Principles were couched in non-legal language. Principle 1 linked environmental protection to human rights norms, stating that man has ‘the fundamental right to freedom, equality and adequate conditions of life, in an environment of a quality that permits a life of dignity and well-being, and he bears a solemn responsibility to protect and improve the environment for present and future generations’.⁸¹ Other Principles can be grouped into themes. Principles 2, 3 and 5 set forth general guidelines for the natural resources of the Earth to be safeguarded for the benefit of present and future generations, and for the maintenance, restoration and improvement of vital renewable resources and the non-exhaustion of

⁷⁶ This principle was, in effect, accepted at UNCED in 1992 and in the Climate Change and Biodiversity Conventions.

⁷⁷ Caldwell, *International Environmental Policy*, 62. ⁷⁸ UN Doc. A/CONF.48/PC.17.

⁷⁹ For the background to Principle 21 and its subsequent development, see Chapter 6, pp. 188–200, below.

⁸⁰ UN Doc. A/CONF.48/PC.12, Annex 1, at 15 (1971). ⁸¹ See Chapter 18, pp. 777–80, below.

non-renewable resources. Principles 4, 6 and 7 identified specific environmental threats, recalling the special responsibility of man to safeguard and wisely manage the heritage of wildlife and habitat, halt the discharge of toxic and other substances and heat which cause serious or irreversible damage to the ecosystem, and prevent pollution of the seas or harm to living resources and marine life. Principles 8–15 addressed issues which reflected the relationship between development and the environment: they recognised the relationship between economic and social development and environmental quality; they called for ‘accelerated development’ through the transfer of financial and technological assistance and stable and adequate prices for commodities and raw materials; and they supported an integrated and co-ordinated approach to rational development planning which is compatible with protecting and improving the human environment. Principles 16–20 recognised the need for appropriate demographic policies; supported the development of national institutions to manage environmental resources; called for the application of science and technology; and encouraged education and scientific research and development.⁸²

The draft Declaration prepared by the Preparatory Committee had included a third important legal principle, originally entitled ‘Principle 20’, which would have provided that:

relevant information must be supplied by states on activities or developments within their jurisdiction or under their control whenever they believe, or have reason to believe, that such information is needed to avoid the risk of significant adverse effects on the environment in areas beyond their national jurisdiction.⁸³

This Principle was not agreed at the Conference, following the objections of a number of developing states, which maintained that the obligation to consult might be abused by developed states to impede development projects. As will be seen, this requirement is now recognised by the International Law Commission, and by many conventions, as a basic requirement.

Stockholm follow-up

The Report of the Stockholm Conference was considered by the UN General Assembly at its twenty-seventh session, which adopted eleven resolutions. Resolution 2994 (XXVII) noted with satisfaction the Conference Report.⁸⁴ Resolution 2995 (XXVII) was a partial revival of the Preparatory Committee’s original ‘Principle 20’, providing that technical information on proposed works should be supplied to other states where there is a risk of significant transboundary environmental harm, but that this information should be received in good faith and not used to delay or impede development of natural resources.⁸⁵ Resolution 2996 (XXVII) affirmed that Resolution 2995 was not to be construed as limiting Principles 21 and 22 of the Stockholm Declaration,⁸⁶ and Resolutions 2997 to 3004 addressed institutional and financial arrangements for international environmental co-operation, including the creation of the United Nations Environment Programme.⁸⁷

⁸² When the Stockholm Declaration was adopted, fewer than six states had national authorities specifically responsible for the environment. Today, few states do not have such a body.

⁸³ UN Doc. A/CONF.48/4, Annex, para. 20, at 4 (1972). ⁸⁴ *Yearbook of the UN* (1972), 330. ⁸⁵ *Ibid*, 330–1.

⁸⁶ *Ibid*, 331. ⁸⁷ *Ibid*, 331–7. On UNEP, see Chapter 3, pp. 60–2, below.

FROM STOCKHOLM TO RIO: 1972–92

The Stockholm Conference set the scene for international activities at the regional and global level, and influenced legal and institutional developments up to and beyond UNCED. Developments in this period are of two types: those directly related to Stockholm and follow-up actions; and those indirectly related thereto. The period was marked by: a proliferation of international environmental organisations (including those established by treaty) and greater efforts by existing institutions to address environmental issues; the development of new sources of international environmental obligations from acts of such organisations; new environmental norms established by treaty; the development of new techniques for implementing environmental standards, including environmental impact assessment and access to information; and the formal integration of environment and development, particularly in relation to international trade and development assistance.

Post-Stockholm: treaties and other international acts

The creation of the United Nations Environment Programme (UNEP) and the adoption of Principle 21 were the most significant achievements of the Stockholm Conference. UNEP has been responsible for the establishment and implementation of the Regional Seas Programme, including over thirty regional treaties,⁸⁸ as well as important global treaties addressing ozone depletion, trade in hazardous waste and biodiversity.⁸⁹ In the period immediately after Stockholm, several other treaties of potentially global application were adopted, outside UNEP but within the UN system, to address the dumping of waste at sea,⁹⁰ pollution from ships,⁹¹ the trade in endangered species⁹² and the protection of world cultural heritage.⁹³ The most important, viewed over time, is likely to be the United Nations Convention on the Law of the Sea (UNCLOS), which established a comprehensive framework for the establishment of global rules on the protection of the marine environment and marine living resources, including detailed and important institutional arrangements and provisions on environmental assessment, technology transfer, liability and dispute settlement.⁹⁴ Many of the techniques subsequently adopted in other environmental treaties may be traced directly to UNCLOS.

The Stockholm Conference was followed by important regional developments, including the adoption of EU environmental protection rules, and the creation of an Environment Committee at the OECD.⁹⁵ Other notable regional developments included: multilateral treaties dedicated to the protection of all migratory species;⁹⁶ the protection of habitats;⁹⁷ the prevention of transboundary air pollution;⁹⁸ the regulation and prohibition of commercial mineral activities

⁸⁸ Chapter 9, pp. 352–65, below. ⁸⁹ Chapter 3, pp. 60–1, below.

⁹⁰ 1972 London Convention; see Chapter 9, pp. 366–9, below.

⁹¹ MARPOL 73/78; see Chapter 9, pp. 381–85, below. ⁹² 1973 CITES; see Chapter 10, pp. 472–9, below.

⁹³ 1972 World Heritage Convention; see Chapter 10, pp. 510–11, below.

⁹⁴ See Chapter 5; Chapter 14; Chapter 16; and Chapter 17 below. ⁹⁵ Chapter 3, p. 73, below.

⁹⁶ 1979 Bonn Convention; see Chapter 10, pp. 502–4, below.

⁹⁷ 1979 Berne Convention; see Chapter 10, pp. 487–89, below.

⁹⁸ 1979 LRTAP Convention and Protocols; see Chapter 7, pp. 246–57, below.

in the Antarctic,⁹⁹ and rules on environmental co-operation and behaviour in a compact on development assistance between developed and developing countries.¹⁰⁰

Towards the end of this period, UN economic and financial organisations began to be faced with the practical implications which national and international environmental law might have for their respective activities. In 1971, the General Agreement on Tariffs and Trade (GATT) had established a Group on Environmental Measures and International Trade (which did not meet until 1991), and as an organisation found itself increasingly faced with environmental issues, including the question of the circumstances in which unilateral trade restrictions adopted in the name of environmental protection could be justified under GATT rules.¹⁰¹ In the face of increasing public and governmental pressure, the World Bank and the regional development banks were called upon to integrate environmental considerations into their loan-making processes. This led to the establishment of an Environment Department in the World Bank and the adoption of limited environmental impact assessment requirements by most multilateral development banks.¹⁰² Amongst the most significant reflection of the changing times was the integration of environmental obligations into the 1990 Articles establishing the European Bank for Reconstruction and Development.¹⁰³ In 1991, the World Bank, UNEP and the United Nations Development Programme established the Global Environmental Facility to provide financial resources to support projects that benefited the global commons. At the same time, the GATT decided to reactivate its long-dormant Group on Environmental Measures and International Trade.

Prior to UNCED, treaties were adopted in areas not previously subject to international regulation. Under the auspices of the UNECE, treaties addressed environmental impact assessment,¹⁰⁴ the transboundary impacts of industrial accidents,¹⁰⁵ and the protection and use of international watercourses.¹⁰⁶ The International Law Commission completed a first reading of its draft Articles on the law of non-navigational uses of international watercourses, while the UN Security Council declared that ecological issues could constitute threats to international peace and security. The UN General Assembly adopted a resolution prohibiting the use of driftnets, the first time that body had adopted a normative rule seeking to establish a worldwide standard.

This was also the period in which the impact of acts of international organisations began to be felt. Many organisations had the power to adopt binding or non-binding decisions, resolutions, recommendations or other acts, and these organisations served as fora in which new international environmental legislation could be proposed, adopted and implemented. There are several examples of such acts that are noteworthy for their consequences on industrial and other economic activity, but three in particular reflect the scale of the changes that had occurred. These were: the moratorium on commercial whaling adopted by resolution of the International Whaling Commission in 1982;¹⁰⁷ the 1983 moratorium on the dumping of radioactive wastes adopted by resolution of the Consultative Meeting of the Parties to the 1972 London Convention;¹⁰⁸ and the decision by the 1989 Conference of the Parties to the 1973 CITES which placed African elephant ivory on Appendix 1 to the Convention and banned the

⁹⁹ 1988 CRAMRA and 1991 Environmental Protocol to the 1959 Antarctic Treaty; see Chapter 13 below.

¹⁰⁰ 1989 Lomé Convention (now the Cotonou Agreement); see Chapter 16 below.

¹⁰¹ Chapter 19, pp. 811–12, below. ¹⁰² Chapter 16, p. 671, below.

¹⁰³ Chapter 16, p. 673, below. ¹⁰⁴ 1991 Espoo Convention; see Chapter 14, pp. 610–13, below.

¹⁰⁵ 1992 Industrial Accidents Convention; see Chapter 11, pp. 519–21, below.

¹⁰⁶ 1992 Watercourses Convention; see Chapter 8, pp. 310–12, below.

¹⁰⁷ Chapter 9, p. 426, below. ¹⁰⁸ Chapter 9, p. 368, below.

international trade in ivory.¹⁰⁹ Each of these acts followed public pressure and politico-legal strategies adopted at the national and international levels over several years. Despite strong efforts to reverse these acts, they were still effective in 1992, although their economic impact, and their effect on the activities of indigenous peoples, focused attention on the broader economic and social implications of adopting international environmental regulations.

Several non-binding instruments were adopted under the auspices of intergovernmental and non-governmental organisations. Three such instruments have played an influential role: the 1978 UNEP draft Principles, the 1981 Montevideo Programme and the 1982 World Charter for Nature. Non-governmental efforts lay behind two other initiatives whose impact has been substantial: the collaboration between IUCN, UNEP and the Worldwide Fund for Nature (WWF) which led to the 1980 World Conservation Strategy; and the 1991 document entitled 'Caring for the Earth: A Strategy for Sustainable Living'.

1978 UNEP draft Principles

One of the first acts to be adopted by UNEP in the field of international law led to the 1978 draft 'Principles of Conduct in the Field of the Environment for the Guidance of States in the Conservation and Harmonious Utilisation of Natural Resources Shared by Two or More States' (the UNEP draft Principles).¹¹⁰ The draft Principles resulted from the efforts of an Intergovernmental Working Group established by the UNEP Governing Council in 1976,¹¹¹ pursuant to a request by the UN General Assembly.¹¹² The Working Group agreed to limit the effort to the preparation of principles and guidelines that would not be taken as creating legally binding obligations. This is reflected in the Explanatory Note to the Principles, which states that 'the language used throughout does not seek to prejudice whether or to what extent the conduct envisaged in the principles is already prescribed by existing principles of general international law'. The UNEP draft Principles were annexed to the final report of the Working Group which was adopted by the UNEP Governing Council in May 1978 but never submitted to the General Assembly for its consideration.¹¹³

The UNEP draft Principles comprise fifteen Principles to govern the use of 'shared natural resources', a concept which is not defined but which is understood from the Report of the UNEP Executive Director to mean something other than the 'global commons'.¹¹⁴ The fifteen Principles include language presciently similar to some of the provisions that were endorsed by the whole of the international community, fourteen years later at UNCED. Principles 1 and 2 recognise the duty of states to co-operate to control, prevent, reduce and eliminate adverse environmental effects, and requires them, to that end, to endeavour to conclude bilateral or

¹⁰⁹ Chapter 10, p. 475 fn 185, below.

¹¹⁰ 17 ILM 1097 (1978); see also A. O. Adede, 'Utilisation of Shared Natural Resources: Towards a Code of Conduct', 5 *Environmental Policy and Law* 66 at 67-8 (1979).

¹¹¹ UNEP Governing Council Decision 44 (III) (1975). ¹¹² UNGA Res. 3129 (XXVIII) (1973).

¹¹³ UNEP Governing Council Decision 6/14 (1978).

¹¹⁴ Co-operation in the Field of the Environment Concerning National Resources Shared by Two or More States, Report of the Executive Director, UNEP/GC/44, 20 February 1975, which cites five illustrative examples: (1) an international water system, including both surface and ground water; (2) an air-shed or air mass above the territories of a limited number of states; (3) enclosed or semi-enclosed seas and adjacent coastal waters; (4) migratory species which move between the waters or territories of several states; and (5) a special ecosystem spanning the frontiers between two or more states, such as a series of mountains, forests or areas of special nature conservation; *ibid*, 40-1. See Chapter 1 above.

multilateral agreements to secure specific regulation of their conduct. Principle 21 of the Stockholm Declaration, broadly followed by Principles 3 and 4, introduces a requirement that states ‘make environmental assessments’ before engaging in certain activities. Principles 5 and 6 relate to information exchange, consultation and notification, which are elements of the principle of good faith and good neighbourliness elaborated by Principle 7. The draft Principles include principles on scientific studies and assessments (Principle 8), emergency action (Principle 9) and the use of the ‘services’ of international organisations (Principle 10). The settlement of disputes and responsibility and liability are addressed by Principles 12 and 13, and Principles 13 and 14 elaborate upon the objectives of non-discrimination and the rights of persons in other jurisdictions who may be adversely affected by environmental damage to the equal right of access to administrative and judicial proceedings. Principle 15 provides that the UNEP draft Principles should be interpreted and applied ‘to enhance and not to affect adversely development and the interests of all countries, and in particular the developing countries’.

1981 Montevideo Programme

Three years later, an *ad hoc* meeting of senior government officials expert in environmental law was held in Montevideo under UNEP auspices, and the Programme for the Development and Periodic Review of Environmental Law (the Montevideo Programme) was prepared.¹¹⁵ The Programme was adopted by the UNEP Governing Council in May 1982 and influenced UNEP’s legal activities in the period 1982–92, resulting in the development of regional and global treaties and ‘soft law’ instruments.¹¹⁶ The Montevideo Programme has also been integrated into the UN System-Wide Medium-Term Environment Programmes (1984–9 and 1990–5). In 1993, 2001 and again in 2009, the UNEP Governing Council adopted new Programmes.¹¹⁷

The original Montevideo Programme was divided into three parts. The first part proposed that guidelines, principles or agreements should be developed to address: marine pollution from land-based sources; protection of the stratospheric ozone layer; and the transport, handling and disposal of toxic and dangerous wastes. The second part proposed that action should be taken to address eight priority subject areas, and the third programme area proposed work of a general nature to promote the development of environmental law, including research, writing and teaching of theoretical and practical aspects of environmental law and the dissemination of information.

1982 World Charter for Nature

Ten years after the Stockholm Conference, the UN General Assembly adopted the World Charter for Nature, which set forth ‘principles of conservation by which all human conduct affecting nature is to be guided and judged’.¹¹⁸ The Charter, which is divided into three sections, is a non-binding instrument drafted in general language. The Charter is an avowedly ecological instrument, which emphasises the protection of nature as an end in itself. The explanation for this lies in part in its origins – the Twelfth General Assembly of the IUCN held in Zaire in 1975 – and in

¹¹⁵ Report, UNEP/GC.10/5/Add.2, Annex, Chapter II (1981); 8 *Environmental Policy and Law* 31 (1982).

¹¹⁶ Governing Council Decision 10/21, 31 May 1982. On UNEP-sponsored legal developments, see Chapter 3, pp. 60–2, below.

¹¹⁷ See p. 61, below.

¹¹⁸ UNGA Res. 37/7, 28 October 1982. The Charter was adopted by a vote of 111 in favour, eighteen abstentions and one vote against (United States); 23 ILM 455 (1983).

its subsequent elaboration by IUCN and an international group of independent experts. Although not binding, the Charter has been characterised as ‘an important symbolic expression of an intent among nations to achieve a more harmonious and sustainable relationship between humanity and the rest of the biosphere – between mankind and earth’.¹¹⁹ As a standard of ethical conduct, however, many of its provisions are now reflected in treaties.

Section I sets out ‘General Principles’ calling for the respect of nature and its essential processes: safeguarding habitats and ensuring the survival of all life forms; providing special protection for unique areas, ecosystems and habitats of endangered species; maintaining ‘optimum sustainable productivity’ of natural resources without endangering other ecosystems or species; and securing nature against degradation from warfare.¹²⁰ Section II, entitled ‘Functions’, is more operational in character. It calls for the integration of nature into the planning and implementation of development activities, taking into account the long-term capacity of natural systems and the physical constraints, biological productivity and diversity and natural beauty of different areas.¹²¹ Living resources should not be used in excess of their natural capacity for regeneration; the productivity of soils should be maintained; resources should be reused or recycled, and non-renewable resources should be used with restraint.¹²² The Charter includes language on environmental impact assessment¹²³ that is now broadly reflected in international practice, as well as the 2010 judgment of the ICJ in the *Pulp Mills* case and ITLOS in its 2011 *Advisory Opinion on Responsibilities and Obligations of States in the Area*.¹²⁴ Section III of the Charter addresses ‘Implementation’, including by education, environmental assessment, access to information, financial resources, the establishment of standards for products and manufacturing processes, implementation of applicable international legal provisions, and measures to ensure that activities do not cause damage to natural systems within other states or in areas beyond the limits of national jurisdiction.¹²⁵

1980 World Conservation Strategy/1991 ‘Caring for the Earth’ Strategy

The 1980 World Conservation Strategy was prepared by IUCN, UNEP, WWF, UNESCO and FAO. The Strategy gave currency to the term ‘sustainable development’, and led to the preparation of national and sub-national conservation strategies in most states. It has subsequently influenced international legal developments. The 1980 Strategy emphasised three key objectives (maintaining ecological processes, preserving genetic diversity and sustainable use of species and ecosystems) and identified obstacles to the fulfilment of these objectives.¹²⁶

The 1991 Strategy restated the thinking about conservation and development with two aims: securing a commitment to sustainable living; and translating its principles into practice.¹²⁷ The Strategy calls for the development of international law by strengthening existing international agreements, concluding new international agreements to achieve global sustainability, and preparing and adopting a Universal Declaration and Covenant on Sustainability.¹²⁸

¹¹⁹ Caldwell, *International Environmental Policy*, 92. ¹²⁰ Paras. 1–5. ¹²¹ Paras. 7–9. ¹²² Para. 10.

¹²³ Para. 11. ¹²⁴ See Chapter 14, pp. 620–2, below. ¹²⁵ Para. 21.

¹²⁶ Caldwell, *International Environmental Policy*, 322–3.

¹²⁷ IUCN, UNEP and WWF, *Caring for the Earth: A Strategy for Sustainable Living* (1991). ¹²⁸ *Ibid.*, 79–81.

The Brundtland Report and the Report of the Legal Experts Group

The World Commission on Environment and Development (WCED), chaired by Norwegian Prime Minister Gro Harlem Brundtland, was established in 1983 by the UN General Assembly, and its report (the Brundtland Report) was published in 1987.¹²⁹ The Commission was established as an independent body and was an important catalyst for UNCED and the five instruments there adopted. The Brundtland Report signalled changes in the way we look at the world, endorsing an expanded role for sustainable development and a UN programme on sustainable development, and identifying key legal and institutional issues.¹³⁰

The Report made specific recommendations on a range of policy matters (population, food security, the loss of species and genetic resources, energy, industry and human settlements), recognising that these are connected and cannot be treated in isolation from each other. In addition, issues of international co-operation and institutional reform were addressed (the role of the international economy; managing the global commons; the relationship between peace, security, development and the environment; and institutional and legal change). The Brundtland Report identified six priority areas for legal and institutional change, and identified the existing legal order as part of the problem. First, national and international authorities were called on to support economically and ecologically sustainable development, to integrate the environment fully into their goals and activities, and to improve co-ordination and co-operation. Second, it sought a strengthened UNEP, as the principal source for environmental data, assessment and reporting and the principal advocate and agent for change and international co-operation. Third, it called for an extension of the capacity of the international community to address irreversible environmental damage. Fourth, it recognised the need to expand the rights, roles and participation of an informed public, non-governmental organisations, the scientific community and industry.

Fifth, in recognising that ‘international law is being rapidly out-distanced by the accelerating pace and expanding scale of impacts on the ecological basis of development’, the Report called on governments to fill gaps in national and international law in order to find ways to recognise and protect the rights of present and future generations to an environment adequate for their health and well-being, to prepare under UN auspices a universal declaration on environmental protection and sustainable development and a subsequent convention, and to strengthen dispute settlement. Finally, the Report recognised the need to invest in pollution control by providing new financial assistance, and called for a UN Programme on Sustainable Development. Each of these proposals received support from governments at UNCED.

An Experts Group on Environmental Law was established alongside UNCED. It proposed Legal Principles and Recommendations on Environmental Protection and Sustainable Development (1986 WCED Legal Principles),¹³¹ set out in twenty-two Articles reflecting basic obligations of states based on an assessment of treaties, soft law instruments, and some state practice. The WCED Legal Principles fall into three categories, including ‘general principles, rights and responsibilities’, and ‘principles, rights and obligations governing transboundary natural resources and environmental interference’.

¹²⁹ *Our Common Future* (1987). ¹³⁰ *Ibid*, 4.

¹³¹ Reprinted in R. D. Munro and J. G. Lammers (eds.), *Environmental Protection and Sustainable Development* (1987), 7.

Conclusions

By 1990, preparations for UNCED were underway and significant political and legal changes were in place. There was now a discrete area of law called international environmental law. At the global and regional level this included a large number of substantive rules limiting the rights of states to engage in activities that were harmful to the environment. International environmental law was no longer focused on the protection of wildlife. Standards had been adopted and applied for the protection of the marine environment and freshwater resources, the atmosphere and the ozone layer, and the disposal of hazardous and other wastes. New techniques for the implementation of those standards, such as environmental impact assessment and access to environmental information, were being developed and applied. Environmental protection was being addressed in the context of economic matters, such as trade and development lending. Developing countries had succeeded in establishing the principle that financial resources should be made available to help them meet the incremental costs of implementing their international environmental obligations. Differential standards were accepted in the 1985 SO₂ Protocol to the 1979 LRTAP Convention and the 1987 Montreal Protocol. New institutions had been created to address regional and global environmental issues, and existing institutions were beginning to integrate environmental considerations into their activities. Subsidiary bodies were being established to ensure innovative implementation and compliance techniques. Principle 21 was broadly considered to reflect a rule of customary international law, and new principles were emerging, such as the polluter pays principle and the precautionary principle. Perhaps most significantly, in respect of the standards being adopted, and in respect of monitoring and implementation, new international actors, including non-governmental organisations from developed and developing countries, were participating in the international legal process.

UNCED¹³²

In December 1987, the UN General Assembly noted the Brundtland Report, and the following year called for a UN conference on environment and development.¹³³ In December 1989, General Assembly Resolution 44/228 convened a UN Conference on Environment and Development for June 1992 in Rio de Janeiro, Brazil, to ‘elaborate strategies and measures to halt and reverse the effects of environmental degradation in the context of strengthened national and international efforts to promote sustainable and environmentally sound development in all countries’.¹³⁴

¹³² *Report of the UN Conference on Environment and Development*, Rio de Janeiro, 3–14 June 1992, UN Doc. A/CONF.151/26/Rev.1 (vols. I–III); A. C. Kiss and S. Doumbe-Bille, ‘La Conference des Nations Unies sur l’Environnement et le Developpement’, *Annuaire Français de Droit International* 823 (1992); I. M. Porras, ‘The Rio Declaration: A New Basis for International Co-operation’, 1 *Review of European Community and International Environmental Law* 245 (1992); P. Sand, ‘UNCED and the Development of International Environmental Law’, 3 *Yearbook of International Environmental Law* 3 (1992); N. Robinson (ed.), *International Protection of the Environment: Agenda 21 and the UNCED Proceedings* (1992).

¹³³ UNGA Res. 42/187 (1987); UNGA Res. 43/196 (1988). See also UNEP Governing Council Decision 15/3 (1989); ECOSOC Res. 1989/87 (1989); Report of the Secretary General, UN Doc. A/44/256-E/1989/66 and Corr.1 and Add.1 and 2 (1989).

¹³⁴ UNGA Res. 44/228, para. 3.

UNCED was held in Rio de Janeiro, Brazil, on 3–14 June 1992, and was attended by 176 states, more than fifty intergovernmental organisations, and several thousand corporations and non-governmental organisations. UNCED adopted three non-binding instruments: the Rio Declaration on Environment and Development (the Rio Declaration); a Non-Legally Binding Authoritative Statement of Principles for a Global Consensus on the Management, Conservation and Sustainable Development of All Types of Forest (the UNCED Forest Principles);¹³⁵ and Agenda 21. Two treaties were also opened for signature: the Convention on Biological Diversity;¹³⁶ and the UN Framework Convention on Climate Change.¹³⁷

UNCED was the culmination of three separate but related negotiating processes, one of which was the Preparatory Committee for UNCED (PrepComm) that met four times between August 1990 and May 1992. The other two were the Intergovernmental Negotiating Committee for a Framework Convention on Climate Change (INC/FCCC) that held five sessions between February 1991 and May 1992, and the Intergovernmental Negotiating Committee for a Convention on Biological Diversity (INC/CBD) that held five sessions between June 1991 and May 1992. It was also, however, an opportunity to take stock of developments which had taken place in regional and global organisations, in public and private initiatives, and in bilateral, regional and global treaties. It provided an opportunity for the international community to translate initiatives such as the Brundtland Report and the Strategy for Sustainable Living, as well as the many regional preparatory conferences that had taken place, into a coherent strategy of international environmental policy and law for the twenty-first century. UNCED's contribution to international law includes the Commission on Sustainable Development, the endorsement of a new topic area known as the 'international law of sustainable development' (of which international environmental law forms a significant part),¹³⁸ a number of the Rio Declaration Principles, and the framework established by Agenda 21. At the time of UNCED, it was suggested that its endorsement of sustainable development might undermine 'the autonomy of environmental law as a body of rules and standards designed to restrain and prevent the environmentally destructive effects of certain kinds of economic activity', and there might be some reason to fear that the Rio Conference constituted 'the beginning of the decline of international environmental law as an autonomous branch of international law'.¹³⁹ This has not occurred; international environmental law has continued to develop and expand since 1992. Nonetheless, UNCED's concern with the balance between environmental protection and economic development has necessitated a reorientation of international environmental regulation. Up until that time, environmental concerns had been marginal in the broader scheme of international legal and institutional arrangements. UNCED stressed that for environmental concerns to affect and influence behaviour in significant ways they must be integrated into economic and development activities. The challenge for international environmental law has been to facilitate this interlinkage without environmental protection objectives being overwhelmed by the more powerful rules of international economic co-operation.

¹³⁵ A/CONF.151/6/Rev.1, 13 June 1992. ¹³⁶ Chapter 10, pp. 453–64, below.

¹³⁷ Chapter 7, pp. 276–83, below. ¹³⁸ Rio Declaration, Principle 27. Agenda 21, paras. 39.1 and 39.2.

¹³⁹ Marc Pallemerts, 'International Environmental Law from Stockholm to Rio: Back to the Future?', 1 *Review of European Community and International Environmental Law* 254 at 264 (1992); and D. Wirth, 'The Rio Declaration on Environment and Development: Two Steps Forward and One Step Back, or Vice Versa', 29 *Georgetown Law Review* 599 (1995).

The Rio Declaration

The Rio Declaration represents a series of compromises between developed and developing countries and a balance between the objectives of environmental protection and economic development.¹⁴⁰ The text was completed at the Fourth PrepComm in April 1992 and was not reopened for negotiation at UNCED, despite threats from a number of countries to do so, and was ‘endorsed’ by the UN General Assembly in December 1992.¹⁴¹ It comprises twenty-seven Principles, which set out the basis upon which states and people are to co-operate and further develop ‘international law in the field of sustainable development’ (Principle 27). Although it is non-binding, some provisions reflect rules of customary law, others reflect emerging rules, and yet others provide guidance as to future legal developments. A number of the Principles – for example, in relation to precaution – have been frequently referred to by national and international courts. The Rio Declaration lost its original title (‘Earth Charter’), mainly at the insistence of developing countries, and it bears little resemblance to the Universal Declaration of Human Rights, or to the Universal Covenant, which the Brundtland Report had called for.

Principle 1 of the Rio Declaration reflects a shift towards an anthropocentric approach to environmental and developmental issues, declaring that human beings are ‘at the centre of concerns for sustainable development’, and that they are ‘entitled to a healthy and productive life in harmony with nature’; this falls short of recognising a right to a clean and healthy environment. The Rio Declaration reaffirmed Principle 21 of the Stockholm Declaration with one addition. As amended, Principle 2 provides that:

States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental and developmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other states or of areas beyond the limits of national jurisdiction.

The addition of the words ‘and developmental’ (not reflected in Article 3 of the Biodiversity Convention or Principle 2(a) of the Forest Principles), in the context of a negotiation of a document adopted by consensus by 176 states, arguably reflects an ‘instant’ change in the rule of customary international law which is widely considered to be set forth in Principle 21. It has been suggested that the addition of these two words reveals a ‘skilfully masked step backwards’ which by its stronger emphasis on development ‘upsets the delicate balance struck in Stockholm between the sovereign use of natural resources and the duty of care for the environment’.¹⁴² In fact, a careful reading suggests that the additional words merely affirm that states are entitled to pursue their own development policies.

The heart of the Rio Declaration is in Principles 3 and 4, which should be read together to understand the political context and the trade-off they represent. Both Principles were initially controversial. Principle 3 provides that ‘[t]he right to development must be fulfilled so as to

¹⁴⁰ 31 ILM 874 (1992). For an account of the negotiating history of the Rio Declaration, and an excellent interpretative guide, see Ileana Porras, ‘The Rio Declaration: A New Basis for International Co-operation’, 1 *Review of European Community and International Environmental Law* 245 (1992).

¹⁴¹ UNGA Res. 47/190 (1992), para. 2. ¹⁴² Pallemaerts, ‘International Environmental Law’, 256.

equitably meet developmental and environmental needs of present and future generations'. It represents something of a victory for developing countries and the Group of 77, being the first time that the 'right to development' was affirmed in an international instrument adopted by consensus.¹⁴³ In return for Principle 3, the developed countries extracted Principle 4, which provides that '[i]n order to achieve sustainable development, environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it'. This reflects a commitment to moving environmental considerations and objectives from the periphery of international relations to its economic core. In practical terms, Principle 4 can be read as permitting, or requiring, the attachment of environmental conditionalities to all development lending by states and multilateral development banks, and the integration of environmental considerations into all economic and other development.

The Rio Declaration recognises a new principle of 'common but differentiated responsibility'. Principle 7 notes the different contributions of countries to regional and global environmental degradation, and provides that:

[i]n view of the different contributions to global environmental degradation, States have common but differentiated responsibilities. The developed countries acknowledge the responsibility that they bear in the international pursuit of sustainable development in view of the pressures their societies place on the global environment and of the technologies and financial resources they command.¹⁴⁴

This principle crystallises the provisions in earlier instruments that encourage universal participation in agreements by providing incentives in the form of differentiated standards and 'grace periods', and the provision of financial incentives to subsidise at least some of the incremental costs incurred in fulfilling treaty obligations. The United States rejected an interpretation 'that would imply a recognition or acceptance by the United States of any international obligations or liabilities, or any diminutions in the responsibilities of developing countries'.¹⁴⁵

Principle 11 of the Rio Declaration commits all states to enact 'effective environmental legislation', although the standards, objectives and priorities 'should reflect the environmental and developmental context to which they apply'.¹⁴⁶ Principle 11 also recognises that standards applied by some countries 'may be inappropriate and of unwarranted economic and social cost to other countries, in particular developing countries'.

The Rio Declaration develops general principles of the international law of sustainable development. The 'precautionary approach' is endorsed by Principle 15, and the polluter pays principle is implicitly recognised in Principle 16. The Rio Declaration takes several steps beyond the Stockholm Declaration by supporting the development of 'procedural' techniques for implementing international standards (including access to information and public participation), the use of environmental impact assessments, and enhanced notification, information exchange and consultation.

¹⁴³ Cf. the written statement by the United States, which 'does not, by joining consensus ... change its longstanding opposition to the so-called "right to development": A/CONF.151/26/Rev.1 (vol. II), 17 (1992).

¹⁴⁴ See Chapter 6, pp. 233–6, below. ¹⁴⁵ A/CONF.151/26/Rev.1 (vol. II), 18 (1993). ¹⁴⁶ Principle 11.

Other matters addressed by the Rio Declaration include: the relationship between environmental protection and free trade obligations; the development of national and international law regarding liability and compensation for the victims of pollution and other environmental damage; the need to eradicate poverty and decrease disparities in standards of living; and the reduction and elimination of ‘unsustainable patterns of production and consumption’. It promotes ‘appropriate demographic policies’, endogenous capacity-building and scientific understanding, as well as the transfer of technologies. The Rio Declaration supports the full participation of women, youth and indigenous people and their communities, recognises that war is ‘inherently destructive of sustainable development’, that peace, development and environmental protection are ‘interdependent and indivisible’, and that there is a need for the peaceful resolution of environmental disputes.

As a package, the Rio Declaration is more specific than the Stockholm Declaration. It provides a framework for the development of environmental law at the national and international level, which has served as an important point of reference to guide decision-making.

Agenda 21

Agenda 21 was adopted as a non-binding blueprint and action plan for a global partnership for sustainable development.¹⁴⁷ It was conceived as a plan of action by and for the whole of the international community, designed to integrate environment and development concerns for ‘the fulfillment of basic needs, improved living standards for all, better protected and managed ecosystems and a safer, more prosperous future’.¹⁴⁸ Agenda 21 comprises forty chapters and hundreds of programme areas, the indicative cost of each having been estimated by the UNCED secretariat. The average annual cost of implementing the activities in Agenda 21 was estimated at US\$600 billion in the period 1993–2000.

Agenda 21 was negotiated over two years, and ‘reflects a global consensus and political commitment at the highest level’ towards the implementation of national strategies, plans, policies and processes to be supported and supplemented by international co-operation.¹⁴⁹ The implementation of Agenda 21 is the responsibility of governments, with key roles to be played by the UN system, other international, regional and sub-regional organisations, and with broad public participation and the active involvement of non-governmental organisations.¹⁵⁰

What contribution has Agenda 21 made to international law? It recommended the creation of a Commission on Sustainable Development, and new co-ordinating mechanisms among UN and other bodies. It proposed a Convention on Drought and Desertification (which was adopted in 1994), but could not agree on a possible international agreement on forests (which remains, two decades later, an unachieved goal). It proposed two intergovernmental follow-up conferences, on ‘straddling stocks’ of marine living resources (a convention was adopted in 1995) and

¹⁴⁷ UNCED Report, A/CONF.151/26/Rev.1 (vol. I) (1993).

¹⁴⁸ Chapter 1, para. 1.1. UNGA Res. 47/190 (1992) called upon ‘all concerned’ to implement the commitments and recommendations without specifically endorsing Agenda 21.

¹⁴⁹ Chapter 1, para. 1.2. For the draft negotiating texts, see N. Robinson *et al.* (eds.), *The United Nations Conference on Environment and Development, Agenda 21 and the UNCED Proceedings* (1992). Although it was adopted by consensus, written statements were submitted by the United States, Saudi Arabia, Argentina, Kuwait, Philippines, France and the delegation from Palestine: A/CONF.151/26/Rev.1 (vol. II), 18–22 (1993).

¹⁵⁰ *Ibid.*

on the sustainable development of small island states. It endorsed a partnership role for all members of the international community (states, international organisations, non-state actors) in the development and implementation of law and policy on environment and development. And it established programme areas of variable quality and likely effect to cover virtually all human activity. Its contribution to international law can be considered at three levels. First, as a consensus document negotiated by the international community over a period of two years, it provides the only agreed global framework for the development and application of international legal instruments, including 'soft law' instruments, and the activities of international organisations. Second, limited parts of Agenda 21 might be considered to reflect rules of 'instant' customary law.¹⁵¹ Third, it reflected a consensus on principles, practices and rules that might contribute to the development of new rules of conventional and customary law.

Agenda 21 comprises a Preamble (Chapter 1) and four sections. Section I (Chapters 2–8) addresses 'Social and Economic Dimensions'. The seven chapters in this section provide for national and international action in relation to international co-operation, poverty, consumption patterns, population, human health, sustainable human settlement and the integration of environment and development in decision-making. Section II (Chapters 9–22) is concerned with 'Conservation and Management of Resources for Development'. Its fourteen chapters address substantive issues for the protection and sustainable use of natural resources in various sectors, from the protection of the atmosphere to the management of hazardous wastes.

Section III (Chapters 23–32) provides for 'Strengthening the Role of Major Groups'. The section recognises that '[o]ne of the fundamental prerequisites for the achievement of sustainable development is broad public participation in decision-making', including new forms of participation.¹⁵² In a chapter devoted to each, it identifies key groups for the implementation of Agenda 21 and proposes their roles at the national and international levels: women; children and youth; indigenous people and their communities; non-governmental organisations; local authorities; workers and their trade unions; business and industry; the scientific and technological community; and farmers.¹⁵³ Finally, Section IV (Chapters 33–40) identifies 'Means of Implementation'. The eight chapters in this section identify actions relating to financial resources and mechanisms (Chapter 33), technology transfer, co-operation and capacity-building (Chapter 34), science (Chapter 35), education, public awareness and training (Chapter 36), capacity-building in developing countries (Chapter 37), international institutional arrangements (Chapter 38), international legal instruments and mechanisms (Chapter 39) and information for decision-making (Chapter 40).

BEYOND UNCED: TRENDS AND DIRECTIONS

The UN General Assembly adopted five follow-up resolutions to UNCED. These established a negotiating committee to elaborate a convention on drought and desertification; convened a global conference on the sustainable development of small island states; noted the report of UNCED, endorsed the Rio Declaration and the Forest Principles and called for effective follow-up action and the implementation of all commitments, agreements and recommendations;

¹⁵¹ See e.g. the provision limiting the storage or disposal of radioactive waste near the sea: Agenda 21, para. 22.5(c).

¹⁵² Agenda 21, Preamble, paras. 23.1–23.2. ¹⁵³ *Ibid*, Chapters 24–32.

established new institutional arrangements to follow up UNCED, including the Commission on Sustainable Development; and convened a conference on straddling and highly migratory fish stocks.¹⁵⁴

Since UNCED, a number of important new instruments have been adopted, and the negotiation of others continues, although there are clear signs that, in recent years, the rate of legislative activity has dropped off. A treaty was signed to replace the 1972 Oslo Dumping Convention and the 1974 Paris LBS Convention, incorporating many of the principles (precaution, polluter pays) and legal techniques (environmental impact assessment, access to information, economic instruments) endorsed at UNCED.¹⁵⁵ In 1995, a global Agreement on Straddling Fish Stocks was adopted by parties to the 1982 UNCLOS.¹⁵⁶ The parties to the 1969 CLC and the 1971 Fund Convention adopted 1992 Protocols that introduced significant legal changes;¹⁵⁷ and the Council of Europe adopted a convention on civil liability for environmental damage that incorporates many of the recommendations on procedural matters referred to in the Rio Declaration, including access to information and national legal remedies.¹⁵⁸ The Kyoto Protocol to the 1992 Climate Change Convention was adopted in 1997,¹⁵⁹ and the Biosafety Protocol to the 1992 Biodiversity Convention was adopted in 2000:¹⁶⁰ both instruments reflect new thinking in the approach to international regulation and the role of various actors, including the private sector. In 1998, under the auspices of the UNECE, states adopted the Aarhus Convention, the first treaty to address in a comprehensive fashion the rights of participation reflected in Principle 10 of the Rio Declaration.¹⁶¹ In 2003, this innovative treaty was further extended by a Protocol on Pollutant Release and Transfer Registers and has been amended to elaborate its provisions relating to public participation in decisions concerning the environmental release of genetically modified organisms.¹⁶² Other treaties that have been adopted include an IAEA nuclear safety convention;¹⁶³ amendments and protocols to the 1960 and 1963 nuclear liability conventions;¹⁶⁴ a convention on desertification and drought under the auspices of the General Assembly;¹⁶⁵ an International Labour Organization convention on the prevention of industrial disasters;¹⁶⁶ revisions to the 1985 SO₂ Protocol to the 1979 LRTAP Convention and the adoption of Protocols concerning other matters;¹⁶⁷ a liability protocol to the 1989 Basel Convention and a supplementary liability protocol to the Biosafety Protocol;¹⁶⁸ global conventions on chemicals and pesticides and on persistent organic pollutants;¹⁶⁹ a convention and protocol on liability for hazardous and noxious substances under the auspices of the International Maritime Organization,¹⁷⁰ and a protocol to the Convention on Biological Diversity concerning access to genetic resources and the fair and equitable

¹⁵⁴ See respectively: UNGA Res. 47/188 (1992), and Chapter 10, pp. 500–1, below; UNGA Res. 47/189 (1992); UNGA Res. 47/190 (1992); UNGA Res. 47/191 (1992), and Chapter 3 below; and UNGA Res. 47/192 (1992), and Chapter 9, pp. 407–11, below.

¹⁵⁵ 1992 OSPAR Convention; see Chapter 9, pp. 360–2, below. ¹⁵⁶ Chapter 9, pp. 407–11, below.

¹⁵⁷ Chapter 17, p. 748, below.

¹⁵⁸ 1993 Lugano Convention, not in force; see Chapter 17, pp. 766–70, below, noting Principle 13 of the Rio Declaration.

¹⁵⁹ Chapter 7, pp. 283–93, below. ¹⁶⁰ Chapter 10, pp. 466–71, below.

¹⁶¹ Chapter 5, pp. 140, 166–7, below; and Chapter 15, p. 625, below.

¹⁶² Chapter 15, pp. 655–7, below. ¹⁶³ Chapter 11, p. 538, below.

¹⁶⁴ Chapter 17, pp. 730–45, below. ¹⁶⁵ Chapter 10, pp. 500–1, below.

¹⁶⁶ Chapter 11, pp. 519–21, below. ¹⁶⁷ Chapter 7, pp. 246–57, below.

¹⁶⁸ Chapter 17, pp. 757, 764–6, below.

¹⁶⁹ Chapter 11, below. ¹⁷⁰ Chapter 17, pp. 759–60, below.

sharing of benefits arising from their utilisation.¹⁷¹ Important new treaties have also been adopted in relation to international watercourses, at the global, regional and bilateral levels,¹⁷² in addition to new instruments addressing the protection of regional seas.¹⁷³

International organisations have continued to address a wide range of environmental issues. Developments include: the maintenance by the International Whaling Commission of its moratorium on commercial whaling;¹⁷⁴ the maintenance of the prohibition on trade in African elephant ivory;¹⁷⁵ further adjustments and amendments to the Montreal Protocol bringing forward the phase-out of certain substances and adopting a non-compliance procedure which provides for sanctions;¹⁷⁶ the OSPAR Commission Decisions on reprocessing activities;¹⁷⁷ the adoption of implementing rules and a non-compliance procedure under the Kyoto Protocol;¹⁷⁸ and the initiation of new environmental policies by the World Bank, including a policy on broad access to information.¹⁷⁹ In the meantime, the International Law Commission has concluded its work on state responsibility,¹⁸⁰ and on prevention of transboundary harm from hazardous activities.¹⁸¹

The two decades since UNCED have also been notable for the significant increase in international litigation on international environmental issues, reflecting a willingness on the part of states and other actors to bring international claims and a growing receptiveness on the part of the courts to give effect to environmental considerations. The International Court of Justice has addressed the environment in four important cases, including the dispute between Hungary and Slovakia concerning the Gabčíkovo-Nagymaros project on the Danube River and the *Pulp Mills* case.¹⁸² Important decisions have been handed down by other international courts and tribunals, including WTO panels and the Appellate Body,¹⁸³ the International Tribunal for the Law of the Sea,¹⁸⁴ the European Court of Human Rights and the Inter-American Court of Human Rights,¹⁸⁵ and numerous international arbitral tribunals, including in respect of the law of the sea.¹⁸⁶ As increased attention is given to compliance with environmental obligations, states have also established a large number of new non-compliance mechanisms.¹⁸⁷ There is also considerable evidence that national courts are increasingly willing to apply international environmental obligations.¹⁸⁸

World Summit on Sustainable Development

To mark the tenth anniversary of UNCED, the World Summit on Sustainable Development (WSSD) was held in Johannesburg in September 2002.¹⁸⁹ The WSSD did not adopt any

¹⁷¹ 2010 Nagoya Protocol, see Chapter 16, pp. 684–5, below. ¹⁷² Chapter 8, below.

¹⁷³ Chapter 9 below. There are currently nine UNEP Regional Seas Conventions with attendant protocols, as well as partner programmes, such as the 2003 Tehran Convention.

¹⁷⁴ Chapter 9, pp. 352–65, below. ¹⁷⁵ Chapter 10, p. 475 fn 185, below; and Chapter 5 below.

¹⁷⁶ Chapter 7, pp. 265–74, below; and Chapter 5, p. 142, below. ¹⁷⁷ Chapter 9, pp. 375–6, below.

¹⁷⁸ Chapter 7, pp. 283–93, below; and Chapter 5, pp. 165–6, below. ¹⁷⁹ Chapter 15, p. 649, below.

¹⁸⁰ Chapter 17, pp. 702–27, below. ¹⁸¹ Chapter 17, below.

¹⁸² See respectively Chapter 10, below, and Chapter 5, below.

¹⁸³ Chapter 19, below. ¹⁸⁴ Chapter 9, below.

¹⁸⁵ Chapter 18, below. ¹⁸⁶ Chapter 5, below; and Chapter 9, below.

¹⁸⁷ Chapter 5, pp. 163–7, below.

¹⁸⁸ See generally M. Anderson and P. Galizzi, *International Environmental Law in National Courts* (2002).

¹⁸⁹ In 1997, a five-year review conference was held: see D. Osborn and T. Bigg, *Earth Summit II: Outcomes and Analysis* (1998).

conventions or a statement of principles, and was generally focused on the eradication of poverty. The Johannesburg Declaration on Sustainable Development notes that the global environment continues to suffer, but proposes no specific actions beyond a general commitment to sustainable development.¹⁹⁰ The WSSD Plan of Implementation is long on general commitments and aspiration, but short on specific actions to be taken.¹⁹¹ Such soft targets and timetables as are proposed are intended to build on post-UNCED achievements and expedite the realisation of UNCED's goals. In June 2012, a twenty-year review conference of UNCED will take place (the Rio+20 summit).

Useful indicators of future international legal developments are also reflected in the revisions to the Montevideo Programme. A first revision was completed by government experts from eighty-one countries (with input from observers from one country, one national liberation movement and twelve international organisations, but no non-governmental organisations) in September 1992, and endorsed by the UNEP Governing Council.¹⁹² A second revision – the Programme for the Development and Periodic Review of Environmental Law for the First Decade of the Twenty-First Century – was completed by government experts from seventy countries (with input from observers, a national liberation movement and international organisations, but no non-governmental organisations) in October 2000.¹⁹³ A fourth revision was agreed in 2008.¹⁹⁴

In common with the third programme, the fourth revision includes parts on the effectiveness of environmental law (covering matters such as implementation, compliance and enforcement; capacity-building; prevention, mitigation and compensation of environmental damage; avoidance and settlement of international disputes; strengthening and further developing international environmental law; promoting appropriate harmonised approaches to the development and implementation of environmental law and promoting co-ordination between relevant institutions, including synergies in the implementation of related multilateral environmental agreements; public participation and access to information; information technology; improving the effectiveness of environmental law through the application of innovative approaches; and governance), and on the conservation, management and sustainable use of natural resources (including freshwater resources; aquatic living resources; soils; forests; biological diversity; and sustainable consumption and production patterns). The third part of the programme is entitled 'Challenges for Environmental Law'. In addition to topics such as environmental emergencies and natural disasters, and pollution control, it canvasses several new issues that were not addressed in the third programme, including climate change, poverty, access to drinking water and sanitation, and holistic management and conservation of ecosystems. Part IV addresses the relationship between environmental issues and other fields, and focuses on four areas:

- examining the utility of human rights-based approaches to environmental protection;
- securing environmental protection objectives in international trade, investment and financial laws and policies in order to achieve sustainable development;

¹⁹⁰ Available at www.un.org/jsummit/html/documents/summit_docs/1009wssd_pol_declaration.htm.

¹⁹¹ Available at www.un.org/jsummit/html/documents/summit_docs/2309_planfinal.htm.

¹⁹² UNEP/GC.17/5 (1993). ¹⁹³ UNEP/GC.21/22 (9 February 2001).

¹⁹⁴ UNEP/Env.Law/MTV4/IG/2/2 (22 October 2008).

- considering and exploring the linkages between environmental legislation and security; and
- reducing or mitigating the harmful effects of military activities on the environment and encouraging a positive role for the military sector in environmental protection.

The Programme was adopted by the UNEP Governing Council in February 2009, and will be reviewed in 2015.¹⁹⁵

CONCLUSIONS

It is apparent that over the past two decades the rules of international law have become increasingly complex and technical, as environmental considerations are increasingly addressed in economic and other social fields, such as human rights and international trade. In this regard, UNCED – although some twenty years have now passed – still stands as an important marker in the history of the development of international environmental law and a follow-up conference is planned for 2012 (Rio+20). As international environmental law moves into its next phase, one feature that emerges is that international environmental law is no longer exclusively concerned with the adoption of normative standards to guide behaviour, but increasingly addresses techniques of implementation and mechanisms for compliance. Two consequences follow. First, the focus on implementation and compliance means that international environmental law will increasingly be concerned with procedural, constitutional and institutional issues: environmental impact assessment; access to and dissemination of environmental information; techniques of law-making and, perhaps most importantly, issues of international governance. The latter encompasses questions of legitimacy, accountability and transparency in decision-making; the participation or representation of the different members of the international community in the international legal process; the operation of compliance mechanisms (including appropriate national judicial and administrative remedies); new techniques of regulation (including economic instruments); and co-ordination between overlapping or related multilateral environmental treaties and institutions. Second, as environmental issues are increasingly integrated into aspects of economic and development institutions and law (in particular, trade, development lending and intellectual property), the field in which international environmental law has developed will continue to broaden, creating new challenges for the subject and for lawyers and others involved in its development and application.

¹⁹⁵ UNEP/GC.25.CW.L.3 (20 February 2009).

3

Governance: states, international organisations and non-state actors

INTRODUCTION

A wide range of actors participate in those aspects of the international legal order which address environmental issues, including the negotiation, implementation and enforcement of international environmental agreements.¹ Apart from the state delegations that play a central role, a visitor to climate change or other negotiations would find international organisations and non-state actors actively involved. International environmental law is characterised by this phenomenon that, with the possible exception of the human rights field, renders it unique. Various reasons explain this state of affairs. States are involved because they are still the pre-eminent international legal

¹ P. Sands, 'The Environment, Community and International Law', 30 *Harvard International Law Journal* 393 (1989); P. Sand, *Lessons Learned in Global Environmental Governance* (1990); J. Tuchman-Mathews (ed.), *Preserving the Global Environment: The Challenge of Shared Leadership* (1990); A. Hurrell and B. Kingsbury (eds.), *The International Politics of the Environment: Actors, Interests and Institutions* (1992); Commission on Global Governance, *Our Global Neighborhood* (1995); K. Ginther, E. Denters and P. De Waart (eds.), *Sustainable Development and Good Governance* (1995); D. Bodansky, 'The Legitimacy of International Governance: A Coming Challenge for International Environmental Law?', 93 *American Journal of International Law* 596 (1999); B. Desai, 'Mapping the Future of International Environmental Governance', 13 *Yearbook of International Environmental Law* 43 (2002); W. B. Chambers, and J. F. Green (eds.), *Reforming International Environmental Governance: From Institutional Limits to Innovative Solutions* (2005); P. Roch and F. X. Perrez, 'International Environmental Governance: The Strive Towards a Comprehensive, Coherent, Effective and Efficient International Environmental Regime', 16 *Colorado Journal of International Environmental Law and Policy* 1 (2005); M. D. Varella, 'Le Rôle des Organisations Non-Gouvernementales dans le Développement du Droit International de l'Environnement', 132 *Journal du Droit International* 41 (2005); F. Munari and L. S. Di Pepe, 'Diritto Internazionale Dell'Ambiente e Ruolo Dei Non-State Actors: Alcuni Recenti Sviluppi', 61 *La Comunità Internazionale* 483 (2006); S. Oberthür and T. Gehring (eds.), *Institutional Interaction in Global Environmental Governance* (2006); G. Winter (ed.), *Multilevel Governance of Global Environmental Change: Perspectives from Science, Sociology and the Law* (2006); S. Manga, 'Copenhagen 2009 et Nagoya 2010: Vers une Organisation Mondiale de l'Environnement Pour la Cause du Développement Durable?' (2007) 20 *Revue Québécoise de Droit International* 131; C. Okereke, *Global Justice and Neoliberal Environmental Governance: Ethics, Sustainable Development and International Cooperation* (2007); M. Betsill and E. Corell (eds.), *NGO Diplomacy: The Influence of Nongovernmental Organizations in International Environmental Negotiations* (2008); J. Park, K. Conca and M. Finger (eds.), *The Crisis of Global Environmental Governance* (2008); F. Spagnuolo, 'Beyond Participation: Administrative-Law Type Mechanisms in Global Environmental Governance: Toward a New Basis of Legitimacy?', 15 *European Public Law* 49 (2009). See also D. Hunter, J. Salzman and D. Zaelke, *International Environmental Law and Policy* (2011, 4th edn), Chapters 2 and 5; D. Bodansky, J. Brunnée and E. Hey (eds.), *The Oxford Handbook of International Environmental Law* (2007), Chapters 4–5, 31–2; D. Bodansky, *The Art and Craft of International Environmental Law* (2010), Chapter 6; M. A. Drumbl, 'Actors and Law-Making in International Environmental Law' in M. Fitzmaurice, D. M. Ong and P. Merkouris (eds.), *Research Handbook on International Environmental Law* (2010), Chapter 1; P. Birnie, A. Boyle and C. Redgwell, *International Law and the Environment* (2009, 3rd edn), Chapters 2 and 5.

persons. International organisations participate because they have been created by states to address particular environmental issues. Of the various non-state participants, the scientific community is involved because, to a great extent, international environmental law is driven by scientific considerations; the corporate sector is involved because of the significant implications which decisions taken at the global level can now have even for individual companies; and environmental non-governmental organisations (NGOs) are involved because they advocate for concerns often not pursued by states and see the need for active participation at the international level as the lines dividing local, national and global issues disintegrate. The participation of non-state actors in international environmental law has an established history, and is widely accepted.

The various actors have different roles and functions, both as subjects and as objects of international environmental law, including: participating in the law-making process; monitoring implementation, including reporting; and ensuring implementation and enforcement of obligations. The role of each actor turns upon its international legal personality and upon the rights and obligations granted to it by general international law and the rules established by particular treaties and other rules. The Rio Declaration and Agenda 21, as well as an increasing number of international environmental agreements, confirmed the central role of international organisations and non-state actors in all aspects of the international legal process.²

STATES³

States are the primary subjects of international law. This remains the case in spite of the incursions made by international organisations into previously sovereign spheres of activity and the expanded role of non-state actors. States create, adopt and implement international legal principles and rules, establish international organisations, and permit the participation of other actors in the international legal process. There are currently 192 member states of the UN, another three states that are not members and numerous entities that do not possess the full characteristics of statehood, including dependent territories and non-self-governing territories.⁴ The role played by the 192 UN member states in the development and application of international law depends on the subject being addressed and on the relationship of their vital interests to that subject, and on a complex blend of economic, political, cultural, geographical and ecological considerations. Broadly speaking, states are divided by international, legal and institutional arrangements into developed countries, developing countries, and economies in transition. Developed countries include the thirty-four member states of the OECD. The twenty-seven states that previously formed part of the 'Soviet bloc' have been referred to as 'economies in transition'.⁵

² See pp. 42–5, above.

³ OECD, *Transfrontier Pollution and the Role of States* (1981); T. M. Franck, *The Power of Legitimacy Among Nations* (1990); B. Simma, 'From Bilateralism to Community Interest in International Law', 250 *Recueil des Cours* 217 (1994); U. Beyerlin, 'State Community Interests and Institution Building in International Environmental Law', 56 *ZaöRV* 602 (1996).

⁴ The four characteristics which must traditionally obtain before an entity can exist as a state are: (a) a permanent population; (b) a defined territory; (c) a government; and (d) a capacity to enter into relations with other states: see 1933 Montevideo Convention on the Rights and Duties of States, Art. 1, 165 LNTS 19; see also R. Jennings and A. Watts (eds.), *Oppenheim's International Law* (1992, 9th edn), vol. 1, 120–3.

⁵ For an indicative list of developed countries and 'economies in transition', see Appendix 1 to the 1992 Climate Change Convention, and Appendix 2 for a list of OECD members; see Chapter 7, p. 277, below. Poland, Hungary, the Czech Republic and Slovakia, all formerly part of the 'Soviet bloc', have now joined the OECD and can now be considered developed countries. For a list of countries currently considered by the UN to be

The rest of the world, comprising some 134 states, are the developing states which form the Group of 77.⁶ The Group of 77 sometimes works as a single negotiating bloc within the framework of the UN, although in relation to environmental matters their perspectives vary widely. Within the UN system, states are also arranged into regional groupings, usually for the purpose of elections to UN bodies. The five groupings are: the Latin American and Caribbean Group; the African Group; the Asian Group; the Western European and Others Group; and the Central and Eastern European Group (although this grouping is seen as problematic as ten states are also members of the EU). Frequently in environmental negotiations, these distinctions tend to break down as states pursue what they perceive to be their vital national interests, including their strategic alliances, which may be unrelated to environmental matters. The UNCED negotiations – and more recently the climate change negotiations dealing with the post-Kyoto arrangements – illustrate the extent of the differences existing between and among developed states and developing states on particularly contentious issues: atmospheric emissions, production and trade in living modified organisms, conservation of marine mammals, protection of forests, institutional arrangements and financial resources.⁷

INTERNATIONAL ORGANISATIONS

Introduction

International organisations involved in environmental law are established at the global, regional, sub-regional and bilateral levels.⁸ Almost all international organisations today have some competence or responsibility for the development, application or enforcement of international environmental obligations, including functions related to standard-setting. The decentralised nature of international organisations in the environmental field makes it difficult to assess their role by reference to any functional, sectoral or geographic criteria. They can be divided into three general categories: global organisations associated with the UN and its specialised agencies; regional organisations outside the UN system; and organisations established by environmental and other treaties. Within these categories, there are of course

'economies in transition', see the Report of the Secretary General, 'Integration of the Economies in Transition into the World Economy', 8 August 2008, A/63/256.

⁶ The G77, as it is known, does not include all developing countries; there are currently 131 members.

⁷ See C. Bail, R. Falkner and H. Marquard, *The Cartagena Protocol on Biosafety* (2002), Part II. On the international climate change negotiations, see Daniel Bodansky, 'The Copenhagen Climate Change Conference: A Postmortem', 104(2) *American Journal of International Law* 230 (2010); Lavanya Rajamani, 'The Making and Unmaking of the Copenhagen Accord', 59 *International and Comparative Law Quarterly* 824 (2010); David Hunter, 'Implications of the Copenhagen Accord for Global Climate Governance', 10(2) *Sustainable Development Law and Policy* 4 (2010).

⁸ National Academy of Sciences, *Institutional Arrangements for International Environmental Co-operation* (1972); J. Hargrove (ed.), *Law, Institutions and the Global Environment* (1972) (especially A. Chayes, 'International Institutions for the Environment'); J. Schneider, *World Public Order of the Environment: Towards an International Ecological Law and Organisation* (1979); P. Thacher, 'Multilateral Co-operation and Global Change', 44 *Journal of International Affairs* 433 (1991); UNCED, *International Institutions and Legal Instruments* (Research Paper No. 10, 1991); L. A. Kimball, *Forging International Agreement: Strengthening Inter-Governmental Institutions for Environment and Development* (1992); J. Werksman (ed.), *Greening International Institutions* (1996); N. Desai, 'Revitalizing International Environmental Institutions: The UN Task Force Report and Beyond', 40 *Indian Journal of International Law* 455 (2000); P. Sands and P. Klein, *Bowett's Law of International Institutions* (2009, 6th edn); R. S. Axelrod, S. D. VanDeveer and D. L. Downie (eds.), *The Global Environment: Institutions, Law, and Policy* (2011).

overlaps, since many of the organisations established in the third category were created by acts of the UN or its specialised agencies.⁹

History of international organisational arrangements

The role of international organisations has developed in a somewhat *ad hoc* manner. Early environmental agreements did not generally establish standing bodies to administer, or ensure implementation of, their provisions. Since 1945, the number of international environmental organisations has flourished, and they have usually been established at the sub-regional, regional or global level either to deal with specific environmental issues or, as is more often the case, by formally or informally adapting existing organisations to endow them with competence in the area of environmental issues. The Stockholm Conference and UNCED provided opportunities to establish more orderly and coherent arrangements for international organisations in addressing environmental matters. The Stockholm Declaration recognised that the growing global and regional environmental problems required ‘extensive co-operation among nations and action by international organisations in the common interest’.¹⁰ Principle 25 called on states to ‘ensure that international organisations play a co-ordinated, efficient and dynamic role for the protection and improvement of the environment’. Following the Stockholm Conference, the UN General Assembly established the United Nations Environment Programme (UNEP), an environment secretariat and fund, and an Environment Co-ordination Board to co-ordinate UN environment activities.¹¹

Between Stockholm and UNCED, the environmental activities of global and regional organisations proliferated, and many new organisations were created by environmental treaties and acts. The proliferation did not occur in the context of a coherent strategy, and there was little effort to ensure effective co-operation or co-ordination between them. Moreover, significant gaps existed, and many activities considered to be particularly harmful to the environment remained outside the scope of formal international institutional authority. Activities relating to the energy, mining and transport (other than air transport) sectors are examples of areas for which no single UN body yet has overall responsibility. The Brundtland Report recognised the gaps, and in 1989 a group of twenty-four developed and developing states adopted the Hague Declaration calling for the development of a new institutional authority, within the framework of the UN, with responsibility for preserving the Earth’s atmosphere.¹²

UNCED

The UN General Assembly recognised the gaps, overlapping activities and lack of co-ordination in international environmental arrangements. In 1990, UNCED was called upon to review and examine the role of the UN system in dealing with the environment, to promote the development of regional and global organisations, and to promote international co-operation within the UN system in monitoring, assessing and anticipating

⁹ See e.g. the Conference of the Parties to the 1987 Montreal Protocol (UNEP); the 1989 Basic Convention (UNEP); the 1992 Climate Change Convention (UNGA); the 1992 Biodiversity Convention (UNEP); and the Intergovernmental Panel on Climate Change (WMO/UNEP).

¹⁰ Preambular para. 7. ¹¹ See pp. 60–2, below.

¹² Declaration of The Hague, 11 March 1989, 28 ILM 1308 (1989). See also J. Ayling, ‘Serving Many Voices: Progressing Calls for an International Environmental Organization’, 9 *Journal of Environmental Law* 243 (1997).

environmental threats.¹³ Three main issues needing international attention were identified: the role of institutions for environment and development within the UN system; institutional follow-up arrangements after UNCED, especially regarding Agenda 21; and the relationship of the UN system to other institutions in the field of environment and development.¹⁴ During the UNCED negotiations, specific institutional proposals related to five functions and responsibilities: functions related to technical and operational matters; responsibilities for policy-making; co-ordinating functions; responsibilities for financial matters; and functions relating to the administration and implementation of international law.¹⁵ Proposals on technical and operational functions focused on UNEP, the development of regional institutions in the UN system, and new technical functions, particularly environmental assessment, early warning and emergency response, and energy management.¹⁶

Chapter 38 of Agenda 21 proposed the framework for institutional arrangements. With regard to specific institutions, UNCED proposed the establishment of a UN Commission on Sustainable Development and the further development of UNEP and the United Nations Development Programme (UNDP). It affirmed the central role of the UN General Assembly and the Economic and Social Council (ECOSOC), and provided limited guidance on co-operative mechanisms between UN bodies, and between UN bodies and regional organisations and international financial organisations. Overall, it appears that UNCED missed the opportunity to set in motion a wholesale and effective review of activities and operations. UN General Assembly Resolution 47/191 (1992) endorsed the Agenda 21 recommendations on international institutional arrangements to follow up on UNCED and took the following decisions:

- requested ECOSOC to set up a high-level Commission on Sustainable Development;
- requested all UN specialised agencies and related organisations of the UN system to strengthen and adjust their activities, programmes and plans in line with Agenda 21;
- invited the World Bank and other international, regional and sub-regional financial and development institutions, including the Global Environment Facility, to submit regularly to the Commission on Sustainable Development reports on their activities and plans to implement Agenda 21;
- requested UNEP, UNDP, the United Nations Conference on Trade and Development (UNCTAD), the UN Sudano-Sahelian Office and the regional economic commissions to submit reports of their plans to implement Agenda 21 to the Commission on Sustainable Development; and
- endorsed the view of the UN Secretary General concerning the establishment of a High Level Advisory Board.

UNCED was reviewed at the World Summit on Sustainable Development (WSSD) in Johannesburg in 2002. The main outcomes relating to the institutional framework to support sustainable development were recommendations to strengthen institutional arrangements, promote integration of environmental, social and economic dimensions into the work of UN regional commissions, enhance inter-agency co-ordination and the role of the Commission on Sustainable Development.¹⁷

¹³ UNGA Res. 44/228, para. 15(q), (r) and (t) (1990).

¹⁴ 'Institutional Proposals: Report by the Secretary General of the Conference' A/CONF.151/PC/102 (1991).

¹⁵ *Ibid.*, 5–54. ¹⁶ *Ibid.*, 21–6. ¹⁷ WSSD Plan of Implementation, paras. 120–40.

The function and role of international organisations

International organisations perform a range of different functions and roles in the development and management of international legal responses to environmental issues, of a judicial, legislative or administrative nature. Specific functions depend upon the powers granted by the organisation's constituent instrument, as interpreted and applied in practice. Apart from very specific functions required of some particular organisations, international organisations perform five main functions.

First, they provide a forum for co-operation and co-ordination between states on matters of international environmental management. The participation of states in the activities of international organisations is the principal means for consultation and the informal sharing of ideas and information that contribute towards building an international consensus for regional and global action. Thus, the formal negotiation of the 1992 Climate Change Convention followed extensive 'consciousness-raising' activities by a number of international organisations, including the UN General Assembly, the WHO, the WMO and the Intergovernmental Panel on Climate Change (IPCC), as well as the less formal settings of the World Climate Conferences held in 1979 and 1990.¹⁸ International organisations thus contribute to developing the international agenda on environmental matters, broadening the participation of interested states, and encouraging technical research and development. Such organisations also play an important role in liaising with non-state actors.

The second function of international organisations is more formal, and relates to the provision of information. International organisations receive and disseminate information, facilitate information exchange, and provide for formal and informal consultation between states, and between states and the organisation. They also act as a conduit for the notification of emergencies and other urgent matters.¹⁹ In some cases, the information function may include a formal fact-finding role.²⁰

A third function of international organisations is to contribute to the development of international legal obligations, including 'soft law'. This function may take place informally, where the organisation acts as a catalyst for the development of legal and other obligations outside the organisation itself. Alternatively, it may take place formally and within the organisation, where the organisation adopts acts and decisions that can create legal obligations or which may contribute to the subsequent development of legal obligations.²¹ International organisations develop policy initiatives and standards, may adopt rules that establish binding obligations or reflect customary law, and can establish new and subsidiary institutional arrangements.²²

Once environmental and other standards and obligations have been established, institutions increasingly play a role in ensuring implementation of and compliance with these standards and obligations. Assisting in implementation takes a number of forms. It may be limited to receiving information from parties or other persons on an informal and *ad hoc* basis, or it may entail the regular receipt and consideration of reports or periodic communications from parties

¹⁸ See Chapter 7, pp. 275–6, below. ¹⁹ See Chapter 15, pp. 639–43, below.

²⁰ See Chapter 5, pp. 162 and 168, below.

²¹ See Chapter 4, pp. 108–9, below, for a discussion of the legal effects of acts of international institutions.

²² Such as the creation of UNEP and the Commission on Sustainable Development by the UN General Assembly, and the Marine Environment Protection Committee by the IMO Assembly.

to international environmental treaties as a means of reviewing progress in implementation.²³ Assisting in implementation also takes place through the provision of advice on technical, legal and administrative or institutional matters. Under the 1987 Montreal Protocol, the parties seek to ensure implementation through the work of a non-compliance procedure including an Implementation Committee.²⁴ This provided a model for the more elaborate non-compliance procedure of the Kyoto Protocol, which comprises two subsidiary bodies, known as the Facilitation Branch and the Enforcement Branch.²⁵ The 1992 Climate Change Convention has its own Subsidiary Body for Implementation to assist the Conference of the Parties in the assessment and review of the implementation of the Convention.²⁶ There is now a growing number of such institutional arrangements, as described in Chapter 5 below.

A fifth function of international institutions is to provide an independent forum, or mechanism, for the settlement of disputes, usually disputes between states. This may occur through the work of bodies with general competence, such as a Conference or Meeting of the Parties to an environment agreement, adopting an authoritative interpretation of a provision,²⁷ or by the reference of an issue to a body created specifically to assist in dispute settlement through a judicial or quasi-judicial function, such as the International Court of Justice, the International Tribunal for the Law of the Sea, the European Court of Justice, human rights courts, or WTO dispute settlement panels.²⁸ Finally, some organisations are granted enforcement or compliance functions. To date, the only institution that has been granted extensive powers and international legal personality to engage in enforcement activities is the European Commission, which has brought several hundred cases to the European Court of Justice against member states alleging non-compliance with their environmental obligations.²⁹

Global organisations

United Nations (www.un.org)

The UN, its specialised agencies, and subsidiary bodies, organs and programmes are the focal point for international law and institutions in the field of the environment. The UN Charter does not expressly provide the UN with competence over environmental matters. The relevant purposes of the UN include the maintenance of international peace and security, the adoption of measures to strengthen universal peace, and the achievement of co-operation in solving international economic, social, cultural or humanitarian problems.³⁰ Since the late 1960s, however, the practice of the organisation through its principal organs, in particular the General Assembly and the Economic and Social Council (ECOSOC), has been to interpret and apply these broad purposes as including the protection of the environment and the promotion of sustainable

²³ See Chapter 5, pp. 138–43, below.

²⁴ See Chapter 5, pp. 163–4, below; and Chapter 7, pp. 273–4, below. The approach has been taken up by other conventions.

²⁵ Chapter 5, pp. 165–6, below; and Chapter 7, pp. 283–93, below. See Decision 27/CMP.1: 'Procedures and Mechanisms Relating to Compliance under the Kyoto Protocol', Report of the COP serving as the MOP to the Kyoto Protocol, Montreal, 28 November–10 December 2005, FCCC/KP/CMP/2005/8/Add.3, 30 March 2006.

²⁶ Art. 10.

²⁷ See e.g. CITES Conference of the Parties Res. 5.11 on the meaning of the words 'pre-Convention' specimen; see Chapter 10, pp. 476–7, below.

²⁸ See Chapter 5, pp. 169–80, below; and p. 70, below. ²⁹ See Chapter 5, pp. 154–5, below.

³⁰ Charter of the United Nations, Art. 1(1), (2) and (3).

development. The UN is the principal forum for global environmental law-making and has played a central role in the development of international environmental law, its universal character making it the only 'appropriate forum for concerted political action on global environmental problems'.³¹ Apart from the Secretariat, the UN has five principal organs: the General Assembly, the Security Council, ECOSOC, the Trusteeship Council and the International Court of Justice.³² Each organ has, to differing degrees, addressed international environmental issues.

Co-ordination

From 1977 until 2000, co-ordination between the various UN organs and bodies at the Secretariat level took place under the Administrative Committee on Co-ordination (ACC) (co-ordination at the political level is a responsibility of ECOSOC), which was established in 1946 to supervise the implementation of the agreements between the UN and the specialised agencies and to ensure that the activities of the various bodies were co-ordinated.³³ The ACC comprised the heads of the specialised agencies and related bodies and organs that met several times a year under the chairmanship of the Secretary General. Together with an inter-agency board of Designated Officials on Environmental Matters, the ACC deliberated and adopted recommendations on the co-ordination of all environment-related programmes carried on by the participating agencies and bodies, and prepared an annual report to the UNEP Governing Council.

In October 1992, an Inter-Agency Committee on Sustainable Development (IACSD) was established to make recommendations to the ACC and to improve co-operation and co-ordination between the various UN bodies and organs on issues related to sustainable development, including environmental matters. The IACSD, attended by the senior officials of UN bodies most closely involved in the issues,³⁴ was established to rationalise subsidiary mechanisms for co-ordination, allocate and share responsibilities for implementing Agenda 21, monitor financial matters, and assess reporting requirements. In December 1992, the UN Secretary General established a new Department for Policy Co-ordination and Sustainable Development (DPCSD) in the Department of Economic and Social Development, which provided support to ECOSOC and to the Commission on Sustainable Development. This was later consolidated with other departments to form the Department of Economic and Social Affairs which continues to act as the central co-ordinating mechanism for policy and programme development on sustainable development issues, including co-operative relationships with international organisations, NGOs, the academic community and the corporate sector. Agenda 21 recognised the important role of the Secretary General, and the need for the further development of the co-ordination mechanism under the ACC.³⁵

The operation of the ACC was reformed in 2001 as part of former Secretary General Kofi Annan's wider reform efforts. The ACC was renamed the UN System Chief Executives Board for Co-ordination (CEB), a title intended to emphasise the high-level nature of the body and the shift to a more collegial body whose participants share a collective responsibility over an

³¹ UNGA Res. 44/224 (1990); G. Smith, 'The United Nations and the Environment: Sometimes a Great Notion?', 19 *Texas International Law Journal* 335 (1984).

³² The role of the ICJ is discussed in Chapter 5, pp. 171–4, below.

³³ ECOSOC Res. 13 (111) (1946).

³⁴ Senior officials from the following bodies participated: FAO, UNESCO, WMO, WHO, ILO, World Bank, IAEA, UNEP and UNDP; any other ACC member could also take part in discussions on relevant topics.

³⁵ Agenda 21, paras. 38.16 and 38.17.

integrated system. The reforms also involved a transformation of the subsidiary structures. The previous multi-layered and rigid arrangements of inter-agency committees were transformed and streamlined into two high-level committees, the High Level Committee on Programmes and the High-Level Committee on Management. Following a review of the CEB in 2006–7, the United Nations Development Group was integrated as the ‘third pillar’ of the CEB to ensure that substantive policy co-ordination and oversight was brought to operational activities at country level. The three high-level committees report to the CEB biannually, and make recommendations on the basis of input received from flexible ‘networks’ of specialists in different areas of common concern, along with time-bound task-oriented inter-agency arrangements and thematic working groups.³⁶ These changes have involved the abolition of the previous subsidiary bodies, including the IACSD, and its subcommittees.

UN General Assembly

The UN General Assembly, which is the principal policy-making organ on UNCED follow-up, has the power to discuss any questions or matters within the scope of the UN Charter, to make recommendations to the member states or to the Security Council on any such questions or matters, and to promote international co-operation in the political, economic, social, cultural, educational and health fields and the progressive development of international law and its codification.³⁷ Although it does not have a specific environmental mandate, its proactive role led to its being identified by Agenda 21 as ‘the principal policy-making and appraisal organ’ on UNCED follow-up, having a regular review function.³⁸ This review was conducted by a Special Session of the General Assembly convened in June 1997, which produced a Programme for the Further Implementation of Agenda 21.³⁹ The Plan of Implementation adopted by the WSSD affirmed the need for the General Assembly to adopt sustainable development as a key element of the overarching framework for United Nations activities and its role in giving overall political direction to the implementation of Agenda 21 and its review.⁴⁰

Although its resolutions are not formally binding, the General Assembly has taken decisions which have created new bodies, convened conferences, endorsed principles and substantive rules, and recommended actions.⁴¹ Its contribution to the development of international environmental law is not to be underestimated. The General Assembly has long been involved in natural resource issues: the 1962 resolution on permanent sovereignty over natural resources was a landmark instrument in the development of international law, and has continued to influence debate and practice on the nature and extent of limitations imposed on states for environmental reasons.⁴² It was only in the late 1960s, however, that the General Assembly began to address the protection of the environment and the conservation of natural resources, and since 1968 it has adopted a large number of resolutions contributing directly or indirectly to the development of substantive legal obligations and new institutional arrangements.

³⁶ Annual Overview Report of the United Nations System Chief Executives Board for Co-ordination for 2008/09: E/2009/67.

³⁷ UN Charter, Arts. 10 and 13(1). ³⁸ Agenda 21, para. 38.9. ³⁹ A/RES/S-19/2.

⁴⁰ WSSD Plan of Implementation, para. 125. On follow-up activities, see A/RES/57/253, A/RES/57/270A, A/RES/57/270B, A/RES/62/189 and A/RES/63/212.

⁴¹ See E. Morgera, ‘United Nations Activities’, 41(1) *Environmental Policy and Law* 2 (2011), for a discussion of developments at the UNGA’s sixty-fifth session in 2010.

⁴² UNGA Res. 1803/62; see Chapter 6, p. 191, below.

The General Assembly's early interest in environmental matters related to the protection of the marine environment,⁴³ the relationship between environment and development,⁴⁴ and co-operation on shared natural resources.⁴⁵ The General Assembly convened the 1972 UN Conference on the Human Environment,⁴⁶ and created UNEP later that year.⁴⁷ Other bodies created by the General Assembly include the United Nations Development Programme (UNDP), the International Law Commission, UNCED and the Commission on Sustainable Development. Other relevant bodies established by the UN, which are conspicuous by their more limited actions, include the Committee on the Development and Utilisation of New and Renewable Sources of Energy.⁴⁸ At a more informal level, the General Assembly also created the Open-Ended Informal Consultative Process on Oceans and the Law of the Sea, established on the recommendation of the Commission on Sustainable Development to facilitate the General Assembly's annual review of ocean affairs.⁴⁹

Amongst the General Assembly resolutions on broad principles are those: declaring the historical responsibility of states for the preservation of nature;⁵⁰ noting the 1978 UNEP draft Code of Conduct;⁵¹ adopting the 1982 World Charter for Nature;⁵² requesting the UN Secretary General to prepare and regularly update a consolidated list of products whose consumption or sale has been banned, withdrawn, severely restricted or not approved by governments;⁵³ endorsing the Brundtland Report;⁵⁴ seeking to improve co-operation in the monitoring and assessment of environmental threats;⁵⁵ co-ordinating the activities of UN organisations with respect to fisheries policy;⁵⁶ declaring the fundamental values and principles of the international community in the Millennium Declaration;⁵⁷ and seeking to develop a holistic approach to sustainable development 'in harmony with nature'.⁵⁸ The General Assembly also convened UNCED,⁵⁹ the negotiations of the framework Convention on Climate Change,⁶⁰ the Convention on Drought and Desertification,⁶¹ the negotiations leading to the 1995 Fish Stocks Agreement,⁶² the WSSD,⁶³ the Millennium Summit⁶⁴ and, more recently, the 2012 Rio+20 summit.⁶⁵ In 1997, it adopted the Watercourses Convention.⁶⁶ The General Assembly has only on a few occasions adopted resolutions on substantive matters, examples being the recommendation that moratoria should be imposed on all large-scale pelagic driftnet fishing on the high seas,⁶⁷ and support for the precautionary approach to the conservation, management and exploitation of straddling fish stocks and highly migratory fish stocks.⁶⁸ The General Assembly's 1994 request for an advisory opinion on the legality of the use

⁴³ UNGA Res. 2467B (XXIII) (1968); UNGA Res. 2566 (XXIV) (1969); and UNGA Res. 3133 (XXVIII) (1973).

⁴⁴ UNGA Res. 2849 (XXVI) (1971). ⁴⁵ UNGA Res. 3129 (XXIX) (1974). ⁴⁶ UNGA Res. 2398 (XXII) (1968).

⁴⁷ UNGA Res. 2997 (XXVII) (1972). ⁴⁸ UNGA Res. 37/250 (1982).

⁴⁹ UNGA Res. 54/33 (1999); and UNGA Res. 57/33 (2002). ⁵⁰ UNGA Res. 35/8 (1980).

⁵¹ UNGA Res. 34/188 (1979). ⁵² UNGA Res. 37/7 (1982). ⁵³ UNGA Res. 37/137 (1982).

⁵⁴ UNGA Res. 42/187 (1987). ⁵⁵ UNGA Res. 44/224 (1989). ⁵⁶ UNGA Res. 59/25 (2004).

⁵⁷ UNGA Res. 55/2 (2000). The summit adopted goals and a series of time-bound targets for their achievement that have become known as the 'Millennium Development Goals'. One of these goals is to 'integrate the principles of sustainable development into country policies and programs and reverse the loss of environmental resources'.

⁵⁸ UNGA Res. 65/165 (2010). ⁵⁹ UNGA Res. 44/228 (1989). ⁶⁰ UNGA Res. 45/212 (1990).

⁶¹ UNGA Res. 47/188 (1992). ⁶² UNGA Res. 48/194 (1993); and UNGA Res. 50/24 (1995).

⁶³ UNGA Res. 55/199 (2000). See also A/RES/57/253 and A/RES/62/189 concerning implementation and follow-up of the WSSD Plan of Implementation.

⁶⁴ UNGA Res. 54/254. On follow-up activities, see A/RES/57/270A and A/RES/57/270B.

⁶⁵ UNGA Res. 64/236 (2010). ⁶⁶ UNGA Res. 52/229 (1997).

⁶⁷ UNGA Res. 44/225 (1989). See also Res. 45/197 (1990); Res. 46/215 (1991); and Res. 59/25 (2004).

⁶⁸ UNGA Res. 56/13 (2001).

of nuclear weapons resulted in the ICJ affirming the existence of a general obligation of states not to cause transboundary environmental harm.⁶⁹

UN Environment Programme (www.unep.org)

UNEP was established in 1972 by General Assembly Resolution 2997 following the Stockholm Conference, and it has played a significant catalytic role in the development of treaties and soft law rules. It is based in Nairobi and comprises a Governing Council of fifty-eight members elected by the General Assembly (which reports to the General Assembly through ECOSOC), a Global Ministerial Forum convened annually to review important and emerging environmental policy issues (with the Governing Council constituting the forum either in its regular or in its special sessions) and an Environment Secretariat headed by the UNEP Executive Director. Following UNCED and WSSD, it remains the only UN body exclusively dedicated to international environmental matters. Its constituent instrument commits it to promote international environmental co-operation; to provide policy guidance for the direction and co-ordination of environmental programmes within the UN system; to receive and review reports from UNEP's Executive Director on the implementation of the UN's environment programmes; to review the world environment situation; to promote scientific knowledge and information and contribute to technical aspects of environmental programmes; and to maintain under review the impact of national and international environmental policies on developing countries.⁷⁰

Despite its limited status as a UN programme (rather than a specialised agency or body) and its limited financial resources, few observers would dispute that UNEP has made an important contribution to the development and application of international environmental law. UNEP promoted the Regional Seas Programme, which now includes more than thirty environmental treaties and numerous regional 'Action Plans',⁷¹ including the Zambezi Agreement and Action Plan, and has been responsible for the development of several global environmental treaties, including the 1985 Vienna Convention and 1987 Montreal Protocol (ozone), the 1989 Basel Convention (hazardous waste), the 1992 Biodiversity Convention, the 2000 Biosafety Protocol, the 2001 POPs Convention, the 2003 Carpathians Convention and the 2010 Nagoya Protocol. UNEP provides secretariat functions to these treaties and performs a supportive role in relation to several others including the 1998 Chemicals Convention (with FAO). UNEP has also been responsible for sponsoring numerous soft law instruments, including the 1978 draft principles on shared natural resources, offshore mining and drilling;⁷² and instruments on land-based marine pollution;⁷³ the management of hazardous wastes;⁷⁴ environmental impact

⁶⁹ Chapter 6, p. 195, below.

⁷⁰ UNGA Res. 2997 (XXVII) (1972), section I, para. 2. See generally C. A. Petsonk, 'The Role of the United Nations Environment Programme in the Development of International Environmental Law', 5 *American University Journal of International Law and Policy* 351 (1990).

⁷¹ The Programme is administered by the UNEP Ocean and Coastal Areas Programme Activity Centre (OCA/PAC); see Chapter 9, pp. 352–60, below.

⁷² 1982 Guidelines Concerning the Environment Related to Offshore Mining and Drilling Within the Limits of National Jurisdiction, UNEP GC Dec. 10/14/(VI) (1982).

⁷³ 1985 Montreal Guidelines for the Protection of the Marine Environment Against Pollution from Land-Based Sources, adopted by UNEP GC Dec. 13/18(II) (1985); see Chapter 9 below.

⁷⁴ 1987 Cairo Guidelines for the Environmentally Sound Management of Hazardous Wastes, UNEP GC Dec. 14/30 (1987); see Chapter 12, p. 556, below.

assessment;⁷⁵ and the international trade in chemicals.⁷⁶ Current work includes the preparation of draft guidelines for the development of domestic legislation on: liability, response action and compensation for damage caused by activities dangerous to the environment;⁷⁷ and access to information, public participation and access to justice in environmental matters.⁷⁸ UNEP has focused attention on the inadequacy of existing international legal instruments in the field of the environment and has sought to further develop international environmental law in a variety of ways. Among its most important initiatives has been the regular convening of the experts group that led to the Programme for the Development and Periodic Review of Environmental Law (Montevideo Programme), as revised.⁷⁹ This continues to form the basis for many of its activities in the field of environmental law reform.

Resolutions of the UNEP Governing Council guide the development of UNEP's contribution to international law. UNEP Governing Council resolutions are supplemented by the activities of the Division of Environmental Law and Conventions, which together with the IUCN and FAO maintains the ECOLEX Internet database on environmental law.⁸⁰ The Division of Environmental Policy Implementation is responsible for issues relating to environmental governance, including compliance and enforcement. UNEP participates in the Global Environmental Monitoring System (GEMS) and collaborates in the operation of INFOTERRA.⁸¹ UNEP also established, on an experimental basis, the UN Centre for Urgent Environmental Assistance, focusing on assessment of and responses to man-made environmental emergencies.⁸² This has since merged with the activities of the UN Office for the Coordination of Human Affairs to form the Joint Environment Unit. Although UNEP was not significantly strengthened by UNCED or the WSSD, its increasingly focused and enhanced role is reflected in the decision granting it co-management responsibilities, with UNDP and the World Bank, of the Global Environment Facility.⁸³ The need to enhance and strengthen the policy and co-ordination role of UNEP was recognised by UNCED in Chapter 38 of Agenda 21. The priority areas for UNEP set out in Agenda 21 included: strengthening its 'catalytic role', through the development of techniques such as natural resource accounting and environmental economics; promoting environmental monitoring and assessment; co-ordinating scientific research; disseminating information and raising general awareness; further developing international environmental law, including promoting implementation and co-ordinating functions; further developing environmental impact assessment; and providing technical, legal and institutional advice.⁸⁴ UNEP's present strategic priorities include: strengthening the ability of countries, particularly developing countries, to integrate climate change responses into national development processes; ensuring resource efficiency; minimising threats to human well-being from the environmental causes and consequences of natural and man-made disasters; strengthening environmental governance arrangements; minimising the impact of harmful substances and hazardous wastes on the

⁷⁵ 1987 Goals and Principles of Environmental Impact Assessment, adopted by UNEP GC Dec. 14/25 (1987); see Chapter 14, p. 603, below.

⁷⁶ 1987 London Guidelines for the Exchange of Information on Chemicals in International Trade, adopted by UNEP GC Dec. 14/27 (1987) and amended by UNEP GC Dec. 15/30 (1989); see Chapter 11, p. 528, below.

⁷⁷ UNEP/Env.Law/IGM.Lia/2/2 (2009).

⁷⁸ UNEP/Env.Law/IGM.Acc/1/2 (2009).

⁷⁹ First adopted by UNEP GC Dec. 10/21 (1982), and most recently UNEP GC 25/CW/L.3 (2009); see Chapter 2, p. 37, above.

⁸⁰ www.ecolex.org. ⁸¹ Chapter 15, p. 645, below. ⁸² UNEP GC Dec. 16/9 (1991).

⁸³ Chapter 16, pp. 674–8, below. ⁸⁴ Agenda 21, paras. 38.21 and 38.22.

environment and people; and ensuring that countries use an ‘ecosystem approach’ of holistic land, water and living resources management to promote conservation and sustainable use of resources.⁸⁵

UN Development Programme (www.undp.org)

The UN General Assembly established the UN Development Programme (UNDP) in 1965.⁸⁶ It is the principal channel for multilateral technical and investment assistance to developing countries. It is active in all economic and social sectors and has addressed environmental issues since the early 1970s. UNDP receives voluntary contributions from participating states, as well as donor co-financing, and additional finance from the business sector, foundations and NGOs, and in 2010–11 had a total budget of approximately US\$828 million. The role of UNDP in environmental programmes has been strengthened by its participation in the management of important programmes and institutions, such as the UN-REDD programme,⁸⁷ and the Global Environment Facility. In 2001, UNDP adopted major reforms which realigned its global network around six thematic practice areas, including energy and environment, the focus of which was on building developing country capacity to protect natural resources wisely, acquire them affordably and use them sustainably. More recent strategic planning of the organisation seeks to respond to the goals of the Millennium Declaration, which sets benchmarks for development and poverty alleviation to be achieved by 2015.⁸⁸ The focus of UNDP in this respect is on areas such as democratic governance, poverty reduction, crisis prevention and recovery, HIV/AIDS and environment and energy. The latter area covers six priority goals: integrating environment into development; effective water and oceans governance; access to sustainable energy services; sustainable land management to combat desertification and land degradation; conservation and sustainable use of biodiversity; and national/sectoral policy and planning to control emissions of ozone-depleting substances and persistent organic pollutants.

UNDP’s role is to help developing countries strengthen their capacity to deal with these challenges at global, national and community levels, seeking out and sharing best practices, providing policy advice and linking partners through practical pilot projects on the ground. UNDP’s work in the area of energy and the environment is supported by a trust fund known as the Environment and Energy Thematic Trust Fund.⁸⁹ UNDP also administers several special-purpose funds that are relevant to environmental matters,⁹⁰ and is particularly active in translating international efforts into grass-roots programmes and activities.

⁸⁵ UNEP, *Medium Term Strategy 2010–2013*, UNEP/GCSS.X/8.

⁸⁶ UNGA Res. 2029 (XX) (1965).

⁸⁷ See www.un-redd.org. REDD activities are designed to reduce emissions from deforestation and forest degradation in developing countries.

⁸⁸ UNDP, *UNDP in Action 2009/2010: Delivering on Commitments* (2010), 2, 5–7; and see further UNDP, *Annual Report of the Administrator on the Strategic Plan to the Executive Board* (2010).

⁸⁹ From 2001 to 2004, the Energy and Environment Practice managed two separate Thematic Trust Fund (TTFs), one for Environment and one for Energy. As per Executive Board decision in 2004, the Energy TTF was merged with the TTF on Environment to form a new TTF on Environment and Energy as of the beginning of 2005.

⁹⁰ Including the UN Revolving Fund for Natural Resources Exploration, the UNDP Thematic Trust Fund on Energy for Sustainable Development, the UN Trust Fund for Sudano-Sahelian Activities and UNDP Trust Fund to Combat Desertification and Drought.

International Law Commission (www.un.org/law/ilc)

The International Law Commission (ILC) was established by the General Assembly in 1947 to promote the 'progressive development of international law and its codification'.⁹¹ Since 1981, it has had thirty-four members, who are persons of recognised competence in the field of international law elected by the UN General Assembly (the original membership of fifteen was raised to twenty-one in 1956 and to twenty-five in 1961). Since 1949, the ILC has worked on nearly forty topics. Apart from its important contribution to the development of general aspects of international law, including the law of treaties, state responsibility, and treaties between states and international organisations and between two or more international organisations, the ILC has also addressed environmental issues and contributed significantly to the development of international environmental law.⁹² Its draft Articles on the legal regime of the high seas and territorial waters led to the development of the 1958 Geneva Conventions, which include provisions that have influenced the development of environmental law. The ILC's draft Articles on the Law of the Non-Navigational Uses of International Watercourses, completed in 1994, led to the adoption of the 1997 Watercourses Convention. In 2001, the ILC adopted draft Articles on the Responsibility of States for Internationally Wrongful Acts and draft Articles on the Prevention of Transboundary Harm from Hazardous Activities.⁹³ In 2002, the ILC decided to resume work on the liability aspects of the long-standing topic of International Liability for Injurious Consequences Arising out of Acts Not Prohibited by International Law, and established a new project on Shared Natural Resources.⁹⁴ It adopted Draft Principles on the Allocation of Loss in the Case of Transboundary Harm arising out of Hazardous Activities in 2006,⁹⁵ and draft Articles on the Law of Transboundary Aquifers in 2008.⁹⁶ Since 2009, the ILC has continued work on the topic of shared natural resources in the field of oil and gas.⁹⁷

UN Commission on Sustainable Development (www.un.org/esa/dsd/csd/csd_index.shtml)

In 1992, pursuant to its mandate in Agenda 21, the General Assembly and ECOSOC established the UN Commission on Sustainable Development (CSD).⁹⁸ The CSD comprises representatives of fifty-three states elected by ECOSOC with due regard to equitable geographical distribution, and on the basis of representation at a high level including ministerial participation.⁹⁹ Other member states of the UN and its specialised agencies and other observers of the UN are able to participate as observers, and international organisations (including the EU) participate to

⁹¹ UNGA Res. 174 (II) (1947) (as subsequently amended), Art. 1. In this context, the 'progressive development of international law' means the 'preparation of draft conventions on subjects which have not yet been regulated by international law or in regard to which the law has not yet been sufficiently developed in the practice of States', and 'codification' means 'the more precise formulation and systematisation of rules of international law in fields where there already has been extensive state practice, precedent and doctrine': Art. 15.

⁹² See generally G. Hafner and H. Pearson, 'Environmental Issues in the Work of the ILC', 11 *Yearbook of International Environmental Law* 3 (2000).

⁹³ Chapter 17, pp. 702–27, below; Chapter 6, p. 200, below; and Chapter 15, p. 626, below.

⁹⁴ Chapter 17, p. 712, below.

⁹⁵ ILC, 'Report of the International Law Commission on the Work of Its Fifty-Eighth Session', 61 UN GAOR, UN Doc. A/61/10 (2006) (containing the Draft Principles).

⁹⁶ ILC, 'Report of the International Law Commission on the Work of Its Sixtieth Session', 63 UN GAOR, UN Doc. A/63/10 (2008) (containing the Draft Principles).

⁹⁷ ILC, 'Report of the International Law Commission on the Work of Its Sixty-First Session', 64 UN GAOR, UN Doc. A/64/10 (2009), Chapter VIII; 'Report of the International Law Commission on the Work of Its Sixty-Second Session', 65 UN GAOR, UN Doc. A/65/10 (2010), Chapter XII.

⁹⁸ UNGA Res. 47/191 (1992). ⁹⁹ Para. 6.

assist and advise the Commission in the performance of its functions; non-governmental organisations are also entitled to ‘participate effectively’ in the Commission’s work and contribute to its deliberations.¹⁰⁰ The CSD is assisted by a secretariat based in New York and meets annually in New York.¹⁰¹ The Commission makes recommendations to ECOSOC and, through it, to the General Assembly. The Commission’s objectives are to

ensure the effective follow-up of [UNCED], as well as to enhance international co-operation and rationalise the intergovernmental decision-making capacity for the integration of environment and development issues and to examine the progress of the implementation of Agenda 21 at the national, regional and international levels, fully guided by the principles of the Rio Declaration on Environment and Development and all other aspects of the Conference, in order to achieve sustainable development.¹⁰²

Following the WSSD in 2002, the CSD was also charged with providing policy guidance to follow up the Johannesburg Plan of Implementation.

The WSSD Plan of Implementation confirmed the CSD as the high-level forum for sustainable development issues within the UN and called for an enhanced role for the institution, including reviewing and monitoring progress in the implementation of Agenda 21 and fostering coherence of implementation, initiatives and partnerships.¹⁰³ The Plan of Implementation enumerated ten environmental functions for the CSD. From an international legal perspective, the most significant are those requiring it to review and evaluate progress and promote further implementation of Agenda 21; to focus on cross-sectoral aspects and to provide a forum for better integration of policies; to provide a forum for analysis and exchange of experience on measures that assist sustainable development planning, decision-making and the implementation of sustainable development strategies; and to take into account significant legal developments in the field of sustainable development.¹⁰⁴

The Commission can ‘receive and analyse relevant input from competent non-governmental organisations’, a function representing a compromise between those states which sought to deny NGOs any role in the activities of the Commission, and those states which envisaged NGOs providing regular information, and even complaints, along the lines of the procedures established by the UN Human Rights Committee.¹⁰⁵ In practice, the involvement of non-state actors is organised around the categories of ‘major groups’ recognised in Section III of Agenda 21.¹⁰⁶ The Commission is recognised as being open, transparent and accessible to non-state actors. The Commission’s other functions include: reviewing progress towards the UN target of 0.7 per cent of the gross national product of developed countries for official development

¹⁰⁰ Paras. 7 and 8.

¹⁰¹ UNGA Res. 47/191 provided for the possibility of future sessions being held in Geneva, but to date all substantive sessions have been held in New York.

¹⁰² Para. 2.

¹⁰³ Plan of Implementation, para. 145.

¹⁰⁴ Plan of Implementation, paras. 147 and 148.

¹⁰⁵ Para. 3(f). On human rights generally, see Chapter 18 below.

¹⁰⁶ The ‘major groups’ recognised in Agenda 21 are: women; children and youth; indigenous people; non-governmental organisations; local authorities; workers and trade unions; business and industry; scientific and technological communities; and farmers.

assistance; reviewing the adequacy of funding and mechanisms; enhancing dialogue with NGOs and other entities outside the UN system; and considering the results of reviews by the Secretary General of all the recommendations of UNCED.¹⁰⁷

The CSD initially divided its work programme into three areas: the first addressed financial resources and mechanisms, transfer of technology and other cross-sectoral issues; the second reviewed the implementation of Agenda 21, taking into account progress in the implementation of relevant environmental conventions; and the third was a high-level meeting to consider the implementation of Agenda 21 on an integrated basis, to consider emerging policy issues, and to provide the necessary political impetus to implement the decisions and commitments of UNCED.¹⁰⁸ At its eleventh session in 2003, in response to the WSSD Plan of Implementation, the Commission decided that its future multi-year programme of work would be organised on the basis of seven two-year cycles, with each cycle focusing on selected thematic clusters of issues.¹⁰⁹ The thematic clusters address the following themes: (in 2004/5) water, sanitation and human settlements; (in 2006/7) energy for sustainable development, industrial development, air pollution/atmosphere and climate change; (in 2008/9) agriculture, rural development, land, drought, desertification and Africa; (in 2010/11) transport, chemicals, waste management, mining and a ten-year framework of programmes on sustainable consumption and production patterns; (in 2012/13) forests, biodiversity, biotechnology, tourism and mountains; and (in 2014/15) oceans and seas, marine resources, small island developing states, and disaster management and vulnerability. During the final cycle in 2016/17, it is proposed to conduct an overall appraisal of implementation of Agenda 21, the Programme of Further Implementation of Agenda 21 and the Johannesburg Plan of Implementation. Each two-year implementation cycle includes review and policy years. The review year evaluates progress made in implementing sustainable development goals and identifies obstacles and constraints. The policy year decides on measures to speed up implementation and mobilise action to overcome identified obstacles and constraints.

Up until 2002, states were required to report annually on national measures contributing to the implementation of Agenda 21. Following the WSSD, the CSD reviewed reporting requirements and decided to reduce the reporting burden on countries. Countries must now provide national reports that reflect upon progress made in the themes under consideration in each CSD cycle.

Other subsidiary bodies established by the General Assembly

The General Assembly has established numerous other bodies with less direct responsibility for environmental issues. The UN Conference on Trade and Development (UNCTAD) was established by the General Assembly in 1964 as one of its organs.¹¹⁰ UNCTAD's functions include promoting international trade with a view to accelerating the economic growth of developing countries, and formulating and implementing principles and policies on international trade and the related problems of economic development. The eighth session of UNCTAD, held in 1992,

¹⁰⁷ Para. 3(c), (d), (e), (g) and (j). The resolution also recommends the Commission to promote the incorporation of the Rio Declaration and the Forest Principles, to monitor progress in technology transfer and to consider issues related to the provision of financial resources: paras. 4 and 5.

¹⁰⁸ Para. 14. ¹⁰⁹ E/CN.17/2003/6. ¹¹⁰ UNGA Res. 1995 (XIX) (1964); www.unctad.org.

adopted 'A New Partnership for Development: The Cartagena Commitment', which committed UNCTAD to a programme of ensuring that growth and development, poverty alleviation, rural development and the protection of the environment are 'mutually reinforcing'.¹¹¹ UNCTAD has convened international commodity conferences that have led to the negotiation and adoption of international agreements on individual commodities, under the Integrated Programme for Commodities.¹¹² The Bangkok Declaration and Programme of Action, adopted in February 2000 at the tenth session of UNCTAD,¹¹³ provide the main thrust for the current work of UNCTAD, as the focal point for the integrated treatment of development and the interrelated issues of trade, finance, investment, technology and sustainable development. The Bangkok Programme of Action made a number of specific recommendations on the focus of UNCTAD's work on trade and the environment.¹¹⁴ Other bodies created by the General Assembly which play a role in international environmental issues include: the United Nations Institute on Training and Research (UNITAR), whose role is to carry out training programmes and initiate research programmes;¹¹⁵ the UN Population Fund, which promotes awareness of the social, economic and environmental implications of national and international population problems;¹¹⁶ the Committee on Peaceful Uses of Outer Space (COPUOS) to review international co-operation in peaceful uses of outer space and study associated legal problems;¹¹⁷ the Scientific Committee on Effects of Atomic Radiation (UNSCEAR) to consider the effects of radiation levels and radiation on humans and their environment;¹¹⁸ and the United Nations Human Settlements Programme, known as UN-Habitat, which has a mandate to promote sustainable human settlements development in all countries with due regard for the carrying capacity of the environment in accordance with the Habitat Agenda adopted at the Habitat II Conference held in Istanbul in 1996.¹¹⁹ Additionally, several human rights treaties have established committees to monitor implementation that report on their activities to parties and to the General Assembly. Of particular relevance to environmental matters are the Human Rights Committee (established under the 1966 International Covenant on Civil and Political Rights) and the Committee on Economic, Social and Cultural Rights (established under the 1966 International Covenant on Economic, Social and Cultural Rights).¹²⁰ In November 2002, the Committee on Economic, Social and Cultural Rights issued a General Comment recognising

¹¹¹ TD (VIII)/MISC.4 (1992), para. 63. See also paras. 118–23 (environment and development finance, and resource allocation and sustainable development); paras. 151–5 (environment and trade); and para. 208 (commodities and sustainable development).

¹¹² Current international commodity agreements (ICAs) are for cocoa, coffee, cotton, grains, olive oil and table olives, sugar and tropical timber. In addition, there are international study groups (ISGs) on rubber, lead and zinc, nickel, copper, and on jute.

¹¹³ Bangkok Declaration (TD/387) and Bangkok Programme of Action (TD/386), both adopted 18 February 2000.

¹¹⁴ TD/386, para. 147.

¹¹⁵ UNGA Res. 1934 (XVIII) (1963); www.unitar.org.

¹¹⁶ UNGA Res. 2211 (XXI) (1966); ECOSOC Res. 1763 (LIV) (1966); renamed by UNGA Res. 42/430 (1987); www.unfpa.org.

¹¹⁷ UNGA Res. 1472 (XIV) (1959); the Committee's work has led to the negotiation and adoption of, *inter alia*, the 1967 Outer Space Treaty, the 1972 Space Liability Convention, the 1979 Moon Treaty and the 1992 Outer Space Principles: see Chapter 7, pp. 299–301, below; www.oosa.unvienna.org/COPUOS/copuos.html.

¹¹⁸ UNGA Res. 913 (X) (1955); www.unscear.org.

¹¹⁹ UNGA Res. 56/206 (2002) transformed the former Commission on Human Settlements and its secretariat, the United Nations Centre for Human Settlements (Habitat), including the United Nations Habitat and Human Settlements Foundation, into the United Nations Human Settlements Programme, to be known as UN-Habitat; www.unhabitat.org.

¹²⁰ Chapter 18, p. 777, below.

access to safe drinking water and sanitation as a human right, which stresses that water is a limited natural resource and a public commodity fundamental to life and health.¹²¹

Economic and Social Council (ECOSOC)

The Economic and Social Council (ECOSOC), which has fifty-four members serving three-year terms, has competence over international economic, social, cultural, educational and health issues, and related matters. Although it does not have an express mandate over environmental issues, it has addressed a broad range of topics that are directly related to the environment. ECOSOC makes recommendations with respect to the General Assembly, to the UN members and to specialised agencies, and it can also prepare draft conventions.¹²² ECOSOC has responsibility for co-ordinating the activities of specialised agencies, including UNEP and the CSD, and obtaining regular reports from them.¹²³ This co-ordinating function was underlined by UNCED, which called for ECOSOC to assist the General Assembly by ‘overseeing system-wide co-ordination, overview on the implementation of Agenda 21 and making recommendations’.¹²⁴

ECOSOC has contributed to the development of international environmental law. In 1946, it convened the 1949 UN Scientific Conference on the Conservation and Utilisation of Resources (UNCCUR), the predecessor to the Stockholm and Rio Conferences.¹²⁵ It receives the reports of the UNEP Governing Council and the CSD, which are passed on to the General Assembly. Since it does not have any committees that focus exclusively on the environment, it has not itself served as a forum for important decisions on these matters. It has, however, established subsidiary bodies relevant to the environment.

The five Regional Economic Commissions, established under Article 68 of the UN Charter, have contributed significantly to the development of international environmental law.¹²⁶ Under the auspices of the UN Economic Commission for Europe (UNECE),¹²⁷ regional treaties have been adopted on: transboundary air pollution;¹²⁸ environmental impact assessment;¹²⁹ industrial accidents;¹³⁰ protection of watercourses;¹³¹ public access and participation in environmental decision making;¹³² and protection and sustainable development of the Carpathians mountain region.¹³³ The UNECE Group of Senior Advisers to UNECE Governments on Environmental and Water Problems has also adopted numerous recommendations on water issues and biodiversity conservation, as well as a draft UNECE Charter on Environmental Rights and Obligations.¹³⁴ In 1995, the UNECE ministers adopted the Environmental Programme for

¹²¹ United Nations Committee on Economic, Social and Cultural Rights, General Comment No. 15, adopted 26 November 2002.

¹²² UN Charter, Art. 62(1) and (3). ¹²³ *Ibid.*, Arts. 63(2) and 64(1). ¹²⁴ Agenda 21, para. 38.10.

¹²⁵ *UN Yearbook 1946–47 (1947)*, 491; see Chapter 2, pp. 27–30, above.

¹²⁶ See UNGA Res. 46/235 (1991).

¹²⁷ ECOSOC Res. 36 (IV) (1947). Its members are the European members of the UN, the US, Canada, Switzerland and Israel; www.unece.org.

¹²⁸ 1979 LRTAP Convention and Protocols; see Chapter 7, pp. 246–57, below.

¹²⁹ 1991 Espoo Convention; see Chapter 14, pp. 610–13, below.

¹³⁰ See 1992 Industrial Accidents Convention; see Chapter 11, pp. 519–21, below.

¹³¹ 1992 Watercourses Convention; see Chapter 8, pp. 310–12, below.

¹³² 1998 Aarhus Convention; see Chapter 5, pp. 166–7, below; and Chapter 15, p. 625, below.

¹³³ Framework Convention on the Protection and Sustainable Development of the Carpathians (Kiev), 27 May 2003, in force 4 January 2006.

¹³⁴ Chapter 18, p. 779, note 26, below.

Europe, the first attempt to set long-term environmental priorities at the pan-European level and to make Agenda 21 more operational in the European context.¹³⁵ This programme has evolved into the 'Environment for Europe' process. In 2007, a significant reform process of 'Environment for Europe' was initiated in order to ensure that it remains relevant and valuable, and to strengthen its effectiveness as a mechanism for improving environmental quality and the lives of people across the region.¹³⁶

The other UN Regional Economic Commissions are responsible for Asia and the Pacific (ESCAP),¹³⁷ Africa (ECA),¹³⁸ Latin America and the Caribbean (ECLAC)¹³⁹ and West Asia.¹⁴⁰ Although these Regional Economic Commissions have not yet promoted the negotiation of international environmental agreements, they play some role in developing 'soft' instruments and the regional preparatory arrangements for international conferences and meetings.

In 2000, ECOSOC established the UN Forum on Forests with a mandate to promote the management, conservation and sustainable development of all types of forests and to strengthen long-term political commitment to this end.¹⁴¹ Over the first five years of its operation, in addition to its more generalised activities, the Forum was to work on a mandate for developing a legal framework for all types of forests. This work resulted in the adoption of a Non-Legally Binding Instrument on All Types of Forests on 28 April 2007. The instrument represents the first time member states have agreed to an international instrument for sustainable forest management. The instrument was adopted by the UN General Assembly on 17 December 2007.

Other relevant ECOSOC subsidiary bodies include: the Permanent Forum on Indigenous Issues, an expert advisory body with a mandate to consider indigenous issues relating to economic and social development, culture, the environment, education, health and human rights;¹⁴² the Commission on Population and Development;¹⁴³ the Commission on Social Development;¹⁴⁴ the Committee for Development Policy;¹⁴⁵ and the Committee of Experts on the Transport of Dangerous Goods and on the Globally Harmonized System of Classification and Labelling of Chemicals.¹⁴⁶ The now-disbanded Commission on Transnational Corporations

¹³⁵ Environmental Programme for Europe, adopted at the 1995 Sofia Ministerial Conference on Environment for Europe.

¹³⁶ By agreement of the ministers at the 2007 Belgrade Ministerial Conference on Environment for Europe: Sixth Ministerial Conference 'Environment for Europe', Belgrade (10–12 October 2007). See the Chair's Summary: ECE/BELGRADE.CONF/2007/9 (16 October 2007).

¹³⁷ ECOSOC Res. 37 (IV) (1947), as the Economic Commission for Asia and the Far East; the name was changed to ESCAP by ECOSOC Res. 1895 (LVII) (1974); www.unescap.org.

¹³⁸ ECOSOC Res. 671 (XXV) (1958) to develop 'concerted action for the economic development of Africa, including its social aspects, with a view to raising the level of economic activity and levels of living in Africa'; www.un.org/depts/eca.

¹³⁹ ECOSOC Res. 106 (VI) (1948); www.eclac.cl.

¹⁴⁰ ECOSOC Res. 1818 (LV) (1973) as the Economic Commission for West Asia; ECOSOC Res. 1985/69 to ESCWA; www.escwa.org.lb.

¹⁴¹ ECOSOC Res. 2000/35. ¹⁴² ECOSOC Res. 2000/22.

¹⁴³ ECOSOC Res. 150 (VII) (1948), Res. 87 (LVII) (1975) and Res. 1995/55.

¹⁴⁴ ECOSOC Res. 10 (II) (1946), Res. 1139 (XLI) (1966) and Res. 1996/7.

¹⁴⁵ ECOSOC Res. 1998/46, which renamed the former Committee on Development Planning originally established by ECOSOC Res. 1079 (XXXIX) (1965); www.un.org/esa/analysis/devplan.

¹⁴⁶ ECOSOC Res. 1999/65, which reconfigured the former Committee of Experts on the Transport of Dangerous Goods into the current Committee.

carried out useful work examining the relationship between transnational corporations and international environmental obligations.¹⁴⁷

Security Council

The Security Council, which has primary responsibility in the UN system for the maintenance of international peace and security,¹⁴⁸ has only recently addressed international environmental issues. Its five permanent members and ten members elected for a period of two years can adopt legally binding resolutions, which give it the potential to develop a significant role.¹⁴⁹

The Security Council's first foray into environmental affairs was in 1991, when it adopted a resolution holding Iraq liable for, *inter alia*, damage to the environment resulting from the invasion of Kuwait.¹⁵⁰ In the following years it met for the first time at the level of heads of government or state, and adopted a declaration that affirmed that 'non-military sources of instability in the economic, social, humanitarian and ecological fields have become threats to peace and security'.¹⁵¹ In recognising the link between environment and security, the Security Council opened the door to further consideration of significant environmental matters, including environmental emergencies and their consequences.¹⁵² In 2001, the Security Council addressed the link between the illegal exploitation of natural resources and armed conflict in Africa.¹⁵³ More recently, the Security Council has examined the implications of climate change for security, holding its first ever debate on the impacts of climate change on peace and security in 2007.¹⁵⁴

Trusteeship Council

The Trusteeship Council assists the Security Council and the General Assembly in performing the UN's functions under the International Trusteeship System of Chapter XII of the UN Charter. The Trusteeship Council has one administering power (US) and four non-administering powers (China, France, Russia and the United Kingdom). Its basic objectives include the promotion of political, economic, social and educational advancement of the inhabitants of trust territories, without specifying environmental objectives.¹⁵⁵ Although the Trusteeship Council has not played a direct role in the development of international environmental law, its obligation to respect these basic objectives provides a role in natural resource issues, including conservation. The role of the Trusteeship Council was therefore indirectly at issue in the case concerning *Certain Phosphate Lands in Nauru*, where Nauru asked the ICJ to declare Australia's

¹⁴⁷ ECOSOC Res. 1913 (LVII) (1974). ¹⁴⁸ UN Charter, Art. 24(1). ¹⁴⁹ Art. 25.

¹⁵⁰ Security Council Res. 687/1991 (1991).

¹⁵¹ Note by the President of the Security Council on 'The Responsibility of the Security Council in the Maintenance of International Peace and Security', UN Doc. S/23500, 31 January 1992, 2.

¹⁵² Lorraine Elliott, 'Imaginative Adaptations: A Possible Environmental Role for the UN Security Council', 24(1) *Contemporary Security Policy* 47 (2003).

¹⁵³ Report of the Panel of Experts on the Illegal Exploitation of Natural Resources and Other Forms of Wealth of the Democratic Republic of the Congo: S/2001/357 and Security Council Res. S/RES/1355 (2001) and S/RES/1376 (2001).

¹⁵⁴ 5663rd meeting. See Francesco Sindico, 'Climate Change – A Security (Council) Issue?', 1 *Carbon and Climate Law Review* 26–31 (2007); Trina Ng, 'Safeguarding Peace and Security in Our Warming World: A Role for the Security Council', 15(2) *Journal of Conflict and Security Law* 275 (2010).

¹⁵⁵ See UN Charter, Art. 76.

responsibility for breaches of international law relating to phosphate mining activities, including, *inter alia*, breaches of Article 76 of the UN Charter and the Trusteeship Agreement between Australia, New Zealand and the United Kingdom.¹⁵⁶

As the number of international trusteeships steadily declined, alternative functions for the Trusteeship Council were proposed. One idea, put forward by President Gorbachev of the Soviet Union in 1990, was to expand the trusteeship function to include responsibility for environmental protection in areas beyond national jurisdiction, the global commons. Although the suggestion received widespread attention, it was rejected at UNCED, and has not since been revived. When the last remaining UN trust territory, Palau, achieved independence in 1994, the Trusteeship Council suspended operations and amended its rules of procedure to drop the obligation to meet annually. The Council now meets only as occasion requires, by its decision or the decision of its President, or at the request of a majority of its members or the General Assembly or the Security Council.

International Court of Justice (www.icj-cij.org)

The environmentally related activities of the International Court of Justice (ICJ) are considered in more detail in Chapter 5 below. Through its judgments and advisory opinions, the ICJ has contributed to the development of international environmental law through general principles and rules elaborated in non-environmental cases and in cases concerned directly with environmental issues.¹⁵⁷ Cases in the past two decades raising significant environmental issues include the *Gabčíkovo-Nagymaros Project (Hungary/Slovakia)* case, the *Pulp Mills* case, the *Advisory Opinion on the Legality of the Use or Threat of Use of Nuclear Weapons* and the *Request for an Examination of the Situation in Accordance with Paragraph 63 of the Court's Judgment of 20 December 1974 in the Nuclear Tests case (New Zealand v. France)*. In July 1993, the ICJ established a seven-member Chamber for Environmental Matters, but this was disbanded in 2006.

United Nations specialised agencies and related organisations

The UN specialised agencies and related international organisations were established before environmental matters became an issue for the international community. It is therefore not surprising that none was designed to deal with, or given express competence over, environmental matters, and that consequently the environment has tended to play a somewhat peripheral role in their affairs. Since the specialised agencies were designed to deal with issues of concern to the international community in the post-war period, there are numerous significant gaps in their competence, including in particular energy, mining and transport matters. These gaps have been highlighted by the problem of climate change, which cuts across, and interconnects, many sectoral issues such as energy, transport, food security and fisheries management.

Food and Agriculture Organization (www.fao.org)

The Food and Agriculture Organization (FAO), which is based in Rome, was established in 1945 to collect, analyse, interpret and disseminate information on nutrition, food and agriculture

¹⁵⁶ Chapter 11, pp. 549–50, below.

¹⁵⁷ See Timothy Stephens, *International Courts and Environmental Protection* (2009).

(including fisheries, marine products, forestry and primary forest products), to promote national and international action, and to provide technical and other assistance.¹⁵⁸ The FAO is the only specialised agency with an environmental mandate in its constitution, namely, to promote the ‘conservation of natural resources and the adoption of improved methods of agricultural production’.¹⁵⁹ The FAO Conference and Council may initiate and approve conventions and agreements on food and agriculture,¹⁶⁰ and the FAO has developed soft law, including the operation with WHO of the World Food Programme,¹⁶¹ the operation of a Global System on Plant Genetic Resources,¹⁶² and the adoption and operation of the 1985 International Code of Conduct on the Distribution and Use of Pesticides.¹⁶³ The FAO also established (with WHO) the Codex Alimentarius Commission (discussed below). Additionally, the FAO has sponsored numerous international treaties¹⁶⁴ and created a number of international organisations in, for example, the fields of fisheries,¹⁶⁵ plant protection,¹⁶⁶ forest research¹⁶⁷ and locust control.¹⁶⁸ It has addressed forest issues, and in 1985 established the Tropical Forestry Action Plan.¹⁶⁹ The FAO convenes international conferences which have led to the adoption and development of international action plans and strategies, some of which have subsequently led to binding international obligations. Examples include the 1981 World Soil Charter,¹⁷⁰ the 1984 World Soil Policy and Plan of Action,¹⁷¹ the 1991 Strategy and Agenda for Action for Sustainable Agriculture and Rural Development,¹⁷² the 1995 World Food Summit, and the 2009 World Summit on Food Security. International plans of action of importance to the environment are the 1999 Plans of Action on seabirds, sharks and fishing capacity and the 2001 Plan of Action on illegal, unreported and unregulated fishing.¹⁷³ In 2008, the FAO Conference adopted an Immediate Plan of Action

¹⁵⁸ Constitution, Art. I. ¹⁵⁹ Art. I(2)(c). ¹⁶⁰ Art. XIV.

¹⁶¹ FAO Conference Res. 1/16 of 24 November 1961; and UNGA Res. 1714 (XVI) (1961).

¹⁶² Chapter 10, p. 507, below. ¹⁶³ Chapter 11, pp. 528–9, below.

¹⁶⁴ Eighteen such conventions or agreements have been approved under Art. XIV of the FAO Constitution, for example, the 1998 Chemicals Convention (see Chapter 11, pp. 530–2, below) and the 2001 Plant Genetic Resources Treaty (see Chapter 10, p. 508, below).

¹⁶⁵ 1949 Agreement for the Establishment of a General Fisheries Council for the Mediterranean; 1969 Convention on the Conservation of the Living Resources of the Southeast Atlantic; 2001 Convention on the Conservation and Management of Fishery Resources in the South East Atlantic Ocean; 2006 Southern Indian Ocean Fisheries Agreement; 2009 Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing; 2009 Agreement on the Central Asian and Caucasus Regional Fisheries and Aquaculture Commission.

¹⁶⁶ 1951 Convention for the Establishment of the European and Mediterranean Plant Protection Organization; 1951 International Plant Protection Convention; 1956 Plant Protection Agreement for the South East Asia and Pacific Region; 2001 Treaty on Plant Genetic Resources.

¹⁶⁷ 1959 Agreement for the Establishment on a Permanent Basis of a Latin American Forest Research and Training Institute; 2000 Desert Locust Commission.

¹⁶⁸ 1963 Agreement for the Establishment of a Commission for Controlling the Desert Locust in the Eastern Region of Its Distribution Area in South–West Asia; 1965 Agreement for the Establishment of a Commission for Controlling the Desert Locust in the Near East; and 1970 Agreement for the Establishment of a Commission for Controlling the Desert Locust in Northwest Africa.

¹⁶⁹ FAO’s leadership of this Action Plan has attracted serious criticism and the Plan itself has declined in importance.

¹⁷⁰ Chapter 10, p. 500, below. ¹⁷¹ *Ibid.* ¹⁷² Chapter 11 below.

¹⁷³ FAO, *International Plan of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries International Plan of Action for the Conservation and Management of Sharks* (1999); FAO, *International Plan of Action for the Management of Fishing Capacity* (1999); and FAO *International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing* (2001).

to implement a reform agenda within the organisation.¹⁷⁴ The Plan is intended to equip FAO to deal with new challenges, including those posed by climate change and bioenergy/biofuels production.

United Nations Educational, Scientific and Cultural Organization (www.unesco.org)

The United Nations Educational, Scientific and Cultural Organization (UNESCO), which is based in Paris, was established in 1945 to contribute to peace and security by promoting international collaboration through education, science and culture, including the conservation and protection of historic and scientific monuments and recommending necessary international conventions.¹⁷⁵ UNESCO played a role in convening and hosting the 1948 UNCCUR and has established institutions and programmes such as the Intergovernmental Oceanographic Commission in 1960, and the Man and the Biosphere Programme (under which the Madrid Action Plan for Biosphere Reserves 2008–2013 was adopted).¹⁷⁶ UNESCO was responsible for the adoption of, and performs secretariat functions for, the 1971 Ramsar Convention, the 1972 World Heritage Convention¹⁷⁷ and the 2001 Convention on the Protection of Underwater Cultural Heritage.¹⁷⁸

International Maritime Organization (www.imo.org)

The International Maritime Organization (IMO, formerly known as the Intergovernmental Maritime Consultative Organization) is based in London and was established in 1948. Its objectives, which originally did not refer to marine pollution, include: the provision of machinery for co-operation among governments on regulation and practice relating to technical matters of all kinds affecting shipping engaged in international trade; encouraging the general adoption of the highest practical standards in matters concerning maritime safety; and ensuring the efficiency of navigation and the prevention and control of marine pollution from ships.¹⁷⁹ IMO activities relating to marine pollution are mainly carried out through the Legal Committee and the Marine Environment Protection Committee (MEPC), established by the IMO Assembly in 1975.¹⁸⁰ The MEPC has broad powers to consider any matter to do with the prevention and control of marine pollution from ships, including the power to propose regulations and develop recommendations and guidelines.¹⁸¹ The IMO has supported the negotiation and conclusion of a number of important environmental treaties, for which it provides secretariat functions. These relate to oil pollution,¹⁸² pollution from ships,¹⁸³ civil liability and

¹⁷⁴ FAO Conference Res. 1/2008, *Report of the Thirty-Fifth (Special) Session of the Conference*, C 2008/REP (Rome, 18–21 November 2008).

¹⁷⁵ Constitution, Art. I(2)(c).

¹⁷⁶ See generally B. Von Droste, 'UNESCO's Man and the Biosphere Programme: Two Decades of Sustainable Development', 2 *Colorado Journal of International Environmental Law and Policy* 295 (1991); see also Chapter 10, p. 456, below; and Chapter 2, p. 30, above.

¹⁷⁷ Chapter 10, pp. 510–11, below. ¹⁷⁸ Chapter 10, p. 509, below.

¹⁷⁹ Constitution, Art. 1(a), as amended.

¹⁸⁰ Assembly Res. A.358 (1975); L. de la Fayette, 'The Marine Environment Protection Committee: Conjunction of the Law of the Sea and International Environmental Law', 16 *International Journal of Marine and Coastal Law* 163 (2001).

¹⁸¹ Constitution, Part IX, Arts. 38–42.

¹⁸² 1954 International Convention for the Prevention of Pollution of the Sea by Oil; 1969 High Seas Intervention Convention (and a 1973 Protocol); see Chapter 9, pp. 348 and 381–5, below.

¹⁸³ MARPOL 73/78; see Chapter 9, pp. 381–5, below; 2001 International Convention on the Control of Harmful Anti-Fouling Systems on Ships.

compensation for oil pollution damage,¹⁸⁴ emergency preparedness,¹⁸⁵ control and management of ships' ballast water and sediments,¹⁸⁶ and the environmentally sound recycling of ships.¹⁸⁷ The IMO also acts as secretariat to the 1972 London Convention and has contributed to soft law by adopting non-binding guidelines, standards and codes relating to maritime safety and the protection of the marine environment.¹⁸⁸

International Labour Organization (www.ilo.org)

The purposes of the International Labour Organization (ILO), which is based in Geneva and was originally established in 1919, include the protection of workers against sickness, disease and injury arising out of employment, and the adoption of humane conditions of labour.¹⁸⁹ To this end, the ILO has adopted a number of conventions which set international standards for environmental conditions in the workplace, including occupational safety and health,¹⁹⁰ as well as numerous non-binding recommendations and guidelines.¹⁹¹

World Meteorological Organization (www.wmo.int)

The World Meteorological Organization (WMO) was established in 1947 and is based in Geneva. Its purposes are: to facilitate worldwide co-operation in meteorological observation and hydrological and other geophysical observations related to meteorology; to promote the establishment and maintenance of meteorological centres and the rapid exchange of meteorological information; to promote the standardisation and uniform publication of observations and statistics; and to encourage research and training.¹⁹² The WMO operates the World Weather Watch Programme,¹⁹³ the World Climate Programme¹⁹⁴ and the Atmospheric Research and

¹⁸⁴ 1992 CLC (Chapter 17, pp. 746–8, below); 1992 Fund Convention (Chapter 17, pp. 748–55, below); 1996 HNS Convention and Protocol (Chapter 17, pp. 759–60, below); and the 2001 Bunker Liability Convention (Chapter 17, p. 755, below).

¹⁸⁵ 1990 Oil Pollution Preparedness Convention; 2000 Protocol on Preparedness, Response and Co-operation to Pollution Incidents by Hazardous and Noxious Substances; see Chapter 9, pp. 393–4, below.

¹⁸⁶ International Convention for the Control and Management of Ships' Ballast Water and Sediments (London), 13 February 2004, not in force, IMO Doc. BWM/CONF/36; Chapter 9, p. 385, below.

¹⁸⁷ International Convention for the Safe and Environmentally Sound Recycling of Ships (Hong Kong), 11 May 2009, not in force, IMO Doc. SR/CONF/45; Chapter 9, p. 385, below.

¹⁸⁸ See e.g. the 1997 Guidelines to Assist Flag States in the Implementation of IMO Instruments, Assembly Res. A.847 (20); 2002 Revised GESAMP Hazard Evaluation Procedure for Chemical Substances Carried by Ships (adopted by IMO/FAO/UNESCO-IOC/WMO/WHO/IAEA/UN/UNEP Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection, GESAMP Reports and Studies No. 64); 2005 Revised Guidelines for the Identification and Designation of Particularly Sensitive Sea Areas (PSSAs), Assembly Res. A.982(24) (updating the 2002 Guidelines for the Designation of Special Areas under MARPOL 73/78 and Guidelines for the Identification and Designation of Particularly Sensitive Sea Areas, Assembly Res. A.927(22)). There have recently been calls for the IMO to release guidelines on radiation: see IMO, 23(3) *Current Awareness Bulletin* 14 (March 2011), available at www.imo.org/KnowledgeCentre/CurrentAwarenessBulletin/Documents/CAB%20173%20March%202011.pdf.

¹⁸⁹ Constitution, Preamble.

¹⁹⁰ 1960 Ionising Radiations Convention; 1971 Benzene Convention; 1977 Occupational Hazards Convention; 1981 Occupational Safety Convention; 1985 Occupational Health Services Convention; 1986 Asbestos Convention; 1990 Chemicals Convention; 1993 Prevention of Major Industrial Accidents Convention; and 2001 Safety and Health in Agriculture Convention. See Chapter 11, pp. 532–6, below.

¹⁹¹ *Fundamental Principles of Occupational Health and Safety* (2008, 2nd edn); 2009 ILO Code of Practice on Safety and Health in Underground Coal Mines; and 2005 ILO Code of Practice on Safety and Health in Ports.

¹⁹² Constitution, Art. 2.

¹⁹³ The World Weather Watch provides up-to-the-minute worldwide weather information through member-operated observation systems and telecommunications links.

¹⁹⁴ The objectives of the World Climate Programme are: to use existing climate information to improve economic and social planning; to improve the understanding of climate processes through research; and to detect and warn governments of impending climate variations or changes which may significantly affect human activities.

Environment Programme. The World Climate Programme supports the Global Climate Observing System (GCOS), which is sponsored jointly by the WMO, UNESCO's International Oceanographic Commission, UNEP and the International Council for Science (ICSU). In 1988, the WMO, with UNEP, established the Intergovernmental Panel on Climate Change (IPCC), an intergovernmental body providing scientific, technical and socio-economic advice on climate change issues, and has contributed to the establishment of the legal regimes for ozone depletion, climate change and transboundary atmospheric pollution. The Atmospheric Research and Environment Programme incorporates the Global Atmosphere Watch (GAW), which provides scientific data and information on the chemical composition of the atmosphere, its natural and anthropogenic change, and interactions between the atmosphere, the oceans and the biosphere. The GAW is the principal vehicle for the WMO's involvement in the GCOS.

International Civil Aviation Organization (www.icao.int)

The International Civil Aviation Organization (ICAO), based in Montreal, was established in 1947. Its objectives include the promotion of safe, efficient and economical air transport and generally the development of all aspects of international civil aeronautics.¹⁹⁵ To that end, it has adopted several relevant instruments, including international standards and recommended practices on aircraft engine emissions and on noise pollution.¹⁹⁶ Like many of the UN specialised agencies, the ICAO is playing an increasing role in climate change governance, with contributions particularly in the area of regulating emissions from international aircraft.¹⁹⁷

UN Industrial Development Organization (www.unido.org)

The UN Industrial Development Organization (UNIDO), based in Vienna, was established in 1966.¹⁹⁸ Its objectives include the promotion of sustainable industrial development in developing countries and economies in transition, poverty alleviation and the improvement of living conditions in the world's poorest countries.¹⁹⁹ In recent years, UNIDO has assumed an enhanced role in the sustainable development area by focusing its activities on poverty reduction, inclusive globalisation and environmental sustainability. Through its Energy and Climate Change Branch it has played an important role in promoting energy efficiency and the uptake of renewable energy technologies.

World Health Organization (www.who.int)

The World Health Organization (WHO) was established in 1946 to ensure 'the attainment by all peoples of the highest possible level of health'.²⁰⁰ It is based in Geneva. The WHO Assembly can adopt conventions or agreements for any matters within the competence of the organisation,²⁰¹ as well as regulations on sanitary and quarantine requirements, and on the standards,

¹⁹⁵ Constitution, Art. 44(d) and (i). ¹⁹⁶ Arts. 37 and 38; see Chapter 7 below.

¹⁹⁷ Following the publication of the IPCC's *Special Report on Aviation and the Global Atmosphere* (1999), the ICAO Assembly has urged states to promote scientific research in areas of uncertainty identified in the report, and has requested the ICAO Council to continue its close co-operation with the IPCC in addressing the problems and uncertainties in this area: ICAO A/Res. A35-5 (2001); ICAO A/Res. A36-22.

¹⁹⁸ UNGA Res. 2152 (XXI) (17 November 1966).

¹⁹⁹ UNIDO, *Introducing UNIDO: Fact Sheet* (2009), available at www.unido.org/fileadmin/user_media/UNIDO_Header_Site/About/IntrodUNIDO_July2009.pdf; see also UNIDO, *Strategic Long-Term Vision Statement* GC.11/8 (24 May 2005).

²⁰⁰ Constitution, Art. 1. ²⁰¹ Art. 19.

advertising and labelling of biological, pharmaceutical and similar products placed on international markets.²⁰² It may also make recommendations,²⁰³ and non-binding standards have been adopted for drinking water and air quality.²⁰⁴ In 1990, the WHO established the WHO Commission on Health and Environment, which played a key role in ensuring that environmental health considerations were incorporated in Agenda 21. In 1993, the WHO Assembly requested an advisory opinion from the International Court of Justice on the legality of the use of nuclear weapons, in the context of its work on the effects of nuclear weapons on health and the environment.²⁰⁵

The WHO, together with the FAO, is responsible for the Food Standards Programme, which is administered by the Codex Alimentarius Commission.²⁰⁶ The Codex Alimentarius Commission was established in 1963 with the purpose of making proposals to the FAO and the WHO on all matters relating to the implementation of the Joint FAO/WHO Food Standards Programme, the purposes of which are: to protect the health of consumers and to ensure fair practices in the food trade; to promote the co-ordination of all food standards work undertaken by international governmental and non-governmental organisations; to guide the preparation of and finalise standards and, after acceptance by governments, to publish them in a Codex Alimentarius either as regional or worldwide standards; and to amend published standards in the light of developments.²⁰⁷ Over 180 states are members of the Commission, which has adopted commodity standards and general standards for a very large number of foodstuffs, including in relation to additives, pesticide residues, genetically modified foods and labelling. The Commission has also developed influential Working Principles for Risk Analysis based upon a three-tiered process of risk assessment, risk management and risk communication.²⁰⁸ In varying degrees, the Codex standards are recognised and applied in international trade regimes, including by the WTO, NAFTA, the EU, APEC and MERCOSUR.

International Atomic Energy Agency (www.iaea.org)

The International Atomic Energy Agency (IAEA), which is based in Vienna, was established in 1956 to develop the peaceful uses of atomic energy.²⁰⁹ Over time, the IAEA has taken on a more regulatory function with respect to nuclear energy, through the development of health and safety standards.²¹⁰ The IAEA is autonomous and not formally a specialised agency of the United Nations, but sends reports to the General Assembly and other UN organs. It is the only member of the UN 'family' dedicated to the energy sector, although its dual promotional and regulatory function appears anomalous.²¹¹ Under the 1963 Treaty on the Non-Proliferation of Nuclear Weapons, the IAEA has responsibilities for safeguarding nuclear materials in non-nuclear-weapon

²⁰² Art. 21; 1969 International Health Regulations. ²⁰³ Art. 23.

²⁰⁴ 2008 Guidelines for Drinking Water Quality, www.who.int/water_sanitation_health/dwq/fulltext.pdf; and 2005 Air Quality Guidelines, www.who.int/phe/health_topics/outdoorair_aqg/en.

²⁰⁵ Chapter 5, p. 158, below (the Court's opinion was that the request fell outside the competence of the organisation).

²⁰⁶ www.codexalimentarius.net; Chapter 11, p. 523, below.

²⁰⁷ Statute, Art. 1.

²⁰⁸ FAO/WHO Food Standards Programme, *Codex Alimentarius Commission: Procedural Manual* (2010, 19th edn), 86–91.

²⁰⁹ Constitution, Art. II. ²¹⁰ Chapter 11, pp. 537–9, below.

²¹¹ In 2009, however, a new International Renewable Energy Agency was established to promote the widespread and increased adoption and sustainable use of all forms of renewable energy. Its founding statute had attracted sixty-nine ratifications as at 31 March 2011 but is not yet in force.

states parties to it. The IAEA has also sponsored, and provides secretariat functions for, international conventions relating to liability,²¹² the protection of nuclear material,²¹³ nuclear accidents,²¹⁴ the safety of nuclear installations,²¹⁵ and the safety of spent fuel and radioactive waste management.²¹⁶ The IAEA has also adopted numerous non-binding standards and recommendations on basic safety standards relating to, *inter alia*, radioactive discharges into the environment²¹⁷ and the disposal and transboundary movement of radioactive wastes.²¹⁸

World Bank, International Monetary Fund, and World Trade Organization

The World Bank (comprising the International Bank for Reconstruction and Development (IBRD), the International Development Association (IDA) and the International Finance Corporation (IFC)), the International Monetary Fund (IMF) and the World Trade Organization (WTO) are central players in international environmental law. They and their activities are considered in Chapters 16 and 19 below.

Co-operative arrangements

Apart from the subsidiary bodies of the specialised agencies which are referred to above, two other bodies merit special mention on account of their contribution to the negotiation and adoption of international legal instruments: the Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP)²¹⁹ and the Intergovernmental Panel on Climate Change (IPCC).²²⁰ GESAMP (which is jointly run by the UN, UNEP, FAO, UNESCO, WHO, WMO, IMO, IAEA, UNIDO and UNDP) has a mandate to conduct research and carry out assessments on the state of the marine environment, and to make appropriate recommendations, and has produced numerous reports since 1982.²²¹ In 2001, following completion of an in-depth review of GESAMP, major changes to the operation of the organisation were recommended in order to establish it as 'the world's first choice for marine protection advice and guidance'.²²² It is envisaged that the 'new' GESAMP will periodically publish consensus statements on issues regarding the degradation of the marine environment.

The IPCC was established to assess the available scientific information on climate change, to assess the environmental and socio-economic impacts of climate change, and to formulate response strategies. Its efforts are organised under three working groups (Physical Scientific

²¹² 1963 IAEA Civil Liability Convention, Protocol and Supplementary Convention; Chapter 17, pp. 742–5, below.

²¹³ 1980 Convention on the Physical Protection of Nuclear Material, as amended; Chapter 11, p. 537, below.

²¹⁴ 1986 Convention on Early Notification of a Nuclear Accident, and the 1986 Convention on Assistance in the Event of Nuclear Accident or Radiological Emergency; Chapter 11, p. 537, below.

²¹⁵ 1994 Convention on Nuclear Safety; Chapter 11, pp. 538–9, below.

²¹⁶ Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (1997).

²¹⁷ Regulatory Control of Radioactive Discharges to the Environment (2000), Safety Guide No. WS-2-G.3.

²¹⁸ Radioactive Waste Safety Standards, GSR Part 5 (2009) (supersedes WS-R-2, Predisposal Management of Radioactive Waste, Including Decommissioning (2000)); WS-R-1, Near Surface Disposal of Radioactive Waste (1999) (draft safety standard DS354, Disposal of Radioactive Waste, will supersede WS-R-1 on publication); Regulations for Safe Transport of Radioactive Waste, TS-R-1 (2009) (supersedes ST-1 (1996) and Safety Series No. 6 (1985) and No. 80).

²¹⁹ www.gesamp.org.

²²⁰ www.ipcc.ch.

²²¹ Most recently, 'Pollution in the Open Oceans: A Review of Assessments and Related Studies', GESAMP Reports and Studies No. 79 (2009); and 'Assessment and Communication of Environmental Risks in Coastal Aquaculture', GESAMP Reports and Studies No. 76 (2008). See also Chapter 9, pp. 342–7, below.

²²² See 'The New GESAMP: Science for Sustainable Oceans', www.gesamp.org/data/gesamp/files/media/Publications/GESAMP_The_New_GESAMP_Science_for_Sustainable_Oceans/gallery_1043/object_1043_large.pdf.

Aspects; Impacts, Vulnerability and Adaptation; and Mitigation) and a task force (on Greenhouse Gas Inventories). It has produced four Assessment Reports on Climate Change (1990, 1995, 2001 and 2007), contributing to the ongoing intergovernmental negotiations around the 1992 Climate Change Convention, its 1997 Kyoto Protocol, and post-2012 arrangements. Drafting of the IPCC's Fifth Assessment Report is underway, due in 2014. The IPCC has also produced a large number of special and methodological reports and technical papers on particular aspects of climate change and mitigation strategies, such as aviation, carbon capture and storage and land use.

Other global institutions

Beyond the activities of the UN and specialised agencies, in law of the sea matters, the 1982 UN Convention on the Law of the Sea (UNCLOS) established two new international institutions which address environmental aspects of the law of the sea. These are the International Tribunal for the Law of the Sea (ITLOS), which has made a significant contribution to maritime environmental law,²²³ and the International Seabed Authority, which has promulgated regulations that establish environmental conditions for deep seabed prospecting.²²⁴

Regional and sub-regional organisations

Regional organisations outside the UN system also play an important role in the development of international environmental law. In application of the principle that different environmental standards could be applied to different geopolitical regions, the role of regional organisations has increased significantly over the past decade. They are frequently able to provide the flexibility needed to accommodate special regional concerns, as was recognised by the Brundtland Report's call for regional organisations to do more to integrate environmental concerns into their activities. The regional rules of international environmental law and institutional arrangements are particularly well developed in the Arctic and Antarctic regions; accordingly, organisations related to those developments are considered in more detail in Chapter 13 below.

Some international organisations are not regional, in a strict geographic sense, and are not UN agencies, bodies or programmes. These include the Commonwealth Secretariat, the Organization of the Islamic Conference, the League of Arab States (whose members are in Africa and Asia) and the Organization of Petroleum Exporting Countries. Although each maintains an interest in environmental matters, none has adopted rules of international environmental law or ensured their enforcement, although they provide assistance to states on environmental matters.

Europe and the OECD

In the European context, apart from the EU, three organisations play an important role in the development of regional rules: the Council of Europe, the Organization for Economic Co-operation and Development (OECD) and the Conference on Security and Co-operation in Europe (CSCE). More recently, the European Bank for Reconstruction and Development (EBRD) has emerged as an innovative contributor to European environmental law and policy; it is noteworthy, in a broader global context, as the first multilateral development bank to have a constituent instrument which expressly requires it to fulfil environmental protection and sustainable development objectives.²²⁵

²²³ Chapter 5, pp. 175–7, below. ²²⁴ Chapter 9, p. 388, below.

²²⁵ Chapter 16, pp. 673–4, below.

OECD (*www.oecd.org*)

The OECD (formerly the Organization for European Economic Co-operation, OEEC) was established in 1960 to promote policies designed to achieve in its member countries the highest sustainable economic growth, sound economic expansion in the process of economic development, and the expansion of world trade.²²⁶ Increasingly, the membership of the OECD extends beyond Europe giving it global reach: nine of its thirty-four members are not European states. In addition, the OECD has offered ‘enhanced engagement’ to Brazil, China, India, Indonesia and South Africa, and maintains co-operative relations with more than seventy non-member countries.

In 1974, the members of the OECD established an International Energy Agency,²²⁷ the Nuclear Energy Agency having been established in 1957.²²⁸ The OECD Convention does not specify environmental protection among its functions, but the organisation began to address environmental issues in 1970 following the decision to create an Environment Committee as a subsidiary body to the Executive Committee, which is itself subordinate to the OECD Council. The OECD became involved in environmental issues for three reasons. First, certain environmental issues were recognised to be intrinsically international; second, differences among member countries’ environmental standards were considered to have implications for trade and economic and political relations; and, third, it was felt that some member countries might be insufficiently prepared to address certain environmental problems.

The OECD Council may adopt two types of act: decisions, which are binding on its members; and recommendations, which are non-binding. Both acts are usually adopted with the support of all members.²²⁹ Since 1972, the OECD Council has adopted a large number of environmental measures, and has promulgated a treaty on liability for nuclear damage.²³⁰ These environmental acts have influenced the development of national environmental legislation in the member countries, and have often provided a basis for international environmental standards and regulatory techniques in other regions and at the global level. The OECD Council has frequently been at the forefront of developments in international environmental policy, focusing on the relationship between economic and environmental policies;²³¹ defining and endorsing the ‘polluter pays’ principle;²³² providing early support for the development and use of environmental assessment techniques;²³³ promoting economic instruments;²³⁴ endorsing the use of integrated pollution prevention and control;²³⁵

²²⁶ Convention on the OECD, Art. 1.

²²⁷ 1974 Agreement on an International Energy Programme Including Establishment of the International Energy Agency, Paris, 18 November 1974, 27 UST 1685 at Chapter IX.

²²⁸ EEC Decision of 20 December 1957, subsequently approved by OECD Decision of 30 September 1961.

²²⁹ Arts. 5(a) and (b) and 6(1).

²³⁰ 1960 Convention on Third Party Liability in the Field of Nuclear Energy and 1963 Supplementary Convention; see Chapter 17, pp. 739–45, below.

²³¹ 1972 Recommendation Guiding Principles Concerning International Economic Aspects of Environmental Policies, C(72)128; see Chapter 6, p. 230, below.

²³² 1974 Recommendation on the Implementation of the Polluter-Pays Principle, C(74)223; 1989 Recommendation on the Application of the Polluter-Pays Principle to Accidental Pollutions, C(89)88(Final), 28 ILM 1320 (1989); see Chapter 6, pp. 230–1, below.

²³³ 1974 Recommendation on the Analysis of the Environmental Consequences of Significant Public and Private Projects, C(74)216; 1979 Recommendation on the Assessment of Projects with Significant Impact on the Environment, C(79)116; 1985 Recommendation on Environmental Assessment of Development Assistance Projects and Programmes, C(85)104; Recommendation on Measures Required to Facilitate the Environmental Assessment of Development Assistance Projects and Programmes, C(86)26(Final); see Chapter 14, pp. 602–4, below.

²³⁴ 1991 Recommendation of the Council on Use of Economic Instruments in Environmental Policy, C(90)177(Final); see Chapter 4, p. 126, below.

²³⁵ 1990 Recommendation on Integrated Pollution Prevention and Control, C(90)164(Final); see Chapter 4, pp. 132–3, below.

using pollutant release and transfer registers;²³⁶ the environmentally sound management of waste;²³⁷ and 'greening' public procurement.²³⁸ The OECD Council has also supported the broad use of techniques for ensuring the availability of environmental information,²³⁹ and for developing co-operation on transfrontier pollution.²⁴⁰ Substantive issues have also been addressed, and the OECD Council has developed a broad range of decisions or recommendations on many sectors of environmental protection, including air quality,²⁴¹ water quality,²⁴² energy,²⁴³ waste,²⁴⁴ chemicals,²⁴⁵ noise,²⁴⁶ tourism²⁴⁷ and multinational enterprises.²⁴⁸

²³⁶ 1996 Recommendation on Implementing Pollutant Release and Transfer Registers (PRTRs), C(96)41(Final).

²³⁷ 2004 Recommendation on the Environmentally Sound Management of Waste, C(2004)100.

²³⁸ 2002 Recommendation on Improving the Environmental Performance of Public Procurement, C(2002)3; Recommendation on Good Practices for Public Environmental Expenditure Management, C(2006)84.

²³⁹ 1979 Recommendation on Reporting on the State of the Environment, C(79)114; 1991 Recommendation on Environmental Indicators and Information, C(90)165(Final); 1998 Recommendation on Environmental Information, C(98)67(Final); Recommendation on Information and Communication Technologies and the Environment, C(2010)61.

²⁴⁰ 1974 Recommendation on Principles Concerning Transfrontier Pollution, C(74)224; 1976 Recommendation on Equal Right of Access in Relation to Transfrontier Pollution, C(76)55; 1977 Recommendation on Implementation of a Regime of Equal Right of Access and Non-Discrimination in Relation to Transfrontier Pollution, C(77)28; 1978 Recommendation on Strengthening International Co-operation on Environmental Protection in Transfrontier Regions, C(78)77(Final).

²⁴¹ 1974 Recommendation on Guidelines for Action to Reduce Emissions of Sulphur Oxides and Particulate Matter from Fuel Combustion in Stationary Sources, C(74)16(Final); 1974 Recommendation on Measures Required for Further Air Pollution Control, C(74)219; 1985 Recommendation on Control of Air Pollution from Fossil Fuel Combustion, C(85)101.

²⁴² 1971 Recommendation on the Determination of the Biodegradability of Anionic Synthetic Surface Active Agents, C(71)83(Final); 1974 Recommendation on the Control of Eutrophication of Waters, C(74)220; 1974 Recommendation on Strategies for Specific Water Pollutants Control, C(74)221; 1978 Recommendation on Water Management Policies and Instruments, C(78)4(Final).

²⁴³ 1974 Recommendation on Energy and the Environment, C(74)222; 1976 Recommendation on Reduction of Environmental Impacts from Energy Production and Use, C(76)162 (Final); 1977 Recommendation on the Reduction of Environmental Impacts from Energy Use in the Household and Commercial Sectors, C(77)109(Final); 1979 Recommendation on Coal and the Environment, C(79)117; 1985 Recommendation on Environmentally Favourable Energy Options and Their Implementation, C(85)102.

²⁴⁴ 1976 Recommendation on a Comprehensive Waste Management Policy, C(76)155(Final); 1978 Recommendation on the Re-Use and Recycling of Beverage Containers, C(78)8(Final); 1980 Recommendation on Waste Paper Recovery, C(79)218(Final); 1984 Decision and Recommendation on Transfrontier Movements of Hazardous Waste, C(83)180 (Final); 1986 Decision/Recommendation on Exports of Hazardous Wastes from the OECD Area, C(86)64(Final); 1991 Decision/Recommendation on Reduction of Transfrontier Movements of Waste, C(90)178(Final); 1992 Decision Concerning the Control of Transfrontier Movements of Wastes Destined for Recovery Operations, C(2001)107(Final).

²⁴⁵ 1973 and 1987 Decision and Recommendation on Further Measures for the Protection of the Environment by Control of Polychlorinated Biphenyls, C(82)2(Final); 1973 Recommendation on Measures to Reduce All Man-Made Emissions of Mercury to the Environment, C(73)172(Final); 1974 Recommendation on the Assessment of the Potential Environmental Effects of Chemicals, C(74)215; 1979 Recommendation on Guidelines in Respect of Procedures and Requirements for Anticipating the Effects of Chemicals on Man and in the Environment, C(77)97 (Final); 1981 Decision on the Mutual Acceptance of Data in the Assessment of Chemicals, C(81)30(Final); 1982 Decision on the Minimum Pre-Marketing Set of Data in the Assessment of Chemicals, C(82)196(Final); 1989 Decision and Recommendation on Compliance with Principles of Good Laboratory Practice, C(89)87(Final); 1983 Recommendation on the Protection of Proprietary Rights to Data Submitted in Notifications of New Chemicals, C(83)96(Final); 1983 Recommendation on the Exchange of Confidential Data on Chemicals, C(83)97(Final); 1983 Recommendation on the OECD List of Non-Confidential Data on Chemicals, C(83)98(Final); 1984 Recommendation on Information Exchange Related to Export of Banned or Severely Restricted Chemicals, C(84)37(Final); 1988 Decisions on the Exchange of Information Concerning Accidents Capable of Causing Transfrontier Damage, C(88)84 (Final); 1991 Decision on the Co-operative Investigation and Risk Reduction of Existing Chemicals, C(90)163(Final).

²⁴⁶ 1985 Recommendation on Strengthening Noise Abatement Policies, C(85)103.

²⁴⁷ Recommendation on Environment and Tourism, C(79)115.

²⁴⁸ Decision on the OECD Guidelines for Multinational Enterprises, C(2000)96(Final): updated most recently in 2000.

Council of Europe (www.coe.int)

The Council of Europe was established in 1949 to achieve greater unity between members ‘for safeguarding and realising their ideals and principles which are their common heritage and facilitating their economic and social progress’.²⁴⁹ The Council of Europe now has forty-seven members across the whole of Europe. Without an explicit environmental mandate, the Council of Europe has adopted a number of acts and policies relating to environmental protection through its organs, the Committee of Ministers and the Parliamentary Assembly. The Parliamentary Assembly has adopted many non-binding recommendations on environmental issues.²⁵⁰ The Council of Europe’s contributions include several treaties. Apart from an early environmental treaty restricting the use of detergents,²⁵¹ the Council of Europe has adopted treaties on: the protection of animals;²⁵² the protection of archaeological heritage;²⁵³ the conservation of wildlife;²⁵⁴ transfrontier co-operation;²⁵⁵ civil liability for environmental damage;²⁵⁶ the protection of the environment through criminal law;²⁵⁷ and landscape.²⁵⁸ The European Convention on Human Rights and the European Social Charter, both of which have contributed to environmental jurisprudence and policy, were also adopted under the auspices of the Council of Europe.²⁵⁹

Organization for Security and Co-operation in Europe (www.osce.org)

The Final Act of the 1975 Conference on Security and Co-operation in Europe (CSCE) encompassed co-operation on the protection and improvement of the environment, and the institutions established thereunder may accordingly address matters relating to the environment.²⁶⁰ The 1990 Charter of Paris for a New Europe affirmed the close relationship between economic liberty, social justice and environmental responsibility.²⁶¹ In 1994, the

²⁴⁹ Statute of the Council of Europe, as amended, Art. 1(a).

²⁵⁰ These relate to, *inter alia*, general environmental policy (see Recommendations 888 (1980), 910 (1981), 937 (1982), 958 (1983), 998 (1984), 1078 (1988), 1130 (1990), 1131 (1991), 1284 (1996), 1823 (2008)); marine pollution (Recommendations 585 (1970), 946 (1982), 997 (1984), 1003 (1985), 1015 (1985), 1079 (1988), 1388 (1998), 1558 (2002)); fisheries (Recommendations 913 (1981), 825 (1984), 842 (1985), 1320 (1997)); biodiversity (Recommendations 966 (1983), 978 (1984), 1033 (1986), 1048 (1987), 1918 (2010), 1964 (2011) (provisional)); freshwater resources (Recommendations 1052 (1987), 1128 (1990), 1224 (1993)); air pollution (Recommendations 977 (1984), 1006 (1985), 926 (1989)); environment and human rights (Recommendation 1614 (2003)); environment and health (Recommendation 1863 (2009)).

²⁵¹ 1968 European Agreement on the Restriction of the Use of Certain Detergents in Washing and Cleaning Products, Strasbourg, 16 September 1968.

²⁵² 1968 European Convention for the Protection of Animals During International Transport; 1976 European Convention for the Protection of Animals Kept for Farming Purposes; European Convention for the Protection of Animals During International Transport (Revised) (Chisinau), opened for signature 6 November 2003, CETS 193, in force 14 March 2006.

²⁵³ 1969 European Convention on the Protection of the Archaeological Heritage.

²⁵⁴ 1979 Berne Convention; see Chapter 10, pp. 487–9, below.

²⁵⁵ 1980 European Outline Convention on Transfrontier Co-operation Between Territorial Communities or Authorities; and Protocols (1995 and 1998).

²⁵⁶ 1993 Convention on Civil Liability for Damage Resulting from Activities Dangerous to the Environment; see Chapter 17, pp. 766–70, below.

²⁵⁷ 1998 Convention on the Protection of the Environment Through Criminal Law; see Chapter 17, p. 727, below.

²⁵⁸ 2000 European Landscape Convention; see Chapter 10, p. 510, below.

²⁵⁹ Chapter 18, p. 777, below.

²⁶⁰ 14 ILM 1292 (1975). The ICJ has held that support for the Helsinki Final Act constitutes an expression of *opinio juris*: see *Military and Paramilitary Activities In and Against Nicaragua* (1986) ICJ Reports 3 at 100 and 107.

²⁶¹ 30 ILM 190 (1991).

CSCE was renamed the OSCE, and its institutions now comprise a Ministerial Council, a Senior Council, a Permanent Council, and a Conflict Prevention Centre.²⁶² Although the OSCE recognises the close connection between environmental issues and security, so far, its institutions do not appear to have been apprised of a security issue arising out of an environmental conflict, although there was some suggestion that the dispute between Hungary and Slovakia over the Gabčíkovo-Nagymaros Project might be referred to CSCE procedures. OSCE, together with UNEP, UNDP, the UNECE and the Regional Environment Centre, has developed the Environment and Security Initiative, with NATO as an associated partner. This initiative provides a framework for co-operation on transboundary environmental issues and promotes security through environmental co-operation and sustainable development.²⁶³ The OSCE is also active in the field of good governance, playing an important role in raising public awareness of Europe-wide treaties, such as the Aarhus Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters.

Africa

The principal African organisation that addresses environmental matters is the African Union. Its predecessor, the Organization of African Unity (OAU), was established in 1963 to promote the unity and solidarity of African states and to co-ordinate inter-state co-operation to achieve a better life for the peoples of Africa.²⁶⁴ The Constitutive Act of the African Union, adopted in 2000, articulates similar objectives, but also seeks to promote 'sustainable development at the economic, social and cultural levels'.²⁶⁵ The OAU supported the adoption of a treaty on the conservation of nature and natural resources,²⁶⁶ and a treaty on the trade in and management of hazardous waste.²⁶⁷ The OAU also sponsored the 1981 African Charter on Human and Peoples' Rights²⁶⁸ and the 1991 African Economic Community,²⁶⁹ both of which have environmental provisions. The African Union has also adopted a number of conventions in the environmental field. These include the Convention of the African Energy Commission (2001), and a revised version of the African Convention on the Conservation of Nature and Natural Resources (2003). Apart from the UN Economic Commission for Africa, other organisations having environmental responsibilities and activities include the African Development Bank,²⁷⁰ the Arab Bank for Economic Development in Africa, the Economic Community of Central African States,²⁷¹ the Economic Community of West African States²⁷² and the Intergovernmental Authority on Development. The Southern African Development Community was established in 1992 and has adopted protocols on shared watercourses, wildlife conservation and law enforcement, energy, fisheries, forestry and mining.²⁷³ Regional bodies have also been established to manage shared natural resources.

²⁶² Chapter 5, p. 137, below. ²⁶³ www.envsec.org.

²⁶⁴ Charter of the OAU, Art. II(1); www.africa-union.org.

²⁶⁵ Constitutive Act of the African Union, adopted 7 November 2000 at the Lomé Summit (Togo), entered into force 26 May 2001, Art. 3(j); www.au.int.

²⁶⁶ 1968 African Nature Convention; see Chapter 10, pp. 480–3, below.

²⁶⁷ 1991 Bamako Convention; see Chapter 12, pp. 571–2, below.

²⁶⁸ Chapter 18, p. 777, below. ²⁶⁹ Chapter 19, pp. 860–1, below. ²⁷⁰ Chapter 16, p. 672, below.

²⁷¹ See www.africa-union.org/root/au/recs/eccas.htm. ²⁷² See www.ecowas.int.

²⁷³ For details, see www.sadc.int/index/browse/page/121.

Americas and the Caribbean

The Organization of American States (OAS), whose purposes include promoting the economic, social and cultural development of its members,²⁷⁴ has played a limited role in international environmental law. As the successor organisation to the Pan American Union, the OAS has responsibility for the dormant 1940 Western Hemisphere Convention,²⁷⁵ and has been responsible for the adoption of just one convention, with passing relevance for environmental protection.²⁷⁶ Other organisations with a higher environmental profile include the Inter-American Development Bank, the Caribbean Development Bank,²⁷⁷ the Central American Commission on Environment and Development,²⁷⁸ and the American Convention on Human Rights, which is the only such instrument to state expressly that people have a right to a clean and healthy environment.²⁷⁹ Neither the Caribbean Community nor the Organization of Eastern Caribbean States has played a particularly active role, save in the field of fisheries. Regional free trade agreements have played a catalytic role in developing regional rules of environmental protection, particularly the Canada–United States Free Trade Agreement and the North American Free Trade Agreement.²⁸⁰ At the bilateral level, the Canada–United States International Joint Commission, established in 1909, is significant,²⁸¹ and important bilateral arrangements also exist between Mexico and the United States.²⁸²

Asia Pacific

In recent years, the Asia Pacific region has taken some steps towards establishing regional environmental organisations.²⁸³ This has been driven by the rapid industrialisation which is occurring in many countries in the region, the important role of Japan, and the size and significance of China and India, shared environmental problems (particularly climate change and transboundary haze resulting from forest fires) and the need to conserve natural resources. For the most part, developments have focused on giving existing organisations greater environmental competence, and on the relationship between economic commitments (free trade and investment) and environmental standards.

One of the few regional organisations in the Asia Pacific to have already made a significant contribution is the Association of South East Asian Nations (ASEAN), under whose auspices the 1985 ASEAN Convention was adopted.²⁸⁴ In 2005, agreement was reached on the establishment of the ASEAN Centre for Biodiversity. The Asian Development Bank integrates environmental considerations into its decision-making process,²⁸⁵ and the South Asian Association for Regional Co-operation (SAARC)²⁸⁶ has started to play a more active role in the development of regional rules. In April 2010, a SAARC Convention on Cooperation on the Environment was concluded which will enter into force after it has been ratified by all member states.

²⁷⁴ Charter of the OAS, Art. 2(e); www.oas.org. ²⁷⁵ Chapter 10 below.

²⁷⁶ 1976 Convention on the Protection of the Archaeological, Historical and Artistic Heritage of the American Nations; see Chapter 10, p. 510, note 511, below.

²⁷⁷ Chapter 16, pp. 672–3, below. ²⁷⁸ 1 *Yearbook of International Environmental Law* 229 (1990).

²⁷⁹ Chapter 18, p. 777, below. ²⁸⁰ Chapter 19, pp. 852–60, below.

²⁸¹ Chapter 8, pp. 326–7, below. ²⁸² See e.g. Chapter 8, p. 326, below.

²⁸³ For a history of developments in this region, see B. Boer, R. Ramsay and D. Rothwell, *International Environmental Law in the Asia Pacific* (1998).

²⁸⁴ Chapter 10, pp. 490–2, below. ²⁸⁵ Chapter 16, p. 672, below.

²⁸⁶ Charter of SAARC, Dhaka, 8 December 1985.

Regional organisations in the Pacific have generally been more active than their Asian counterparts, including in the negotiation of multilateral environmental agreements.²⁸⁷ The South Pacific Commission has promulgated at least two treaties for the protection of natural resources.²⁸⁸ At the annual meetings of the South Pacific Forum, regional and global environmental issues are high on the agenda, and the Forum has taken decisions that led to the negotiation and adoption of a nuclear-free zone treaty,²⁸⁹ the prohibition of driftnet fishing,²⁹⁰ and the regulation of transboundary shipments of hazardous and radioactive waste.²⁹¹ The South Pacific Regional Environment Programme (SPREP) became an independent and autonomous regional organisation in 1991, and has adopted a number of action plans, including a draft Action Strategy for Nature Conservation and Protected Areas in the Pacific Islands Region (2008–12), a Pacific Islands Action Plan on Climate Change (2006–15) and a Regional Solid Waste Strategy Action Plan.²⁹²

Organisations established by environmental treaties

The third type of organisation is that established by environmental treaty, most of which establish institutional arrangements for their implementation, development and review. The institutional arrangements have a variety of names and forms, and have only recently begun to attract scholarly and practical attention.²⁹³ They range from the standing Commission established by the 1992 OSPAR Convention (replacing the commissions established by the 1972 Oslo Convention and the 1974 Paris Convention) to the *ad hoc* Conferences or Meetings of the Parties to a wide range of agreements. Each treaty organisation will also have a secretariat. These institutional arrangements are, in effect, international organisations. They have international legal status, rules of procedure and membership, and have enumerated powers relating to decision-making and dispute settlement and, occasionally, enforcement powers. A large number of treaty organisations are highly active and have made significant contributions to the development of international environmental law, much of which is not collectively well documented and assessed. The reporting arrangements established under the Commission on Sustainable Development provide an opportunity for improved co-ordination of the activities of these organisations and their consequential rationalisation.

²⁸⁷ Pacific island states, together with Caribbean states, are active in the Alliance of Small Island States, in the climate change negotiations.

²⁸⁸ 1976 Apia Convention (at the Eighth Meeting of the Parties in 2006, its operation was suspended until further notice); see Chapter 10, p. 486, below; and 1986 Noumea Convention and Protocols, Chapter 10, p. 486, below.

²⁸⁹ 1985 Rarotonga Treaty; Chapter 11, p. 545, below.

²⁹⁰ 1989 Driftnet Convention; Chapter 9, p. 430, below.

²⁹¹ 1989 Waigani Convention; Chapter 12, pp. 572–4, below.

²⁹² www.sprep.org/legal/Plans.htm.

²⁹³ See generally R. Churchill and G. Ulfstein, 'Autonomous Institutional Arrangements in Multilateral Environmental Agreements: A Little Noticed Phenomenon in International Law', 94 *American Journal of International Law* 623 (2000); Sebastian Oberthür, 'Clustering of Multilateral Environmental Agreements: Potentials and Limitations', in W. Bradnee Chambers and Jessica F. Green (eds.), *Reforming International Environmental Governance: From Institutional Limits to Innovative Reforms* (2005); Laurence Mee, 'The Role of UNEP and UNDP in Multilateral Environmental Agreements', 5(3) *International Environmental Agreements: Politics, Law and Economics* 227 (2005); Christopher Marcoux, 'Institutional Flexibility in the Design of Multilateral Environmental Agreements', 26(2) *Conflict Management and Peace Science* 209 (2009); Margaret A. Young, *Trading Fish, Saving Fish: The Interaction between Regimes in International Law* (2011).

A detailed list of these organisations is beyond the scope of this section: where appropriate, they are identified in relevant sections of the book. As will be seen, they may, through their acts, impose obligations on states that range from the legally binding to recommendations with no legal consequences. Certain treaty organisations at the regional and global level are, or are likely to become, noteworthy in respect of particular environmental issues, and these are listed below.

Atmosphere

Transboundary air pollution

- 1979 LRTAP Convention (and Protocols), Executive Body
- 2002 ASEAN Transboundary Haze Pollution Agreement, Conference of the Parties

Ozone

- 1985 Vienna Convention, Conference of the Parties
- 1987 Montreal Protocol, Meetings of the Parties

Climate change

- 1992 Climate Change Convention, Conference of the Parties
- 1997 Kyoto Protocol, Meetings of the Parties

Oceans and seas

General

- UNEP Regional Seas Conventions, various
- 1974 Baltic Convention, Helsinki Commission
- 1982 UNCLOS, Assembly of the International Seabed Authority
- 1992 OSPAR Convention, OSPAR Commission
- 2009 Southern Ocean Fishery Resources Convention, South Pacific Regional Fisheries Management Organization

Dumping

- 1972 London Convention and 1996 Protocol, Consultative Meetings

Pollution from ships

- MARPOL 1973/78, IMO Assembly
- 2001 International Convention on the Control of Harmful Anti-Fouling Systems on Ships
- 1996 HNS Convention and 2010 HNS Protocol, Assembly of the HNS Fund
- 2004 International Convention for the Control and Management of Ships' Ballast Water, International Maritime Organization
- 2007 Wrecks Convention, International Maritime Organization
- 2009 Ships Recycling Convention, International Maritime Organization

Compensation and liability

- 1992 Oil Pollution Fund Protocol, Assembly and Executive Committee

Freshwaters

- 1963 Rhine Convention, International Commission
- 1992 Watercourses Convention and 2003 Kiev Protocol, Meeting of the Parties
- 2000 SADC Revised Water Protocol, ORASECOM
- 2003 Lake Tanganyika Convention, Lake Tanganyika Authority

Biological diversity

General

- 1979 Berne Convention, Standing Committee

- 1992 Biodiversity Convention, 2000 Biosafety Protocol and 2010 Nagoya Protocol, Conference of the Parties

Trade in endangered species

- 1973 CITES, Conference of the Parties

Wetlands

- 1971 Ramsar Convention, conferences

Whales

- 1946 International Whaling Convention, Commission

Migratory species

- 1979 Bonn Convention, Conference of the Parties

Fisheries

- 1949 Tropical Tuna Convention, Commission
- 1952 North Pacific Fisheries Convention, Commission
- 1966 Atlantic Tuna Convention, Commission
- 1969 South-East Atlantic Convention, Commission
- 1973 Baltic Sea Convention, Commission
- 1978 North-West Atlantic Fisheries Convention, General Council of the Northwest Atlantic Fisheries Organization
- 1979 South Pacific Forum Fisheries Convention, Committee
- 1980 North-East Atlantic Fisheries Convention, Commission
- 1980 Convention on the Conservation of Antarctic Marine Living Resources, Commission
- 1982 North Atlantic Salmon Conservation Convention, Council
- 2001 Southeast Atlantic Fisheries Convention, South East Atlantic Fisheries Organization
- 2006 Southern Indian Ocean Fisheries Agreement, Meeting of the Parties
- 2007 West Central Guinea Fishery Committee Convention, Committee

World heritage

- 1972 World Heritage Convention, World Heritage Committee

Waste

- 1989 Basel Convention, Conference of the Parties
- 1991 Bamako Convention, Conference of the Parties
- 1995 Waigani Convention, Conference of the Parties

Chemicals

- 1998 Chemicals Convention, Conference of the Parties
- 2001 POPs Convention, Conference of the Parties

Environmental impact assessment, accidents

- 1991 Espoo Convention and 2003 SEA Protocol, Meeting of the Parties
- 1992 Industrial Accidents Convention, Conference of the Parties
- 2003 Strategic Environmental Assessment Protocol, meeting of the signatories

Public participation

- 1998 Aarhus Convention and 2003 Pollutant Release and Transfer Registers Protocol, Meeting of the Parties

War and environment

- 1977 ENMOD Convention, Conference of the Parties
- 1977 Additional Protocol I to the 1949 Geneva Convention IV, International Committee of the Red Cross

NON-STATE ACTORS

Non-state actors have played a central role in developing international environmental law.²⁹⁴ They remain highly influential. Since the latter half of the nineteenth century, the scientific community and environmental groups have mobilised the forces of public opinion, and have sought to contribute to the progressive development of international law. The corporate sector has also fought to ensure that its voice is heard, especially as international rules have expanded and touched directly upon industrial and other economic activities. At the international level, non-state actors play a formal role in several ways. They identify issues requiring international legal action; they participate as observers in international organisations, and in treaty negotiations; and they participate, formally and informally, in the national and international implementation of principles and rules adopted at the regional and global levels.

Over the past few decades, six categories of non-state actors have emerged as important actors: the scientific community; non-profit-making environmental groups and associations (NGOs); private companies and business concerns; legal organisations; the academic community; and individuals.²⁹⁵ The Rio Declaration and Agenda 21 affirm the important partnership role of non-governmental organisations and call for their ‘expanded role’.²⁹⁶ Agenda 21 calls on the UN system, including international finance and development agencies and all intergovernmental organisations, to take measures to enhance the contribution of non-governmental organisations to ‘policy design, decision-making, implementation and evaluation at the individual agency level, in inter-agency discussions and in United Nations conferences’.²⁹⁷ This objective is to be achieved by, *inter alia*: augmenting their role as partners in project and programme implementation; ensuring their participation in the processes to review and evaluate the implementation of Agenda 21; providing them with access to accurate and timely data and information; and providing them with increased administrative and financial support.²⁹⁸ Agenda 21 urges governments to take:

any legislative measures necessary to enable the establishment by non-governmental organisations of consultative groups, and to ensure the right of non-governmental organisations to protect the public interest through legal action.²⁹⁹

²⁹⁴ M. Bettati and P. Dupuy (eds.), *Les ONG et le Droit International* (1986); M. Garner, ‘Transnational Alignment of Non-Governmental Organisations for Global Environmental Action’, 24 *Vanderbilt Journal of Transnational Law* 653 (1991); S. Charnovitz, ‘Two Centuries of Participation: NGOs and International Governance’, 18 *Michigan Journal of International Law* 183 (1997); P. Sands, ‘International Law, the Practitioner and Non-State Actors’, in C. Wickremasinghe (ed.), *The International Lawyer as Practitioner* (2000); M. D. Varela, ‘Le Rôle des Organisations Non-Gouvernementales dans le Développement du Droit International de l’Environnement’, 132 *Journal du Droit International* 41 (2005); F. Munari and L. S. Di Pepe, ‘Diritto Internazionale dell’ambiente e Ruolo dei Non-State Actors: Alcuni Recenti Sviluppi’, 61 *La Comunità Internazionale* 483 (2006); M. Betsill and E. Corell (eds.), *NGO Diplomacy: The Influence of Nongovernmental Organizations in International Environmental Negotiations* (2008); J. McCormick, ‘The Role of Environmental NGOs in International Regimes’, in R. Axelrod, S. VanDeveer and D. Downie (eds.), *The Global Environment: Institutions, Law and Policy* (2011, 3rd edn), 92.

²⁹⁵ Agenda 21, Section III, entitled ‘Strengthening the Role of Major Groups’, identifies the following ‘major groups’: women, children and youth, indigenous people, non-governmental organisations, local authorities, workers and trade unions, business and industry, the scientific and technological community, and farmers.

²⁹⁶ Agenda 21, paras. 38.42–38.44. ²⁹⁷ *Ibid.*, para. 27.9(a). ²⁹⁸ *Ibid.*, paras. 27.9(b)–(g) and 27.12.

²⁹⁹ *Ibid.*, paras. 27.10 and 27.13. The WSSD reiterated this obligation in general terms: see para. 168.

Non-state actors have for many years been able to participate as observers in the activities of international organisations, such rights being granted expressly in the treaty establishing the organisation, or by its rules of procedures, or by practice. The 1992 OSPAR Convention included, for the first time, a treaty provision for observers that does not distinguish between states, international governmental organisations and non-governmental organisations with respect to the conditions of the granting of observer status, save that the non-governmental organisations must carry out activities that are related to the Convention.³⁰⁰ Moreover, once observer status has been granted, each observer appears to have identical rights, namely, to present to the Commission any information or reports relevant to the objectives of the Convention but not the right to vote.³⁰¹ Even more far-reaching is the 1998 Aarhus Convention which, no doubt because of its subject matter, entitles non-governmental organisations to participate in the Meeting of the Parties and – uniquely – to nominate candidates for election to the Convention’s implementation committee.³⁰²

Scientific community³⁰³

Often, the driving force behind international environmental law is science, a feature that distinguishes this from other areas of public international law where developments are frequently initiated by political, economic or commercial imperatives. The important place for science introduces an objective element over which governments have less control. As one commentator has noted, this has two effects: the ‘environmental movement has been powerfully affected by the consequences of science misused to the detriment of the living world, but even more importantly by what advancing science has revealed about the structure and process of nature’.³⁰⁴ Non-state actors rely upon scientific evidence generated from different sources, including that which emerges from international processes such as the IPCC and GESAMP, from government departments and from non-state sources. The last-mentioned have long played a role in the development of international environmental law. Early efforts leading to international legal developments included the work of individual members of the scientific community in the eighteenth century and the scientific congresses of the late nineteenth century.³⁰⁵ Today, the principal co-ordinating force for the non-governmental activities of individual researchers and academics, and university and commercial research centres and institutes, is the International Council for Science (formerly the International Council of Scientific Unions (ICSU)), a co-ordinating federation of thirty constituent unions together with representation from 121 national scientific bodies representing 141 countries.³⁰⁶ ICSU interdisciplinary bodies address particular issues, of which the following are among the more influential: the Scientific Committees on Oceanic Resources (SCOR, 1957), on Space Research (COSPAR, 1958), on Antarctic Research (SCAR, 1958) and on Problems of the Environment (SCOPE, 1969).³⁰⁷ SCOPE serves as a non-governmental, interdisciplinary and international council of scientists,

³⁰⁰ Art. 11(1). Other similar examples include the 2003 Pollutant Release and Transfer Register Protocol, Art. 17(5); and the Nagoya Protocol, Art. 26(8).

³⁰¹ Art. 11(2). Under Art. 11(3), conditions for admission and participation are to be set in the Rules of Procedure.

³⁰² 1998 Convention, Art. 10(5); Meeting of the Parties, Decision I/7, Annex, para. 4 (2002).

³⁰³ Agenda 21, Chapter 31; see Chapter 3, pp. 44–5, above.

³⁰⁴ L. K. Caldwell, *International Environmental Policy* (1990, 2nd edn), 9. ³⁰⁵ *Ibid.*, 32.

³⁰⁶ www.icsu.org/about-icsu/about-us. ³⁰⁷ *Ibid.*, 114.

and provides advice for governments and non-governmental bodies on environmental problems. It is often through the activities of environmental organisations that this scientific work is brought to the attention of governments and international organisations, supporting calls for further international action and providing the basis for political lobbying in intergovernmental negotiating fora.

Environmental, health and developmental organisations³⁰⁸

Internationally, a number of environmental, health and developmental organisations have played a particularly important role in developing international environmental law. The International Union for the Conservation of Nature (IUCN), established in 1948, has developed policy initiatives and has prepared texts of draft instruments which have served as the basis for the negotiation of the 1971 Ramsar Convention, the 1973 CITES and the 1992 Biodiversity Convention. Together with UNEP and WWF, IUCN was also instrumental in drawing up the 1980 World Conservation Strategy and the 1990 World Conservation Strategy II. WWF, Greenpeace and Friends of the Earth are other international non-governmental organisations that have played an active role in developing treaty language and other international standards, and in acting as watchdogs in the implementation of treaty commitments, together with groups such as Oxfam and Action Aid.³⁰⁹ This extends to the filing of international cases, where rules permit,³¹⁰ or intervening as friends of the court.³¹¹ Grassroots environmental and consumer organisations have also influenced the development of international environmental law, including through domestic litigation. Often, they participate in global networks which focus on specific issues, such as the Climate Action Network and the Pesticides Action Network; similar global networks have been established to address environmental issues relating to matters such as the WTO Doha Round and NAFTA, as well as policies and projects funded by the multilateral development banks. At both UNCED and WSSD, large groups of non-governmental organisations held parallel conferences and prepared their own draft instruments on a range of international legal issues relating to sustainable development and its implementation.

Legal groups

Private groups and associations of lawyers have long played a role in the progressive development of international environmental law. Since the Institut de Droit International adopted its 1911 Resolution on International Regulations Regarding the Role of International Watercourses for Purposes Other Than Navigation,³¹² it and the International Law Association have developed model international rules on a range of environmental issues, including transboundary water resources and atmospheric pollution. The IUCN Environmental Law Centre and the IUCN Commission on Environmental Law have prepared important draft treaties that have formed the basis of formal negotiations. Other private organisations contributing significantly

³⁰⁸ Agenda 21, Chapter 27, 161–3. See also John McCormick, 'The Role of NGOs in International Regimes', in Regina S. Axelrod, Stacy D. VanDeveer and Norman J. Vig (eds.), *The Global Environment: Institutions, Law and Policy* (2011), 92.

³⁰⁹ Chapter 5 below. ³¹⁰ Chapter 5, p. 155, below. ³¹¹ Chapter 5, p. 158, below.

³¹² See Chapter 2, p. 25, above.

to the field include environmental law groups based in the United States, such as the Natural Resources Defense Council (NRDC), the Sierra Club Legal Defense Fund (SCLDF) and the Environmental Defense Fund (EDF), which play an advocacy role in the development of international environmental law. The International Council on Environmental Law and organisations such as the Foundation for International Environmental Law and Development (FIELD) and the Center for International Environmental Law (CIEL) in Washington, have provided international legal assistance to developing countries and non-governmental organisations. Many national academic institutions have also contributed to the domestic implementation of international environmental obligations.

Corporate sector³¹³

In the private sector, associations such as the International Chamber of Commerce (ICC) and the World Business Council for Sustainable Development (WBCSD) have sought to ensure that the interests of the business community are taken into account. To that end, they, and others, have developed proposals for the development of international environmental law, such as the Business Charter on Sustainable Development, the Declaration of the World Industry Conference on Environmental Management (WICEM II) and the Valdez Principles (in the United States).³¹⁴ They also hold regular ‘dialogues’ with intergovernmental environmental organisations, such as the ICC–UNEP Business and Industry Global Dialogue.

In 2000, the UN established a Global Compact that commits its corporate participants to adhere to ten principles and shared values. Three of these relate to the environment, and commit businesses to:

- supporting a precautionary approach to environmental challenges;
- undertaking initiatives to promote greater environmental responsibility; and
- encouraging the development and diffusion of environmentally friendly technologies.³¹⁵

The Global Compact, together with the WBCSD and the ICC, have formed ‘Business Action for Sustainable Development 2012’, an inclusive coalition that will serve as the business voice at the Rio+20 summit. It is anticipated that this summit will issue ‘a strong call for responsible and sustainable business practices in line with the Global Compact’.³¹⁶ The corporate sector participates as observers in international legal negotiations where it is perceived that issues affecting their interests are likely to be legislated on. At negotiations relating to the 1987 Montreal Protocol, the 1992 Climate Change Convention and post-2012 arrangements, and the 2000 Biosafety Protocol, among others, individual companies, trade associations and other industry groups have been particularly active. Their participation reflects the growing relevance of public international law to the business community. Transnational corporations have

³¹³ See Agenda 21, Chapter 30.

³¹⁴ Business Charter on Sustainable Development, adopted by the sixty-fourth session of the board of the International Chamber of Commerce; Official Report of the Second World Industry Conference on Environmental Management, Rotterdam, 10–12 April 1991; L. M. Thomas, ‘The Business Charter for Sustainable Development: Action Beyond UNCED’, 1 *Review of European Community and International Environmental Law* 325 (1992); E. Morgera, *Corporate Accountability in International Environmental Law* (2009).

³¹⁵ Global Compact Annual Review – Anniversary Edition, June 2010.

³¹⁶ www.unglobalcompact.org/NewsAndEvents/rio_2012.html.

also been the subject of international regulatory efforts in relation to activities which may entail harmful consequences. The OECD Guidelines for multinational enterprises were introduced in 1976 as the first internationally agreed framework for co-operation in the field of international direct investment and multinational enterprises,³¹⁷ and updated most recently in 2000.³¹⁸ The Guidelines remain the most comprehensive instrument in existence establishing corporate responsibility multilaterally agreed by governments. Part V of the 2000 Guidelines (on the environment) provides that:

Enterprises should, within the framework of laws, regulations and administrative practices in the countries in which they operate, and in consideration of relevant international agreements, principles, objectives, and standards, take due account of the need to protect the environment, public health and safety, and generally to conduct their activities in a manner contributing to the wider goal of sustainable development.³¹⁹

Individuals and indigenous communities

Individual citizens have traditionally expressed their involvement in the development and application of international environmental law through the activities of their national governments or environmental organisations. However, the growing relationship between human rights and environmental discourse at the international level has led to individuals having recourse to international human rights norms and procedures including, where available, the right to complain to international bodies.³²⁰ International law also increasingly recognises the special interests and rights of indigenous communities, for example in relation to land rights and traditional knowledge associated with the conservation of biodiversity.³²¹ As citizens of nation-states, individuals are responsible for the implementation of international obligations; their role will be enhanced if they are able to report violations by governments of international legal obligations to environmental organisations, to national public authorities and, in the case

³¹⁷ Annexed to the Declaration of 21 June 1976 by governments of OECD member countries in international investment and multinational enterprises, as amended in 1979, 1982 and 1984: 15 ILM 969 (1976), 31 ILM 494 (1992).

³¹⁸ DAFPE/IME(2000)20, Annex. The Guidelines propose that enterprises should, in the countries in which they operate, contribute to 'economic, social and environmental progress with a view to achieving sustainable development' ('General', para. 1). In 2010, adhering governments started work on an update of the Guidelines.

³¹⁹ The Guidelines indicate, *inter alia*, the following minimum requirements for enterprises: to establish and maintain a system of environmental management appropriate to the enterprise; to provide adequate and timely information on the potential environment, health and safety impacts of the activities of the enterprise; to assess and address the foreseeable environmental, health and safety-related impacts associated with the processes, goods and services of the enterprise over their full life-cycle (preparing appropriate environmental impact assessment); not to use the lack of full scientific certainty as a reason for postponing cost-effective measures to prevent or minimise such damage; to maintain contingency plans for preventing, mitigating and controlling serious environmental and health damage from their operations; and to seek continually to improve corporate environmental performance.

³²⁰ Chapter 18, pp. 777–9, below.

³²¹ The 2010 Nagoya Protocol is a leading example. See also D. Shelton, 'Fair Play, Fair Pay: Preserving Traditional Knowledge and Biological Resources', 5 *Yearbook of International Environmental Law* 77 (1994); R. Gupta, 'Indigenous Peoples and the International Environmental Community: Accommodating Claims Through a Co-operative Legal Process', 74 *New York University Law Review* 1741 (1999); Benjamin J. Richardson, 'Indigenous Peoples, International Law and Sustainability', 10(1) *European Community and International Environmental Law* 1 (2001); E. Morgera and E. Tsioumani, 'The Evolution of Benefit Sharing: Linking Biodiversity and Community Livelihoods', 19(2) *European Community and International Environmental Law* 150 (2010); Chapter 10, p. 457, below; Chapter 16, p. 684, below.

of the EU and international human rights organisations, to international organisations. It is in regard to the latter that individuals have acquired rights under international law: the increased availability of complaint procedures – such as the Inspection Panel of the World Bank and the non-compliance mechanism established under the 1998 Aarhus Convention³²² – provides formal mechanisms.

Potentially important developments took place at UNCED, as reflected in the Rio Declaration, which recognised the rights of individual citizens to participate in decision-making processes, to have access to information, and to have access to judicial and administrative remedies. Principle 10 of the Rio Declaration provides that:

[e]nvironmental issues are best handled with the participation of all concerned citizens, at the relevant level. At the national level, each individual shall have appropriate access to information concerning the environment that is held by public authorities, including information on hazardous materials and activities in their communities, and the opportunity to participate in decision-making processes. States shall facilitate and encourage public awareness and participation by making information widely available. Effective access to judicial and administrative proceedings, including redress and remedy, shall be provided.

Although Principle 10 is not binding *per se*, it has provided an international benchmark against which the compatibility of national standards can be compared. Building on the human rights model, these developments foresee the creation of a new range of procedural rights which may be granted to individuals by international law, and which would be exercisable at the national and, possibly, international levels.³²³ Principle 10 inspired the adoption of the first international convention – the 1998 Aarhus Convention – to require parties to guarantee the rights of access to information, public participation in decision-making and access to justice in environmental matters, and to promote the Convention's principles in international environmental decision-making and within international organisations.³²⁴ Subsequent developments, such as the 2003 Protocol to the Aarhus Convention on Pollutant Release and Transfer Registers, have further amplified these rights.

The media

Whilst the contribution of the media to international environmental law should not be overstated, there is little doubt that it plays an important informal role in various aspects of international environmental law. The media is able to place a spotlight on particular international legal issues which excite public interest and which can serve to change the public (or private) position of states.³²⁵ The media also provides an opportunity for governments to make statements that may have legal consequences. In the *Nuclear Tests* cases, the International

³²² Chapter 5, p. 166, below.

³²³ On access to information, see Chapter 15, pp. 648–55, below; on participation in environmental impact assessments, see Chapter 14, below; on access to national remedies, see Chapter 5, pp. 155–7, below.

³²⁴ Aarhus, 25 June 1998, in force 30 October 2001, Arts. 1 and 3(7). The rights established by the Convention are to be applied without discrimination as to citizenship, nationality or domicile or place of registration/effective centre of activities: Art. 3(9). On access to and dissemination of information under Arts. 4 and 5, see Chapter 15, p. 652, below.

³²⁵ A prominent recent example is the leaking of emails by the press in the 'Climategate' incident and its implications for subsequent Copenhagen negotiations. For a discussion, see David Henderson, 'The Climate Change Debate Today: COP 15, the CRU Affair, and the Basis for Policy', 21(3) *Energy and Environment* 279 (2010).

Court of Justice held that it did not have to decide on the Australian and New Zealand claims, after the French Prime Minister made a statement at a press conference that France no longer intended to conduct atmospheric nuclear tests after 1974.³²⁶

CONCLUSIONS

The discussion in this chapter confirms that ‘relationships among global, regional, national and local organisations – governmental and non-governmental – are an expanding web of international governance that will grow increasingly interconnected in the future’.³²⁷ The discussion indicates that the range of actors involved in the development and application of international environmental law is broad and that the involvement of non-state actors is recognised as legitimate, and is increasingly being encouraged, at both national and international levels. At the same time, a growing role for non-state actors of various kinds in international environmental law is shifting the focus from (exclusively) top-down strategies of law-making and implementation, with states and international organisations as the principal actors, to a bottom-up dynamic where international legal development may be driven to a greater extent by the actions of individuals, business and NGOs. Edith Brown Weiss describes this as a ‘kaleidoscopic pattern’ that poses both challenges for the international legal system and opportunities to expand and strengthen the foundations of international law.³²⁸

Operating in this ‘new multi-layered system’, international environmental law has three interrelated challenges: first, to ensure that all states are able to participate in the response of the international community to the growing range of environmental challenges which require an international legal response; second, to strengthen the role of international organisations, and their effectiveness, by rationalising and co-ordinating their activities, and endowing them with increased functions; and, third, to ensure that the role of non-state actors is properly harnessed, by providing them with sufficient international status to participate effectively in the international legal process and to make the link that governments and international organisations seem to find so difficult: translating global obligations into domestic action and implementation.

These three challenges are closely interconnected, and each will require the further elaboration of rules of participation and procedure; the amendment of the constitutions of most international organisations; and a rethink about the limits of sovereignty. Beginning with the participation of states, it has become ever clearer that many developing states are not able to participate as fully and effectively in the law-making process as they should, because they frequently have insufficient financial and human resources. This is not a comment on their lack of insight, ability, inspiration or commitment; it simply reflects the explosion in the number of centres of international environmental legislation that has occurred in the past thirty years. Without effective participation in the law-making process, there can be little expectation that

³²⁶ (1974) ICJ Reports 253, para. 37. Other statements were made by the Minister of Defence on French television and at press conferences, and by the Minister of Foreign Affairs at the UN; on the legal effect of unilateral acts of this type, see Chapter 4 below.

³²⁷ L. Kimball, *Forging International Agreement: Strengthening Intergovernmental Institutions for Environment and Development* (1992), 2.

³²⁸ Edith Brown Weiss, ‘International Law in a Kaleidoscopic World’, 1(1) *Asian Journal of International Law* 21 at 24 (2010).

countries, particularly small island states and least developed countries, will be able to translate their international commitments into domestic action. International law is increasingly complex and technical, both to negotiate and to apply, and significant effort needs to be made to develop human capacities, including developing international legal knowledge. The UNCED process made an important start by ensuring that the funds were available to allow most developing countries at least to attend the negotiations, and it is a testament to their skills that they achieved as much as they did without the resources available to other, more affluent countries.

The process of rationalisation and co-ordination of the activities of international organisations is closely linked to the effective participation of states. The proliferation of organisations, including treaty-based environmental organisations, has brought with it a proliferation of secretariats, most of which would be able to function far more efficiently if they could readily share experiences and expertise and work to minimise the overlaps between their respective fields of competence. Rationalisation and better co-ordination would allow the functions of the organisations and the secretariats to be more efficiently undertaken, and might then provide them with a stronger basis to engage in the sorts of activities which are clearly needed, for which they are well equipped, and which they should be undertaking: preparing documentation, synthesising national implementation reports, encouraging compliance, conducting verification and sponsoring new agreements.³²⁹

Many international organisations already rely heavily on the efforts and activities of non-state actors, either informally or formally. These actors need to be given a strengthened role, and as implementation and enforcement become increasingly important their participation in the process as observers could be supplemented by allowing them to provide information of a general nature or, more specifically, on non-compliance by states with their international obligations. This has happened under the non-compliance procedure of the 1998 Aarhus Convention. The model provided by the human rights field is a useful one that could be further extended into the environmental field; this is perhaps the direction which UNEP should be encouraged to take, if it is provided with sufficient authority and resources. UNEP has a broad mandate to ensure the progressive development of international environmental law, and it should be encouraged to develop that mandate in an expansive manner.

³²⁹ See House of Commons (UK), Select Committee on Environment, Transport and the Regions, *Sixteenth Report, 'Multilateral Environmental Agreements'* (1999), paras. 67–8.

4

International law-making and regulation

INTRODUCTION

This chapter identifies the sources of international legal obligation in the field of the environment, and the regulatory techniques used to give effect to these obligations.¹ International law is traditionally stated to comprise ‘the body of rules which are legally binding on states in their intercourse with each other’.² These rules derive their authority, in accordance with Article 38(1) of the Statute of the International Court of Justice (ICJ), from four sources: treaties, international custom, general principles of law, and subsidiary sources (decisions of courts and tribunals and the writings of jurists and groups of jurists). It is to these sources that international courts look in determining whether a particular legally binding principle or rule of international environmental law exists. The list of sources identified in Article 38(1) does not wholly reflect the sources of obligation, broadly understood, which have arisen in international environmental law. A list of sources of international environmental law is more properly reflected in the list proposed by the International Law Commission (ILC) in 1989, which included those identified in Article 38(1) as well as binding decisions of international organisations, and judgments of international courts or tribunals.³

¹ R. Hahn and K. Richards, ‘The Internationalisation of Environmental Regulation’, 30 *Harvard International Law Journal* 421 (1989); O. Schachter, ‘The Emergence of International Environmental Law’, 44 *Journal of International Affairs* 457 (1991); W. Lang, ‘Diplomacy and International Environmental Law-Making: Some Observations’, 3 *Yearbook of International Environmental Law* 108 (1992); U. Beyerlin and T. Marauhn, ‘Law-Making and Law-Enforcement in International Environmental Law after the 1992 Rio Conference’ (Berichte 4/1997); P. Sands, ‘The New Architecture of International Environmental Law’, 30 *RBDI* 512 (1997); A. Ahmad, *Cosmopolitan Orientation of the Process of International Environmental Lawmaking: An Islamic Law Genre* (2001); W. B. Chambers, ‘Towards an Improved Understanding of Legal Effectiveness of International Environmental Treaties’, 16 *Georgetown International Environmental Law Review* 501 (2004); G. Nagtzaam, *The Making of International Environmental Treaties: Neoliberal and Constructivist Analyses of Normative Evolution* (2009); L. Godden and J. Peel, *Environmental Law: Scientific, Policy and Regulatory Dimensions* (2010); B. Desai, *Multilateral Environmental Agreements: Legal Status of the Secretariats* (2010). See also D. Hunter, J. Salzman and D. Zaelke, *International Environmental Law and Policy* (2011, 4th edn), Chapter 6; D. Bodansky, J. Brunnée and E. Hey (eds.), *The Oxford Handbook of International Environmental Law* (2007), Chapters 19–21, 40; D. Bodansky, *The Art and Craft of International Environmental Law* (2010), Chapter 10; G. Ulfstein, ‘International Framework for Environmental Decision-making’, in M. Fitzmaurice, D. M. Ong and P. Merkouris (eds.), *Research Handbook on International Environmental Law* (2010), Chapter 2; P. Birnie, A. Boyle and C. Redgwell, *International Law and the Environment* (2009, 3rd edn), Chapter 1.

² R. Jennings and A. Watts (eds.), *Oppenheim’s International Law* (1992, 9th edn), vol. 1, 4.

³ International Law Commission, Draft Articles on State Responsibility, Part 2, Art. 5(1), ‘Report of the ILC to the United Nations General Assembly’, UN Doc. A/44/10, 218 (1989).

Beyond these sources of 'hard law', which establish legally binding obligations, there are also so-called rules of 'soft law', which are not binding *per se* but which in the field of international environmental law can play an important role; they point to the likely future direction of formally binding obligations, by informally establishing acceptable norms of behaviour, and by 'codifying' or possibly reflecting rules of customary law.⁴ It is also worth recalling that, although the rules of public international law primarily govern relations between states, it is now widely accepted that states are no longer the only subjects of international law, and that the rules of international law can, and do, impose obligations upon other members of the international community, in particular international organisations and, to a more limited extent, non-state actors, including individuals and corporations.

The traditional sources of international law, together with acts of international organisations and taking account of hard and soft law, have given rise to a large body of international legal obligations which relate, directly or indirectly, to the protection of the environment. These have arisen without a central legislative authority: the international law-making function is decentralised and fragmented. Accordingly, the rules and principles of international environmental law comprise a complex network of bilateral and multilateral legal relations. With the exception of some of the general rules and principles identified in Chapter 6 below, and the rules established by particular treaties, there exists no 'level playing field' that subjects all states and other members of the international community to identical standards. As treaties increasingly apply differentiated standards, the precise rules applicable to any state will depend on the treaties to which it is a party, and the acts of international organisations and the customary and other rules that are binding upon it. Disparities exist between countries and groups of countries, regions and sub-regions, and within regions and sub-regions.

UNCED attempted to propose a rationalisation of the law-making process by allocating particular functions to the regional and global levels, and by seeking to specify the roles of regional and global international organisations. The effort was not successful, having failed to address the root causes of legal and institutional fragmentation,⁵ although it did focus attention on the limitations of the existing international law-making process in the field of environment and development.

Three limitations of an institutional or procedural nature dominate:

- the need to improve the mechanisms for identifying critical issues and legislative priorities;
- the need to ensure that all relevant actors participate in the law-making process (in particular, developing countries), including the negotiation, implementation, review and governance of international environmental agreements; and
- rationalising the law-making process by improving co-ordination between international organisations, including those established by environmental agreements.⁶

⁴ See C. M. Chinkin, 'The Challenge of Soft Law: Development and Change in International Law', 38 *International and Comparative Law Quarterly* 850 (1989); A. Nollkaemper, 'The Distinction Between Non-Legal Norms and Legal Norms in International Affairs: An Analysis with Reference to the North Sea', 13 *International Journal of Marine and Coastal Law* 355 (1998); A. Boyle, 'Some Reflections on the Relationship of Soft Law and Treaties', 48 *International and Comparative Law Quarterly* 901 (1999).

⁵ The causes are complex, but include a lack of political will on the part of states to establish more effective and efficient arrangements, as well as a degree of bureaucratic resistance within some treaty secretariats.

⁶ See House of Commons Select Committee Report on Multilateral Environmental Agreements, 21 July 1999, www.parliament.the-stationery-office.co.uk/pa/cm199899/cmselect/cmenvtra/307r/30702.htm.

These limitations are reflected in most activities relating to treaty-making and acts of international organisations, although they may also be relevant to developing rules of customary law which can be subjected to ‘consciously directed adjustment’ even if they are not as ‘easily and unambiguously manufactured’.⁷

TREATIES⁸

Treaties (also referred to as conventions, accords, agreements and protocols) are the primary source of international legal rights and obligations in relation to environmental protection. A treaty can be adopted bilaterally, regionally or globally, and is defined by the 1969 Vienna Convention on the Law of Treaties (1969 Vienna Convention)⁹ as ‘an international agreement concluded between states in written form and governed by international law, whether embodied in a single instrument or in two or more related instruments and whatever its particular designation’.¹⁰ At the heart of this definition is the idea that the instrument is intended to create international legal rights and obligations between the parties. Whether an instrument is intended to create such binding obligations will usually be clear from its characteristics and the circumstances in which it was adopted. The 1972 Stockholm Declaration, the 1978 UNEP Draft Principles of Conduct, the 1982 World Charter for Nature, the 1992 Rio Declaration and the 2002 WSSD Plan of Implementation were not intended to create legal rights and obligations; the fact that they are not treaties, however, does not preclude the possibility that they may reflect rules of international law or contribute to the development of such rules, other than by operation of treaty law.¹¹

Numerous attempts have been made to classify treaties in one form or another, such as whether they are bilateral or multilateral, or of general or universal effect. These efforts frequently have not shed a great deal of light on the practical consequences of a particular treaty. Certain treaties nevertheless have greater authority than others, and may assume the quality of ‘law-making treaties’ in the sense that they have been concluded for the purpose of

⁷ P. Szasz, ‘International Norm-Making’, in E. Brown Weiss (ed.), *Environmental Change and International Law: New Challenges and Dimensions* (1992), 41 at 43. On the negotiation of international environmental agreements, see B. I. Spector (ed.), *International Environmental Negotiation: Insights for Practice* (1992); and V. A. Kremenyuk and W. Lang, ‘The Political, Diplomatic and Legal Background’, in G. Sjöstedt (ed.), *International Environmental Negotiation* (1993), 3–16.

⁸ The main collections of treaties are: the *Consolidated Treaty Series* (C. Parry (ed.), 1648–1918); the *League of Nations Treaty Series* (205 vols., 1920–46); and the *United Nations Treaty Series* (since 1946). Relevant national collections include the *United Kingdom Treaty Series* (since 1892), the *European Union Treaty Series* (since 1974) and the United States’ *Treaties and Other International Agreements Series* (13 vols., 1776–1949, and annually thereafter). Apart from the collections of international environmental treaties cited in the ‘Further reading’ section at the end of Chapter 1 (especially those edited by Burhenne and by Ruster and Simma), important environmental treaties are regularly reproduced in *International Legal Materials*. See more generally: A. D. McNair, *The Law of Treaties* (1961, revised edn); S. Rosenne, *The Law of Treaties* (1970); T. O. Elias, *The Modern Law of Treaties* (1974); I. M. Sinclair, *The Vienna Convention on the Law of Treaties* (1984, 2nd edn); P. Reuter, *Introduction to the Law of Treaties* (English trans., 1989); A. Aust, *Modern Treaty Law and Practice* (2000); M. Fitzmaurice, O. Elias and P. Merkouris, *Treaty Interpretation and the Vienna Convention on the Law of Treaties: 30 Years On* (2010).

⁹ Vienna, 23 May 1969, in force 27 January 1980, 8 ILM 679 (1969).

¹⁰ Art. 2(1)(a). Treaties may also be adopted by international organisations: see the 1986 Convention on the Law of Treaties Between States and International Organisations, 25 ILM 543 (1986).

¹¹ On occasion, they are referred to by international courts and tribunals to confirm the existence of a rule or finding: see e.g. *The Legality of the Threat or Use of Nuclear Weapons* (1996) ICJ Reports 226 at 242, para. 30, referring to Principle 24 of the Rio Declaration.

laying down general rules of conduct among a large number of states.¹² Factors which are relevant in assessing the authority of a treaty include: the subject matter it addresses; the number and representativity of states participating in its negotiation, and signing it or becoming parties; the commitments it establishes; and practice prior to and following its entry into force. In relation to environmental obligations, certain treaties of potentially global application might be considered to have ‘law-making’ characteristics, particularly where they have attracted a large number of ratifications and are established to ‘manage’ a problem area over time.¹³ These include the 1946 International Whaling Convention, the 1963 Test Ban Treaty, the 1971 Ramsar Convention, the 1972 London Convention and its 1996 Protocol, the 1972 World Heritage Convention, MARPOL 73/78, the 1973 CITES, the 1982 UNCLOS, the 1985 Vienna Convention, the 1987 Montreal Protocol (as amended), the 1989 Basel Convention, the 1995 Fish Stocks Agreement, the 1998 Chemicals Convention and the 2001 POPs Convention. The 1992 Climate Change Convention and the 1992 Biodiversity Convention can also be considered ‘law-making’ treaties since their provisions lay down basic rules of general conduct capable of adapting to accommodate different sets of environmental circumstances over time. Both the latter treaties have also provided a forum for subsequent legal development: the 1992 Climate Change Convention is supplemented by the 1997 Kyoto Protocol; the 1992 Biodiversity Convention has a 2000 Biosafety Protocol and a 2010 Protocol on Access to Genetic Resources and Fair and Equitable Sharing of Benefits (2010 Nagoya Protocol). Regional arrangements and treaties can also have a general law-making role for those regions; examples include the UNEP Regional Seas Conventions, the 1992 OSPAR Convention, the 1959 Antarctic Treaty and the 1998 Aarhus Convention.

The number of treaties relating to the environment increased dramatically after the 1980s, but has more recently slowed down. The emergence and initial rapid development of international environmental law was evidenced by the number of treaties adopted in each decade of the twentieth century: according to the UNEP Register, the number of such treaties was six by 1950, eighteen in the 1950s and twenty-six in the 1960s. The 1970s saw a jump, following the Stockholm Conference, to forty-seven treaties, a further forty-one treaties added in the 1980s, with 139 treaties recorded in the 1989 UNEP Register,¹⁴ expanding to a total of 272 treaties by 2005.¹⁵ By contrast, the new treaty database, ECOLEX, jointly maintained by UNEP, the FAO and IUCN, records only a dozen or so new multilateral treaties for the period 2005–11. While the table of treaties in this book reflects a similar apparent slowdown in environmental treaty-making during the opening years of the twenty-first century, this has been matched by increased activity within existing treaty regimes to consolidate and expand rules to cover new issues or to implement new mechanisms, such as non-compliance procedures or liability provisions.

To the UNEP Register and ECOLEX lists of treaties must be added those treaties that were not adopted primarily to address environmental issues but which nevertheless establish

¹² José Alvarez, *International Organizations as Law-Makers* (2005).

¹³ José Alvarez, ‘The New Treaty Makers’, 25 *Boston College International and Comparative Law Review* 213 at 221–2 (2002).

¹⁴ UNEP, ‘Register of International Treaties and Other Agreements in the Field of the Environment’, UN Doc. UNEP/GC.15/Inf.2 (1989); see also B. Rüster, B. Simma and M. Bock (eds.), *International Protection of the Environment – Treaties and Related Documents* (1975–82; and 2nd Series, 1990–4); see also the list of agreements and instruments in UNCED Doc. A/CONF.151/PC/77.

¹⁵ UNEP, ‘Register of International Treaties and Other Agreements in the Field of the Environment’, UN Doc. UNEP/Env. Law/2005/3.

environmental obligations. As canvassed in Part IV, these treaties play an increasingly important role in shaping the development of international environmental law. Primary examples include agreements relating to trade and other international economic matters, such as the GATT and other WTO agreements, regional free trade agreements, the agreements establishing the World Bank and the regional multilateral development banks, multilateral development assistance agreements such as the Cotonou Agreement, regional and international treaties on human rights, as well as bilateral and other agreements relating to the protection of foreign investments.¹⁶ Additionally, there also exists a huge body of bilateral environmental agreements that have contributed significantly to the development of international environmental law. More than 2,000 such treaties have apparently been adopted since the mid-eighteenth century.¹⁷

Environmental treaties

Environmental treaties share the same general characteristics as other treaties, and are subject to the general rules reflected in the 1969 Vienna Convention and customary law. Nevertheless, certain special features exist, even if a standard format has not emerged. When regulating regional or global environmental problems, a framework treaty is frequently adopted. This sets out general obligations, creates the basic institutional arrangements, and provides procedures for the adoption of detailed obligations in a subsequent protocol.¹⁸ Frequently, a framework agreement or protocol will have one or more annexes or appendices, which include scientific, technical or administrative provisions (such as dispute settlement or information exchange),¹⁹ but which might also list the species, substances or activities which are regulated,²⁰ or the parties to which one or more substantive obligations will apply.²¹ This three-tiered approach (framework agreement, protocol, annex/appendices) introduces flexibility by allowing legal amendments or other changes in accordance with political, scientific or economic developments.

The treaty-making process

The adoption and entry into force of an environmental treaty is preceded by a series of steps that will frequently take place over a lengthy period of time. Once a state or a group of states has identified an environmental issue as requiring international legislation, they will identify the forum or institution to serve as a legislative forum. If the subject is already covered by a framework treaty, the new legal obligation could be developed in a protocol or by amendments

¹⁶ Chapter 20, pp. 869–86, below.

¹⁷ For an extensive list of environmental agreements, including bilateral agreements, see B. Rüster and B. Simma (eds.), *International Protection of the Environment* (30 vols., and looseleaf service, 1975–93).

¹⁸ Framework treaties allowing for protocols include the conventions adopted under the UNEP Regional Seas Programme (see Chapter 9, pp. 352–65, below); the 1979 LRTAP Convention; the 1985 Vienna Convention; the 1989 Basel Convention; the 1992 Climate Change Convention; the 1992 Biodiversity Convention; and the 1998 Aarhus Convention.

¹⁹ Examples include the 1985 Vienna Convention.

²⁰ Examples include: the 1972 London Convention and its 1996 Protocol; the 1973 CITES; the 1987 Montreal Protocol; the 1989 Basel Convention; the 1998 Chemicals Convention; and the 2001 POPs Convention.

²¹ Examples include the 1992 Climate Change Convention and the 1997 Kyoto Protocol.

to an existing protocol; in such cases, the appropriate forum will be the Conference of the Parties or equivalent institution established by the framework agreement. If the international legislation can appropriately be dealt with by an international act other than a treaty, it may be addressed simply by a binding decision, resolution, or other act of an international organisation or the Conference of the Parties of an environmental treaty. If a new treaty is required, the states involved will need to determine which organisation will conduct the negotiation of the treaty. This decision can be controversial. Thus, although the 1992 Biodiversity Convention was negotiated under the auspices of UNEP, developing countries insisted that the UN General Assembly, rather than UNEP, be responsible for the Climate Change Convention. This was due to the view that developing countries were better represented in the UN General Assembly than at UNEP and better able to participate in negotiations. Similar considerations lay behind the failure of the UN General Assembly in December 1992 to agree whether the UN Commission on Sustainable Development should meet in Geneva (where many developing countries are not represented) or New York (where all developing countries are represented), or in both places.²²

Once the forum for negotiations is agreed, that body will establish a negotiating process. This could be anything from an informal *ad hoc* group of governmental experts (such as was established by the UNEP Governing Council for what became the 1985 Vienna Ozone Convention), to a formal institutional structure (such as the Intergovernmental Negotiating Committee for a Framework Convention on Climate Change (INC/FCCC), established by UN General Assembly Resolution 44/212). Similar arrangements apply in the negotiation of protocols under framework agreements. An alternative approach is for an international organisation to establish a subsidiary body to 'prepare' a text for consideration and adoption by an Intergovernmental Diplomatic Conference (such as the establishment by the Governing Body of the IAEA of a Standing Committee on Nuclear Liability to prepare draft amendments to the 1963 Vienna Convention).

Negotiations may be open-ended in time or established for a limited period. Examples of the former include the negotiations of the 1985 Vienna Convention (which took place over five years), the 1982 UN Convention on the Law of the Sea (UNCLOS) (which took nearly twenty years) and the ongoing climate change negotiations considering future emission reduction requirements and other provisions for mitigation and climate change adaptation. On the other hand, formal negotiations of the 1992 Climate Change Convention and the 1992 Biodiversity Convention were concluded in just fifteen months, the negotiators having been asked to prepare a text in time for signature at UNCED. Once the draft text has been negotiated, it will be adopted and opened for signature. It will then enter into force in accordance with its provisions on entry into force.²³

The 1969 Vienna Convention and legal issues relating to treaties

The international law of treaties is governed by customary law, the 1969 Vienna Convention and the 1986 Vienna Convention. The 1969 Vienna Convention, large parts of which reflect

²² UNGA Res. 47/189 (1992) recommended that the first substantive session would be held in New York 'without prejudice to the venue of its future session': para. 9. The secretariat to the Commission on Sustainable Development is based in New York, and the normal practice is for a meeting of an institution to be held in the place in which its secretariat is based.

²³ See M. Fitzmaurice, 'Expression of Consent to Be Bound by a Treaty as Developed in Some Environmental Treaties', in J. Klabbers and R. Lefeber (eds.), *Essays on the Law of Treaties* (1997), 59.

rules of customary international law, provides the basis for considering many of the legal issues that arise in relation to treaties. With respect to 'environmental' treaties, certain legal issues merit particular attention, including: the effect of treaties on third or non-parties; the proper approach to interpreting the terms of a treaty; the consequences of conflict between two or more treaties; the legal effect of reservations and interpretative declarations; and the legal effect, if any, of unratified treaties. Each of these issues raises complex legal points, the resolution of which will always turn on the particular facts of a matter. Accordingly, the discussion that follows should be considered as introductory.

Interpretation

The techniques used to interpret treaties and other international acts can have important practical consequences. A restrictive approach to interpretation will limit the scope and effect of a rule, whereas a broad approach may identify an obligation where none was thought to exist. Most environmental treaties include definitions of some of the key words or phrases used in the treaty, but invariably there will be words for which states could not reach an agreed definition²⁴ or for which no definition was thought necessary at the time of negotiation.²⁵ Different treaties may define the same word or words differently.²⁶

The rules governing the interpretation of treaties are set out in Articles 31 and 32 of the 1969 Vienna Convention. Article 31 establishes the primary rule that a treaty is to be interpreted 'in good faith in accordance with the ordinary meaning to be given to the terms of the treaty in their context and in the light of its object and purpose'. From this general approach certain consequences follow. A person seeking to rely on a special meaning for the terms of a treaty, as opposed to the ordinary meaning, will have to prove that special meaning.²⁷ The context of a treaty includes the whole of its text, the preamble, annexes and, in the case of some environmental treaties, footnotes.²⁸ Any agreement made between all the parties in connection with the conclusion of the treaty and any instrument made by one or more parties relating to the conclusion of the treaty and accepted by the other parties as such are included in understanding the treaty's context.²⁹ Examples of the latter include a protocol adopted after the conclusion of a framework treaty. In relation to environmental treaties, this happens frequently and is usually specifically provided for in the treaty, and a protocol may incorporate certain parts of a

²⁴ See e.g. the failure to reach agreement on the definition of 'forest' in the 1992 Climate Change Convention.

²⁵ See e.g. the difficulties caused by the failure of the 1973 CITES to define 'pre-Convention specimen': Chapter 10, pp. 476–7, below.

²⁶ See e.g. the different definitions of 'pollution' in the 1979 LRTAP Convention (Chapter 7, p. 247, below), the 1976 Barcelona Convention and the 1982 UNCLOS (Chapter 9, pp. 351–2, below), of 'waste' (see Chapter 12, pp. 557–60, below) and of 'adverse effects' in the 1985 Vienna Convention and the 1992 Climate Change Convention (see Chapter 17, p. 734, below).

²⁷ *Legal Status of Eastern Greenland* case, PCIJ (1933) Ser. A/B No. 53, 49, as to the meaning of the term 'Greenland'.

²⁸ E.g. 1979 LRTAP Convention, Art. 8(f); and 1992 Climate Change Convention, Art. 1, which states that '[t]itles of articles are included solely to assist the reader'. The latter footnote raises the question of the legal effect, if any, of titles to individual Articles, and was inserted at the instigation of the US delegation in an attempt to downplay the legal effect of Art. 3, which is entitled 'Principles'.

²⁹ 1969 Vienna Convention, Art. 31(2). See e.g. Final Act of the Eleventh Antarctic Treaty Special Consultative Meeting, 4 October 1991, noting that the harvesting of ice was not considered to be an Antarctic mineral resource activity under the 1991 Antarctic Environment Protocol; see Chapter 13, p. 586, below.

framework treaty.³⁰ Finally, apart from the context, Article 31(3) of the 1969 Vienna Convention provides that account is also to be taken of certain factors which are extrinsic to the treaty: subsequent agreement between the parties regarding the interpretation or application of the treaty; subsequent practice in application of the treaty which establishes the agreement of the parties regarding its interpretation;³¹ and any relevant rules of international law applicable in the relations between the parties.³² A notable development in recent years has been the willingness of international courts charged with the interpretation and application of an international agreement to have regard to rules of international environmental law arising outside the treaty which is being interpreted.³³ Related to this approach is the recognition by the ICJ that it is appropriate, in interpreting and applying environmental norms, including those reflected in treaties, to have regard to new norms and standards which may have been developed in the period after a treaty has been adopted:

Such new norms have to be taken into consideration, and such new standards given proper weight, not only when States contemplate new activities but also when continuing with activities begun in the past.³⁴

If the application of the approach laid down by Article 31 produces a result which is not clear or which is ambiguous, Article 32 allows recourse to be had to supplementary means of interpretation, which may also be used to confirm a meaning already established. The principal supplementary means are the *travaux préparatoires* of a treaty, including the minutes of formal negotiations, reports of sessions, and prior drafts of a text. Other supplementary means include the circumstances of a treaty's conclusion, and the application of certain principles of interpretation, such as *in dubio mitius*,³⁵ and *expressio unius est exclusio alterius*.³⁶ The reliance on supplementary means of interpretation at a

³⁰ E.g. 1987 Montreal Protocol, Art. 14.

³¹ Decisions and acts of the institutions established by treaties, even if they are not binding, may thus assume a particular importance. See e.g. CITES Conf. Res. 5.11, concerning the meaning of 'pre-convention specimen', Chapter 10, pp. 476–7, below; and Appendix I to Decision II/8, adopted at the second Meeting of the Parties to the Montreal Protocol establishing an indicative list of categories of incremental cost to be used by the Financial Mechanism, UNEP/OzL.Pro.2/3, 41, 29 June 1990.

³² On the interpretation of treaties by reference to customary international law, see the *Reparations for Injuries* case (1949) ICJ Reports 174 at 182. The European Court of Human Rights has held that the reference to 'relevant rules of international law' includes general principles of law, 57 ILR 201 at 217 (1975). See generally Philippe Sands, 'Sustainable Development: Treaty, Custom, and the Cross-Fertilization of International Law', in Alan Boyle and David Freestone (eds.), *International Law and Sustainable Development: Past Achievements and Future Challenges* (Oxford University Press, 1999), 39. In the *EC – Biotech* case, the WTO panel took a restrictive approach in interpreting the notion of rules of international law applicable in the relations between the parties. See also A. Mitchell, 'The Legal Basis for Using Principles in WTO Disputes', 10 *Journal of International Economic Law* 795–835 (2007); and M. Young, 'The WTO's Use of Relevant Rules of International Law: An Analysis of the Biotech Case', 56 *International and Comparative Law Quarterly* 907 (2007).

³³ See e.g. WTO Appellate Body, *US – Import Prohibition of Certain Shrimp and Shrimp Products*, 12 October 1998, paras. 129–34, 38 ILM 118 (1999); and P. Sands, 'International Courts and the Application of the Concept of "Sustainable Development"', 3 *Max Planck Yearbook of UN Law* 389–407 (1999).

³⁴ *Case Concerning the Gabčíkovo-Nagymaros Project* (1997) ICJ Reports 7 at 78, para. 140. This has been referred to as the 'principle of contemporaneity' by Judge Weeramantry: *ibid.*, 113 *et seq.*

³⁵ The PCIJ recognised the principle as meaning that, 'if the wording of a treaty provision is not clear, in choosing between several admissible interpretations, the one which involves the minimum of obligations for the parties should be adopted': *Frontier Between Turkey and Iraq*, PCIJ (1925) Ser. B No. 12, 25.

³⁶ R. Jennings and A. Watts (eds.), *Oppenheim's International Law* (1992, 9th edn), vol. 1, 1279, s. 633, describes it as an 'essentially grammatical' rule.

later date means that states will ensure during the negotiation of a text that they are alert to the possible consequences of adding or removing language, or of opposing or failing to oppose language. In the negotiation of instruments, such as the Climate Change Convention and the Biodiversity Convention, the number of states involved was so large that it proved impossible to keep detailed formal records of all aspects of proceedings, although informal records may be kept. This will make recourse to *travaux préparatoires* less feasible.

In practice, international bodies that are required to interpret and apply the language of a treaty apply widely differing approaches. One example of a 'restrictive' approach to treaty interpretation is the GATT Panel decision in the yellow-fin tuna dispute between Mexico and the United States, where the Panel interpreted Article XX(b) and (g) of the GATT to exclude the possibility of allowing an importer to take into account the environmental effects of a process leading to a product's final state when considering whether a product's import could be prohibited.³⁷ An example of a more 'expansive' approach to treaty interpretation is the holding by the European Court of Justice (ECJ) that environmental protection was one of the EU's 'essential objectives', even in the absence of any express reference to environmental protection in the original Treaty of Rome.³⁸ The approach set out by the ICJ to the interpretation of environmental agreements has recently been addressed in the *Pulp Mills* case.³⁹

Entry into force

Treaties provide expressly for the circumstances in which they will enter into force. This is usually upon ratification by a certain number of states.⁴⁰ In the field of environmental law, global treaties have tended to require a low number of ratifications for entry into force.⁴¹ In some instances, entry into force depends upon the participation of certain states or states representing a certain percentage of a particular activity. Examples include the 1992 Oil Pollution Fund Convention (entry into force upon ratification by eight states receiving at least 450 million tons of contributing oil),⁴² the 1987 Montreal Protocol (entry into force upon eleven ratifications representing at least two-thirds of the 1986 estimated global consumption of substances controlled by the Montreal Protocol)⁴³ and the 1997 Kyoto Protocol (entry into force upon ratification by fifty-five states, incorporating developed states accounting for 55 per cent of total carbon dioxide emissions from developed states as at 1990).⁴⁴

Establishing a link between entry into force and the participation of particular states or all states that negotiated the agreement is designed to ensure the fullest participation of key states. However, it is liable to make entry into force hostage to the decision of just one or two states, as

³⁷ Chapter 19, pp. 813–15, below. The approach has not been followed by the WTO Appellate Body: see note 33 above and the accompanying text.

³⁸ ECJ, Case 240/83, *Procureur de la République v. Association de Défense des Brûleurs d'Huiles Usagées* [1985] ECR 531.

³⁹ At paras. 48–66; see Chapter 8, pp. 330–3, below.

⁴⁰ Use of the term 'ratification' here includes the acceptance of, approval of or accession to a treaty.

⁴¹ See e.g. the twenty states required for the entry into force of the 1985 Vienna Convention and the 1989 Basel Convention.

⁴² Chapter 17, pp. 748–55, below. The 1984 Protocol has not entered into force because the required number of ratifications have not been achieved: *ibid.*

⁴³ Art. 16(1). Cf. entry into force of the 1990 amendments to the Montreal Protocol, which required at least twenty ratifications: 1990 amendments, Art. 2(1).

⁴⁴ Art. 25(1).

happened with the 1997 Kyoto Protocol following the decision of the United States to reject the Protocol.⁴⁵ As the United States accounted for around one-quarter of global greenhouse gas emissions in 1990, this required ratification of the Protocol by virtually all other developed countries, including Russia, for the treaty to enter into force. A number of environmental agreements have not entered into force because of their participation requirements: these include the 1988 CRAMRA, the 1993 Lugano Convention, the 1996 Comprehensive Test Ban Treaty and the 1997 Watercourses Convention.

As environmental agreements increasingly affect national economic interests, and where a large number of states have been involved in the negotiation process, the number of states required to ratify to bring a treaty into force has increased. The Biodiversity Convention and the Climate Change Convention respectively required the ratification of thirty and fifty states.⁴⁶ UNCLOS, which required sixty ratifications, only entered into force twelve years after its conclusion. Treaties that have not entered into force may nevertheless have certain legal consequences. Under the 1969 Vienna Convention, signatory states must refrain from acts which would defeat the objects and purposes of the treaty they have signed (unless they have indicated an intention not to become a party),⁴⁷ and, partly with this in mind, arrangements have been made to allow for the provisional application of a treaty or part of a treaty, prior to its entry into force.⁴⁸ Moreover, a treaty which has not yet entered into force may also contribute to the development of customary international law,⁴⁹ or reflect in clearer terms pre-existing customary international law.

Reservations and interpretative declarations

Most modern international environmental agreements do not allow reservations.⁵⁰ A few are silent on the matter,⁵¹ and some permit reservations only in strict accordance with specific provisions of the treaty.⁵² The general tendency to prohibit the use of reservations is intended to avoid a proliferation of bilateral legal relations. There are two principal reasons for this in the environmental field. First, many environmental treaties are framework agreements providing general structures and guidelines, rather than specific commitments with implications for a

⁴⁵ Concerns about delay and the difficulty of agreeing applicable criteria had prevented the participation of certain states or categories of states from being required in the Climate Change Convention. No agreement could be reached on which greenhouse gases or their proportions should establish a threshold for entry into force.

⁴⁶ 1992 Biodiversity Convention, Art. 36; 1992 Climate Change Convention, Art. 23. The Nagoya Protocol to the Biodiversity Convention requires the ratification of fifty states: Art. 33.

⁴⁷ Art. 18. An example of a state indicating its intention not to become a party to a convention that it has signed is the United States in relation to the 1997 Kyoto Protocol.

⁴⁸ See e.g. Resolutions 2 and 3 of the Conference adopting the 1990 Oil Pollution Preparedness Act calling for implementation of the Convention pending entry into force, including in particular Art. 12: Final Act, OP/PR/CONF/24, 29 November 1990, reprinted in 1 *Yearbook of International Environmental Law* 546 at 569–70 (1990). See also the particular transitional arrangements in relation to the 1998 Chemicals Convention, Chapter 11 below.

⁴⁹ In the *Gabčíkovo-Nagymaros* case, the ICJ referred to the adoption of the 1997 Watercourses Convention as evidence of the 'modern development of international law' notwithstanding (1) the fact that the Convention was adopted between the close of pleadings in the case and the Court's judgment, and (2) Slovakia had abstained in the adoption of the Convention: (1997) ICJ Reports 7 at 56, para. 85.

⁵⁰ 1985 Vienna Convention, Art. 18; 1987 Montreal Protocol, Art. 18; 1989 Basel Convention, Art. 26(1); 1992 Biodiversity Convention, Art. 37; 1992 Climate Change Convention, Art. 24; 2001 POPs Convention, Art. 27; 2010 Nagoya Protocol, Art. 34.

⁵¹ 1979 LRTAP Convention; 1991 Espoo Convention; 1992 Watercourses Convention.

⁵² 1982 UNCLOS, Art. 309; 1993 Civil Liability Convention, Art. 35.

particular activity or practice. Second, where a treaty does deal with particularly sensitive or controversial matters, especially where important economic interests are involved, the negotiated text will often represent a series of delicate compromises which would be undermined by allowing one or more states to opt out of certain provisions. Flexibility is intended to be built into the text itself. Reservations or other forms of opt-out are usually permitted in respect of 'secondary legislation', such as an act adopted by the institutions established under an environmental agreement. Examples include the reservations entered by the former Soviet Union, Norway, Iceland and Japan to the 1983 International Whaling Convention moratorium on commercial whaling (that may be addressed in due course by the ICJ in the *Whaling in the Antarctic* case (Australia v. Japan)),⁵³ and the reservation originally entered by the United Kingdom to the decision at CITES to uplist the African elephant from Appendix II to Appendix I and exclude for a limited period the operation of the decision to the territory of Hong Kong.⁵⁴ Where reservations are either expressly allowed or not prohibited, either for treaties or for acts of institutions adopted under treaties, customary international law and the 1969 Vienna Convention provide certain guidance on the conditions under which they will be permitted.⁵⁵ Parties are free to object to reservations that have been entered, which usually happens when the reservation is considered to be incompatible with the objects and purposes of the treaty or another rule of international law.⁵⁶

The trend towards limiting the permissibility of reservations has not prevented states, when signing or ratifying environmental treaties, from entering statements or 'interpretative declarations' explaining an understanding of a particular provision. Examples include: the declaration by the then Federal Republic of Germany to the 1989 Basel Convention;⁵⁷ the declaration entered by four small island states (Fiji, Kiribati, Nauru and Tuvalu) to the 1992 Climate Change Convention;⁵⁸ the declaration entered by the United Kingdom in respect of the 1992 Biodiversity Convention;⁵⁹ and the declarations submitted by several states to the 2001 POPs Convention.⁶⁰ The legal effect of such interpretative declarations remains an open question for which

⁵³ Chapter 9, pp. 426–28, below; see Application of Australia filed at the ICJ against Japan, 31 May 2010.

⁵⁴ Chapter 10, p. 475, below.

⁵⁵ 1969 Vienna Convention, Art. 19; see also the *Case Concerning Reservations to the Convention on the Prevention and Punishment of the Crime of Genocide* (1951) ICJ Reports 15.

⁵⁶ See e.g. the numerous objections to the reservations entered by the former Soviet Union under the 1969 CLC (which includes no provision on reservations), purporting to exclude the application of certain jurisdictional rules under the Convention from being applied in respect of state-owned ships; see T. Scovazzi and T. Treves (eds.), *World Treaties for the Protection of the Environment* (1992), 642.

⁵⁷ The declaration provided, *inter alia*, that 'nothing in this Convention shall be deemed to require the giving of notice to or the consent of any state for the passage of hazardous wastes on a vessel under the flag of a party exercising its right of innocent passage through the territorial sea or the freedom of navigation in an exclusive economic zone under international law': see Scovazzi and Treves, *World Treaties*, 464.

⁵⁸ The states declared their 'understanding that signature of the Convention shall in no way constitute a renunciation of any rights under international law concerning state responsibility for the adverse effects of climate change and that no provisions in the Convention can be interpreted as derogating from the principles of general international law'.

⁵⁹ The declaration states, *inter alia*, 'the understanding that Article 3 of the Convention sets out a guiding principle to be taken into account in the implementation of the Convention', and that 'nothing in Article 20 or Article 21 authorises the Conference of the Parties to take decisions concerning the amount, nature, frequency or size of the contributions of the Parties under the Convention'; on these provisions, see Chapter 10, pp. 470–1, below.

⁶⁰ Parties, including Australia and Canada, have declared that any amendment made to the Annexes under the Convention listing chemicals classed as POPs will only come into force for those countries upon their ratification of that amendment.

there are no settled general rules. On the other hand, some treaties expressly require declarations to be entered in respect of procedural matters⁶¹ or a choice among substantive options available under a treaty,⁶² or allow generally for declarations or statements.⁶³ The majority are silent as to declarations. The case brought in December 2010 by Mauritius against the United Kingdom concerning the legality of the 'marine protected area' for the Chagos Archipelago may require the Annex VII arbitral tribunal to address the nature and effect of UK declarations under Part XV of UNCLOS.⁶⁴

Relations between international agreements

The proliferation of environmental treaties has raised the possibility of overlap or conflict between two or more treaties. This issue is particularly important for the relationship between the growing number of environmental treaties which prohibit trade in certain goods and the WTO, which seeks to restrict non-tariff barriers to trade, including national or, possibly, internationally agreed environmental protection measures. Potential conflict between environmental agreements also exists where regional and global agreements have been adopted for the same subject matter, such as those for the protection of the marine environment (which might adopt different rules on the dumping of wastes)⁶⁵ and mitigation of climate change (as in the case of iron ocean fertilisation which has received different responses in the climate change, biodiversity and ocean dumping regimes).⁶⁶

The relationship between WTO rules and the 1987 Montreal Protocol illustrates the potential for conflict. Parties to the 1987 Montreal Protocol are under an obligation to prohibit the import of controlled substances from any state not party to the Protocol, a requirement that may conflict with earlier GATT obligations, if both the countries concerned were parties to the GATT.⁶⁷ The 1990 amendments to the Protocol may be problematic, since they ban imports from third parties of products *containing* controlled substances (such as refrigerators).⁶⁸ In the event that a party to the Montreal Protocol were to ban the import of refrigerators containing CFCs from a third state, where both states were party to the GATT, which obligation would prevail?

Article 30 of the 1969 Vienna Convention sets forth rules governing the situation where states are parties to treaties relating to the same subject matter (in this case, trade). Article 30(2) provides that, when a treaty specifies that it is subject to, or not incompatible with, an earlier or later treaty, then the provisions of the other treaty will prevail. Under Article 30(3), if all the parties to the earlier treaty are also parties to the later treaty, and the earlier treaty continues in

⁶¹ 1985 Vienna Convention, Art. 11(3), providing for declarations concerning the acceptance of compulsory means of dispute settlement.

⁶² 1991 VOC Protocol, Art. 2(2), requiring declarations to express a choice between three possible options setting dates and amounts for future emissions of volatile organic compounds.

⁶³ 1982 UNCLOS, Art. 310, allowing declarations or statements 'however phrased or named, with a view, *inter alia*, to the harmonisation of its laws and regulations with the provisions of this Convention, provided that such declarations or statements do not purport to exclude or to modify the legal effect of the provisions of this Convention in their application to that state'.

⁶⁴ Chapter 9, pp. 444–5, below. ⁶⁵ Chapter 9, pp. 365–70, below.

⁶⁶ See D. Freestone and R. Rayfuse, 'Iron Ocean Fertilization and International Law', 364 *Marine Ecology Progress Series* 227 (2008).

⁶⁷ 1987 Montreal Protocol, Art. 4(1). ⁶⁸ 1990 amendment, Art. 4(3)–(4bis).

force, then only those provisions of the earlier treaty that are compatible with the later treaty will apply. Finally, Article 30(4) governs the likely situations when the parties to the later treaty do not include all the parties to the earlier treaty. It provides that (a) as between states party to both treaties the same rule applies as in Article 30(3); and (b) as between a state party to both treaties and a state party to only one of the treaties, the treaty to which both states are parties governs their mutual rights and obligations.

The application of Article 30(4) would appear to lead to the following result: in the event of a conflict between the GATT (first signed in 1947) and the 1987 Montreal Protocol, where two states are parties to the GATT but only one state is a party to the Montreal Protocol, then the provisions of the GATT would appear to prevail, without taking into account any permissible exceptions under the GATT. However, if both states are parties to both instruments, then the later in time (the Montreal Protocol) will prevail.⁶⁹ A further complicating factor is that, with the establishment of the WTO, GATT 1947 was re-promulgated, in essentially the same form, as GATT 1994, post-dating the 1987 Montreal Protocol.

With the growing number of environmental agreements touching upon the same subject matter, the question has also arisen as to the conditions under which a party is entitled to invoke the dispute settlement provisions under one treaty as opposed to another. This may be a particularly complex issue where one treaty sets forth general rules and another more specialised rules, as is the case with the 1982 UNCLOS and more specific marine pollution or fisheries conservation agreements. The issue arose in the *Southern Bluefin Tuna* cases, which Australia and New Zealand chose to litigate under the 1982 UNCLOS rather than under the (regional) 1993 Convention on the Conservation of Southern Bluefin Tuna.⁷⁰ Japan argued that the UNCLOS Annex VII arbitral tribunal did not have jurisdiction, on the grounds, *inter alia*, that the 1993 Convention governed the dispute and Article 16 of that Convention (on dispute settlement) excluded the application of the procedures on dispute settlement under Part XV of UNCLOS.⁷¹ By four votes to one, the UNCLOS arbitral tribunal accepted the argument: although Article 16 of the 1993 Convention did not expressly exclude any further proceedings under Part XV of UNCLOS, the 'intent of Article 16 [was] to remove proceedings under that Article from the reach of the compulsory procedures of section 2 of Part XV of UNCLOS'.⁷² The award declining jurisdiction was not received with broad approval.⁷³ It should not be assumed that it will be followed,⁷⁴ particularly having regard to the approach taken by the International Tribunal for the Law of the Sea (ITLOS) the following year in the provisional measures phase of the *MOX* case, which raised a related, but distinguishable, issue.⁷⁵ The ITLOS rejected an

⁶⁹ See further Chapter 19, p. 803, below. ⁷⁰ Chapter 9, pp. 420–1, below.

⁷¹ Art. 281(1) of UNCLOS provides: 'If the States Parties which are parties to a dispute concerning the interpretation or application of this Convention have agreed to seek settlement of the dispute by peaceful means of their own choice, the procedures provided for in this Part apply only where no settlement has been reached by recourse to such means and the agreement between the parties does not exclude any further procedure.'

⁷² Arbitral Award of 4 August 2000, para. 57, 39 ILM 1359 (2000).

⁷³ See e.g. B. Oxman, 'Complementary Agreements and Compulsory Jurisdiction', 95 *American Journal of International Law* 277 (2001).

⁷⁴ See P. Sands, 'ITLOS: An International Lawyer's Perspective', in M. H. Nordquist and J. Norton Moore (eds.), *Twenty-Fifth Annual Conference: Current Marine Environmental Issues and the International Tribunal for the Law of the Sea* (2001).

⁷⁵ ITLOS, *MOX Plant* case, Order of 3 December 2001.

argument by the United Kingdom to the effect that ITLOS did not have jurisdiction since the dispute was centred upon other conventions (and EU law) with their own dispute settlement provisions, noting that:

even if the OSPAR Convention, the EC Treaty and the Euratom Treaty contain rights or obligations similar to or identical with the rights or obligations set out in the Convention, the rights and obligations under those agreements have a separate existence from those under the Convention . . . [T]he application of international law rules on interpretation of treaties to identical or similar provisions of different treaties may not yield the same results, having regard to, *inter alia*, differences in the respective contexts, objects and purposes, subsequent practice of parties and *travaux préparatoires*.⁷⁶

However, the ECJ subsequently disagreed with that approach, ruling that it had exclusive competence to deal with an environmental dispute relating to UNCLOS between two EU members, in circumstances where the EU had exclusive competence over certain of the environmental causes of action in the case.⁷⁷ The issue is likely to be of continuing significance for the interpretation and application of international environmental agreements, which often contain the same or similar language imposing substantive obligations, but which may have been negotiated or subsequently applied in a particular context. It will also be relevant to the exercise of jurisdiction by international courts and tribunals. For example, in the *Pulp Mills* case, the ICJ declined to interpret a provision of the treaty that was in dispute as a referral to other international environmental agreements.⁷⁸ Consequently, the Court limited its findings to compliance with the bilateral treaty in dispute, rather than ruling on broader questions of whether Uruguay had complied with obligations under other multilateral international environmental conventions.⁷⁹

Amendment

The need for expedited amendment processes for environmental agreements (to take into account changes of a scientific, economic or political nature) has led to the adoption of innovative approaches. Almost all environmental treaties make express provision for a formal amendment process by the adoption of a further treaty between the parties.⁸⁰ Informal amendment may also take place orally or by tacit agreement of the parties, including decisions or acts of organs established under a treaty which may amount to a *de facto* amendment.

The provisions of the 1985 Vienna Convention and the 1987 Montreal Protocol illustrate novel techniques, which have been subsequently followed.⁸¹ The 1985 Vienna Convention is a framework treaty with two annexes and provision for protocols.⁸² To date, the only protocol is

⁷⁶ Paras. 50 and 51. In June 2003, the Annex VII Tribunal in the *MOX* case suspended the proceedings pending clarification of jurisdictional issues relating to EC competence: see Order No. 3, 24 June 2003 (available at www.pca-cpa.org).

⁷⁷ Chapter 5, p. 179, below. ⁷⁸ Chapter 8, pp. 330–3, below. ⁷⁹ *Pulp Mills*, para. 63.

⁸⁰ 1971 Fund Convention, Art. V(1); 1972 London Dumping Convention, Art. XV; 1989 Basel Convention, Art. 17; 1992 Biodiversity Convention, Arts. 29 and 30; 1992 Climate Change Convention, Arts. 15 and 16. See generally M. Bowman, 'The Multilateral Treaty Amendment Process: A Case Study', 66 *International and Comparative Law Quarterly* 540 (1995).

⁸¹ See e.g. 1997 Kyoto Protocol; 2001 POPs Convention. ⁸² Art. 8.

the 1987 Montreal Protocol, which was amended and adjusted in 1990, 1992, 1997, 1999 and 2007. The 1985 Vienna Convention establishes the rules for its own amendment as well as that of any protocols: as a last resort, amendments to the 1985 Vienna Convention may be adopted by a ‘three-fourths majority vote of the parties present and voting’ at a meeting of the Conference of the Parties; amendments to protocols require only a ‘two-thirds majority of the parties to that protocol present and voting’ at a Meeting of the Parties to the protocol.⁸³ The 1987 Montreal Protocol also provides an alternative to formal amendment by the adoption of ‘adjustments and reductions’ by the parties; adjustment may be made to the ozone-depleting potential of controlled substances identified in Annexes to the Protocol, as well as production or consumption levels of controlled substances.⁸⁴ As a last resort, adjustments and reductions are adopted by a two-thirds majority of the parties present and voting which represent at least 50 per cent of the total consumption of the controlled substances, and these are binding on all parties without the possibility of objection.⁸⁵ The Protocol also allows the parties to add or remove any substances from any Annex to the Protocol and to decide on the mechanism, scope and timing of the control measures that should apply to such substances.⁸⁶ Such decisions become effective provided they have been accepted by a two-thirds majority of the parties present and voting, without specifying the manner of acceptance or the effect of any objection of a party outside the two-thirds majority.⁸⁷ Adjustments under Article 9 and decisions under Article 10 are made on the basis of assessments under Article 6. This procedure has been used to adopt adjustments at the second, fourth, seventh, ninth and eleventh Meetings of the Parties to the Protocol.⁸⁸ Amendments to the Annexes to the 1985 Vienna Convention or the 1987 Montreal Protocol are adopted in the same way as amendments to that Convention or Protocol.⁸⁹ However, the procedure for entry into force of an Annex amendment differs: it requires a party which objects to such an amendment to opt out, by notifying the depositary within six months of its adoption, failing which it will bind any state which has not objected.⁹⁰

OTHER INTERNATIONAL ACTS

Other international acts include those adopted by international organisations (which may be binding or non-binding), and by states in the form of non-binding declarations, memoranda of understanding or ‘Action Plans’. Non-binding acts are sometimes referred to as ‘soft law’. Although not legally binding, they may contribute to the development of customary law or lead to the adoption of binding obligations by treaty or an act of an international organisation.

Acts of international organisations

Acts of international organisations, sometimes referred to as secondary legislation, provide an important source of international law: they may be legally binding *per se*, or they may amend

⁸³ Art. 9. Amendments which have been adopted will then need to be ratified, approved or accepted before entering into force, by three-fourths of the parties to the Convention or two-thirds of the parties to the Protocol unless otherwise provided by the Protocol: Art. 9(5). The Convention has not been amended, but the Protocol was amended in 1990, 1992, 1997, 1997 and 2007: see Chapter 7, pp. 264–5, below.

⁸⁴ Montreal Protocol, Art. 2(9)(a). ⁸⁵ Montreal Protocol, Art. 2(9)(c) and (d). ⁸⁶ Montreal Protocol, Art. 2(10)(a).

⁸⁷ Montreal Protocol, Art. 2(10)(b). ⁸⁸ Chapter 7, pp. 265–6, below.

⁸⁹ 1985 Vienna Convention, Art. 10(2) and (3). ⁹⁰ 1985 Vienna Convention, Art. 10(2)(b).

treaty obligations, or they may authoritatively interpret treaty obligations.⁹¹ Since binding acts of international organisations derive their legal authority from the treaty on which they were based, they can be considered as part of treaty law.

Many far-reaching decisions affecting the use of natural resources result from acts of international organisations. Examples include: the 1983 decision of the International Whaling Commission to adopt a moratorium on commercial whaling;⁹² the 1985 resolution of the Consultative Meeting of the Parties to the 1972 London Convention adopting a moratorium on the dumping of radioactive waste at sea;⁹³ the 1989 decision by the CITES Conference of the Parties to ban the international trade in African elephant products;⁹⁴ the 1991 Security Council resolution reaffirming the liability of Iraq for the environmental damage caused by its unlawful invasion of Kuwait;⁹⁵ and the 2010 decision of the Conference of the Parties to the 1992 Biodiversity Convention adopting a moratorium on commercial ocean fertilisation activities ‘until there is an adequate scientific basis on which to justify such activities’.⁹⁶

The legal effect of an act of an international organisation depends upon the treaty basis of the organisation, as the following examples illustrate. Usually, the treaty will specify the intended legal consequences. Under Article 25 of the UN Charter, UN General Assembly resolutions are ‘only recommendatory’, whereas resolutions of the Security Council are binding ‘on all states’.⁹⁷ Acts of organisations established by environmental treaties may be binding or non-binding. Such institutions often have a choice. Thus, the International Whaling Commission can adopt regulations that are ‘effective’ for parties not presenting an objection, or it can adopt recommendations that are not legally binding.⁹⁸ The Consultative Meetings of the Parties to the 1972 London Convention and 1996 Protocol can amend the Annexes to the Convention, which enter into force either upon notification by a party or after a stated period of time, unless a party declares that it is not able to accept an amendment.⁹⁹ The CITES Conference of the Parties adopts amendments to Appendices I and II to the Convention which ‘enter into force’ for all parties except those making a reservation.¹⁰⁰ And the Meeting of the Parties to the 1987 Montreal Protocol may adopt amendments and adjustments that can bind even parties not accepting them.¹⁰¹ In each case, a majority of the parties to a treaty may adopt binding acts, although the minority is usually free to opt out.

In other cases, an international organisation may adopt an act (which might be called a resolution, recommendation or decision), without a clear provision in the treaty establishing the legal consequences of that act. The legal effect of resolutions adopted under the 1972 London Convention is less clear (such as the resolution on the dumping of radioactive wastes at sea adopted by the ninth Consultative Meeting, which agreed to a ‘suspension of all dumping at sea of radioactive wastes and other radioactive matter’).¹⁰² Such resolutions, addressing substantive matters, are not binding *per se*, although they may contribute to the development of customary international law, or may set forth an authoritative interpretation of the international agreement under which it was adopted. Examples of such acts include the resolutions

⁹¹ See generally P. Sands and P. Klein, *Bowett's Law of International Institutions* (2009, 6th edn), 284–302.

⁹² Chapter 19, pp. 423–6, below. ⁹³ Chapter 9, p. 368, below. ⁹⁴ Chapter 9, p. 475, below.

⁹⁵ Chapter 17, p. 708, below. ⁹⁶ Decision IX/16, COP 9, C.4.

⁹⁷ This categorisation may be somewhat misleading, however, since certain resolutions of the General Assembly can have ‘definitive legal effect’.

⁹⁸ 1946 International Whaling Convention, Arts. V(1) and (3) and VI. ⁹⁹ 1972 London Convention, Art. XV(2).

¹⁰⁰ Arts. XI(3)(b) and XV. ¹⁰¹ See pp. 107–8, above. ¹⁰² Chapter 9, p. 368, below.

adopted by the Governing Council of UNEP that adopt or endorse principles, guidelines or recommended practices addressed to states and other members of the international community.¹⁰³ The resolution or act could also bind those states supporting it through the operation of some general principle of law, such as the principle of estoppel.¹⁰⁴ Where the act is an internal act of the organisation (adopting a budget or procedural rules, or establishing a subsidiary organ), the resolution may bind all members of the organisation as a matter of the internal law of the organisation.¹⁰⁵

A further issue is the legal effect, if any, of an act of one international organisation upon another, to the extent that it is arguable that there exists a 'common law of international organisations'.¹⁰⁶ This would allow a measure, or interpretative act, adopted by one international organisation, to be relied upon by or have consequences for, another. The proliferation of international organisations addressing environmental issues increases the need for legal consistency and certainty. In practice, organisations do take account of each other's activities, in relation to both procedural and substantive matters, and precedents may be followed on an informal basis. Examples include: the emerging rules and practices governing the participation of non-state actors in the activities of international organisations; the definition of 'best available technology' adopted by the Meeting of the Parties to the 1974 Paris LBS Convention;¹⁰⁷ and the definition of the 'precautionary principle' adopted by the parties to the 1976 Barcelona Convention or the 1974 Paris LBS Convention.¹⁰⁸

Conference declarations and other acts

Many intergovernmental conferences are convened every year to address environmental issues and issues linking environment and development. Many adopt declarations, statements or other non-binding acts, which may contribute to the development of international environmental law even if they are not binding as treaties or as formal acts of international organisations. The most important international conferences have been the 1949 UNCCUR, the 1972 Stockholm Conference, the 1992 UNCED and the 2002 WSSD. Each adopted non-binding acts, of which the Stockholm Declaration, the Rio Declaration and Agenda 21 include important elements which now reflect, or are contributing to the development of, customary international law. They continue to provide a significant influence on the development of new treaties and acts of international organisations.¹⁰⁹

Other conferences have addressed specific, or sectoral, issues. These too can contribute to the development of binding international rules over time. Examples of declarations which have influenced international legislation include the 1990 Ministerial Declaration of the Second World Climate Conference, the Declaration adopted by the 1990 United Nations

¹⁰³ See e.g. the 1985 Montreal Guidelines for the Protection of the Marine Environment Against Pollution from Land-Based Sources; and the 1987 London Guidelines for the Exchange of Information on Chemicals in International Trade.

¹⁰⁴ See *Nuclear Tests* cases, discussed at pp. 118–19, below; see also P. Sands and P. Klein, *Bowett's Law of International Institutions* (2009, 6th edn), 294.

¹⁰⁵ The ICJ affirmed that resolutions of the General Assembly can have 'definitive legal effect': *Case Concerning Certain Phosphate Lands in Nauru* (1992) ICJ Reports 251 (concerning UNGA Res. 2847).

¹⁰⁶ See *de Merode*, WBAT Reports 1987, Decision No. 1, paras. 26 and 28.

¹⁰⁷ Chapter 9, p. 375, below. ¹⁰⁸ Chapter 6, p. 219, below; Chapter 9, p. 359, below.

¹⁰⁹ See Chapter 6, below for examples.

Economic Commission for Europe (UNECE) Bergen Conference on Sustainable Development, and regional conferences on environment and development. These contributed to the consensus at UNCED and the negotiations of the Climate Change and Biodiversity Conventions. The 1992 Rio Declaration may be the single most significant such declaration, in terms of its contribution to the development of international environmental rules and jurisprudence, and is frequently invoked and referred to by international courts and tribunals.¹¹⁰ Other conference declarations have led to acts of international organisations which are then followed by the adoption of a new treaty rule incorporating in binding terms the original conference act or objective. Examples include the 1990 Third Ministerial Declaration on the North Sea, elements of which were incorporated into resolutions of the Commissions established under the 1972 Oslo and 1974 Paris Conventions, and are now reflected in the 1992 OSPAR Convention;¹¹¹ and the 1998 Sintra Ministerial Declaration on the prevention of pollution of the northeast Atlantic by radioactive substances.¹¹² A more recent example is the 2009 Tromsø Declaration of the Arctic Council, which stated that black carbon may pose a particular threat to the Arctic, and that reductions have ‘the potential to slow the rate of Arctic snow, sea ice and sheet ice melting in the near-term’.¹¹³ The importance of reducing emissions of black carbon was also recognised by a decision of the LRTAP executive body in the same year, leading to the formation of an expert group to consider the topic and the inclusion of relevant provisions in proposed revisions to the 1999 Gothenburg Protocol.¹¹⁴

Another act often adopted by international conferences (or by international organisations) is the ‘Action Plan’, which also frequently forms the basis or context for the subsequent adoption of treaty rules. Examples include: the Recommendations adopted by the 1972 Stockholm Conference; the various Regional Action Plans adopted under the UNEP Regional Seas Programme; Agenda 21; and the WSSD Plan of Implementation. Action Plans have also been adopted on a range of sectoral issues, such as water resources, drought and desertification, national parks, and the conservation of biodiversity.

CUSTOMARY INTERNATIONAL LAW¹¹⁵

Customary law rules have played a secondary role in international environmental law, although they can establish binding obligations for states and other members of the international community and may be relied upon in the codification of obligations in treaties and

¹¹⁰ See e.g. ITLOS Seabed Disputes Chamber, *Advisory Opinion on Responsibilities and Obligations* (2011), at paras. 125–7, 135; *Iron Rhine* arbitration award (2005), at para. 59.

¹¹¹ Chapter 9, pp. 360–2, below. ¹¹² Chapter 9, p. 446, below.

¹¹³ Tromsø Declaration, Sixth Ministerial Meeting of the Arctic Council, 29 April 2009, Tromsø, Norway, available at http://arctic-council.org/filearchive/the_tromso_declaration, 2.

¹¹⁴ ECE/EB.AIR/99/Add.1, Decision 2009/5.

¹¹⁵ A. D’Amato, *The Concept of Custom in International Law* (1971); H. W. A. Thirlway, *International Customary Law and Codification* (1972); M. Akehurst, ‘Custom as a Source of International Law’, 47 *British Year Book of International Law* 1 (1974–5); M. E. Villiger, *Customary International Law and Treaties* (1985); International Law Association, *London Statement of Principles Relating to the Formation of General Customary International Law* (2000); I. Brownlie, ‘A Survey of International Customary Rules of Environmental Protection’, 13 *Natural Resources Journal* 179 (1973); P.-M. Dupuy, ‘Overview of Existing Customary Legal Regime Regarding International Pollution’, in D. Magraw (ed.), *International Law and Pollution* (1991); D. Bodansky, ‘Customary (and Not So

other binding acts. The significance of custom lies in the fact that it creates obligations for all states (or all states within a particular region) except those that have persistently objected to a practice and its legal consequences. Moreover, a customary rule may exist alongside a conventional rule, can inform the content and effect of a conventional rule, and can give rise to a distinct cause of action for dispute settlement purposes.

However, the process of developing rules of customary law cannot really be considered as part of a formal legislative process, and the existence of a customary rule may be difficult to prove.¹¹⁶ As the *Iron Rhine* arbitral tribunal recognised, '[t]here is considerable debate as to what, within the field of environmental law, constitutes "rules" or "principles"; what is "soft law"; and which environmental treaty law or principles have contributed to the development of customary international law'.¹¹⁷ Proving customary international law requires evidence of consistent state practice, which practice will only rarely provide clear guidance as to the precise context or scope of any particular rule. Nevertheless, 'customary law can be somewhat shaped and directed, because the practices of states can be consciously affected by various international actions',¹¹⁸ including the non-binding acts of international organisations and the intergovernmental statements and declarations discussed above. Article 38(1)(b) of the Statute of the International Court of Justice identifies the two elements of customary international law: state practice and *opinio juris*.

State practice

State practice is notoriously difficult to prove, and little empirical research has been carried out on state practice relating to international environmental obligations.¹¹⁹ State practice can be discerned from several sources, including: ratification of treaties; participation in treaty negotiations and other international meetings; national legislation; the decisions of national courts; votes and other acts in the UN General Assembly and other international organisations; statements by ministers and other governmental and diplomatic representatives; formal diplomatic notes; and legal opinions by government lawyers.¹²⁰ Preparatory materials to these sources can also provide useful evidence of state practice. Other sources include the pleadings of states before national and international courts and tribunals, parliamentary debates, collections of diplomatic materials and the records and *travaux préparatoires* of international conferences and treaty negotiations. Useful pleadings include those relating to the *Nuclear Tests* cases and the *Case Concerning Certain Phosphate Lands in Nauru*. The pleadings in New Zealand's resumed *Nuclear Tests* case (1995),¹²¹ the ICJ's Advisory Opinion on the legality of

Customary International Environmental Law', 3 *Indiana Journal of Global Legal Studies* 105 (1995); B. Leppard, *Customary International Law: A New Theory with Practical Applications* (2011).

¹¹⁶ As reflected in the fact that national courts in different countries may reach diametrically opposed conclusions as to the customary status of a rule or principle of international law: see e.g. the precautionary principle, at Chapter 6, pp. 217–28, below.

¹¹⁷ At para. 58.

¹¹⁸ P. Szasz, 'International Norm-Making', in E. Brown Weiss (ed.), *Issues in International Law* (1992), 41 at 67.

¹¹⁹ Useful sources of evidence of state practice in relation to environmental matters include national reports prepared for UNCED by participating states; and the country/region reports in Part 2 (the Year in Review) of the *Yearbook of International Environmental Law*.

¹²⁰ See *Yearbook of the International Law Commission* (1950-II), 368–72.

¹²¹ For a summary of the pleadings, see P. Sands, 'Year in Review: International Court of Justice', 6 *Yearbook of International Environmental Law* 531 (1995).

the use of nuclear weapons,¹²² the *Gabčíkovo-Nagymaros Project* case and the *Pulp Mills* case are also likely to repay careful consideration. It is important to bear in mind that the failure of a state to act can also provide evidence of state practice: mutual toleration of certain levels of pollution, or of activities which cause environmental degradation, can provide evidence that states accept such levels and activities as being compatible with international law.

For state practice to contribute to the development of a rule of law, the practice must be general, although this does not mean that it requires the participation of all states across the globe or in a particular region. The ICJ has stated that:

it might be that, even without the passage of any considerable period of time, a very widespread and representative participation in the convention might suffice of itself, provided it included states whose interests were specifically affected.¹²³

More recently, the ICJ deemed it sufficient that the conduct of states should, in general, be consistent with such rules, and that instances of state conduct inconsistent with a given rule should generally have been treated as breaches of that rule, not as indications of the recognition of a new rule.¹²⁴

In both cases, the ICJ was concerned with customary law arising in the context of treaty rules. The relationship between treaty and custom is close, often based upon elements of mutual interdependence. A treaty might codify or further develop a rule of customary law, as was the case in the 1982 UNCLoS. Alternatively, the conclusion and implementation of a treaty may reflect the existence of a rule of customary law. In the *North Sea Continental Shelf* cases, the ICJ found that state practice since the conclusion of the 1958 Geneva Convention on the Continental Shelf, including signature and ratification of the convention, could create a rule of customary law. In the *Military and Paramilitary Activities* case, the ICJ again considered the relationship between treaties and custom, finding that multilateral conventions ‘may have an important role to play in recording and defining rules deriving from custom. or indeed in developing them’.¹²⁵ The frequent reference to, and incorporation of, Principle 21 of the Stockholm Declaration in the text of treaties is an example of treaties contributing to the development of custom.¹²⁶ In 1996, the ICJ confirmed the customary status of the norm reflected in Principle 21,¹²⁷ but without addressing the extent or uniformity of state practice, and in the *Pulp Mills* case referred to ‘the principle of prevention, as a customary rule, [having] its origins in the due diligence that is required of a State in its territory’.¹²⁸ In its judgment in the *Gabčíkovo-Nagymaros* case, the ICJ cited with approval the principle of ‘equitable utilisation’ referred to in Article 5(2) of the 1997 Watercourses Convention.¹²⁹ More recently, the ICJ has stated that the obligation to undertake an environmental impact assessment where there is a risk that the proposed industrial activity may have a significant adverse impact in a trans-boundary context, in particular, on a shared resource, is ‘a requirement under general

¹²² *Ibid.*, 533. ¹²³ *North Sea Continental Shelf* cases (1969) ICJ Reports 3, para. 73.

¹²⁴ *Military and Paramilitary Activities* case (1986) ICJ Reports 98.

¹²⁵ (1986) ICJ Reports 97; and *Libya/Malta Continental Shelf* case (1985) ICJ Reports 29.

¹²⁶ See Chapter 6, pp. 188–200, below. ¹²⁷ Chapter 6, p. 191, below.

¹²⁸ At para. 101. See Chapter 8, pp. 330–3, below; also *Iron Rhine* arbitration award (2005), para. 222.

¹²⁹ Chapter 8, pp. 313–19, below.

international law'.¹³⁰ This suggests that, in the environmental field, the ICJ may well be conscious of the 'Herculean task' of deducing rules of customary international law directly from state practice,¹³¹ and will divine the existence of such rules by more flexible and pragmatic means.

Opinio juris

The second element of customary law, *opinio juris sive necessitatis*, requires evidence that a state has acted in a particular way because it believes that it is required to do so by law. The ICJ in the *North Sea Continental Shelf* cases identified the content and role of *opinio juris*:

Not only must the acts concerned amount to a settled practice, but they must also be such, or be carried out in such a way, as to be evidence of a belief that this practice is rendered obligatory by the existence of a rule of law requiring it. The need for such a belief, i.e. the existence of a subjective element, is implicit in the very notion of the *opinio juris sive necessitatis*. The states concerned must therefore feel that they are conforming to what amounts to a legal obligation. The frequency, or even habitual character of the acts is not in itself enough. There are many intentional acts, e.g. in the field of ceremonial and protocol, which are performed almost invariably, but which are motivated only by considerations of courtesy, convenience or tradition, and not by any sense of legal duty.¹³²

Proving the existence of *opinio juris* will always be a difficult task, since it requires consideration of the motives underlying state activity. It has been suggested that it can be found from a number of sources, including: expressions of beliefs regarding acts of international organisations and other international meetings;¹³³ statements made by representatives of states;¹³⁴ and the conclusion of treaties.¹³⁵ Given the difficulties of proving *opinio juris*, there is a certain attraction in the view of Sir Hersch Lauterpacht, who proposed that the accurate principle consists in 'regarding all uniform conduct of Governments (or, in appropriate cases, abstention therefrom) as evidencing the *opinio necessitatis juris* except when it is shown that the conduct in question was not accompanied by any such intention'.¹³⁶ Such an approach, which shifts the burden of proof but which is not universally shared, would make the acceptance of principles and rules set out in treaties more likely to contribute to the development of custom. The reality, as indicated by the *Advisory Opinion on the Legality of the Use of Nuclear Weapons* and in the *Pulp Mills* case, is that the ICJ does not appear to place any great weight on the need to identify *opinio juris* before confirming the existence of rules of customary law.

¹³⁰ *Pulp Mills*, para. 204. See Chapter 14, p. 610 and Chapter 8, pp. 330–3, below; see also ITLOS Seabed Disputes Chamber, *Advisory Opinion on Responsibilities and Obligations* (2011), para. 148.

¹³¹ See D. Bodansky, 'Customary (and Not So Customary) International Environmental Law', 3 *Indiana Journal of Global Legal Studies* 105 at 113 (1995).

¹³² (1969) ICJ Reports 3 at 44. ¹³³ *Military and Paramilitary Activities* case (1986) ICJ Reports 99–101.

¹³⁴ *Ibid.*, 100–1. ¹³⁵ *Nottebohm* case (1955) ICJ Reports 22–3.

¹³⁶ Sir Hersch Lauterpacht, *The Development of International Law by the International Court* (1958), 380.

Treaties and custom

State practice in treaty-making and in accordance with obligations under treaties can contribute to the development of customary law. Moreover, as the ICJ recognised in the *Military and Paramilitary Activities* case, customary rules may emerge which are identical to those of treaty law, and which exist simultaneously with treaty obligations.¹³⁷ In the *North Sea Continental Shelf* cases, the ICJ had to decide whether the principle of equidistance for delimitation of the continental shelf found in Article 6 of the 1958 Convention on the Continental Shelf constituted a rule of customary international law. The ICJ found that it was necessary to examine the status of a principle as it stood when a treaty was drawn up, as it resulted from the effect of the treaty, and in the light of state practice subsequent to the treaty.¹³⁸ The ICJ held that, at the time of its conclusion, the principle set out in Article 6 of the 1958 Convention was a treaty rule and not regarded as *lege lata* or as an emerging rule of customary international law. The ICJ then considered whether the principle found in Article 6 had passed into the general *corpus* of international law, and was accepted as such by *opinio juris*, so as to be binding even for countries which were not parties to the Convention: such a process was ‘a perfectly possible one which does from time to time occur, although it could not be a result lightly regarded as having been attained’.¹³⁹ The ICJ identified the conditions to be fulfilled for a new rule of customary international law to be formed as a result of a treaty:

It would in the first place be necessary that the provision concerned should, at all events potentially, be of a fundamentally norm-creating character such as could be regarded as forming the basis of a general rule . . . With respect to the other elements usually regarded as necessary before a conventional rule can be considered to have become a general rule of international law, it might be that, even without the passage of any considerable period of time, a very widespread and representative participation in the convention might suffice of itself, provided it included that of states whose interests were specially affected.¹⁴⁰

In this case, the number of ratifications was respectable but insufficient. As to the time element:

[a]lthough the passage of only a short period of time is not necessarily, or of itself, a bar to the formation of a new rule of customary international law on the basis of what was originally a purely conventional rule, an indispensable requirement would be that within the period in question, short though it might be, state practice, including that of states whose interests are specially affected, should have been both extensive and virtually uniform in the sense of the provision invoked; and should moreover have occurred in such a way as to show a general recognition that a rule of law or legal obligation is involved.¹⁴¹

¹³⁷ (1986) ICJ Reports 14.

¹³⁸ (1969) ICJ Reports 37.

¹³⁹ *Ibid.*

¹⁴⁰ *Ibid.*, 41–2.

¹⁴¹ *Ibid.*, 43.

The ICJ held on the facts of the case that state practice was insufficient to transform the treaty obligation under Article 6 of the 1958 Convention into a customary obligation.

However, it should not be assumed that the mere fact that a large number of states are party to a treaty establishes a customary norm for all. For example, the ICJ declined to indicate that the rule prohibiting widespread and significant environmental harm in armed conflict reflected a customary rule.¹⁴² For environmental treaties, provisions of a fundamentally norm-creating character which are capable of being considered as rules of customary law include those of a substantive nature, as well as principles which inform and guide decision-making. Examples of substantive obligations reflected in many treaties include: Principle 21 of the Stockholm Declaration (and Principle 2 of the Rio Declaration); the obligation to co-operate on environmental problems associated with shared natural resources; the obligation to adopt general measures to protect the marine environment from significant damage; and the obligation to take measures to ensure the conservation of, and prevention of harm to, endangered species of flora and fauna. More specific examples of treaty rules which can be considered as having a 'fundamentally norm-creating character' arguably include: the obligation to use a shared international watercourse in an 'equitable and reasonable' manner; the obligation not to dump high-level radioactive waste in the marine environment; the obligation not to engage in commercial whaling; and the general obligation of developed states to limit emissions of gases such as sulphur dioxide. Guiding principles which may, through treaty practice, reflect existing or emerging norms of customary law might include the polluter pays principle, the principle of precautionary action, and the principle of common but differentiated responsibilities of developed and developing countries. Procedural obligations that are binding under customary law include the obligation to carry out an environmental impact assessment for activities likely to cause significant environmental damage, as confirmed by the ICJ in the *Pulp Mills* case, as well as obligations pertaining to consultation and the provision of information on the environment.

Persistent objector

Since a rule of customary law may develop without the express or active support of all states in the international community, the silence or failure of a state to act will not necessarily prevent such a rule from becoming binding upon it, as is clear from the judgments of the ICJ in the *North Sea Continental Shelf* cases. However, a state can avoid being bound by a rule if it persistently objects to that rule. This was one of the issues in the *Anglo-Norwegian Fisheries* case, where the United Kingdom argued the unlawfulness of the Norwegian practice of drawing straight baselines across the mouths of bays to measure the width of the territorial sea, and where both states accepted the existence of the 'persistent objector' principle.¹⁴³ An example of persistent objection in the environmental field is provided by the clear and consistent objection of the United States to the view that the 'right to development' exists as a legal rule.¹⁴⁴ Another example may perhaps be seen in the ICJ's 1996 opinion that environmental obligations under the 1977 Geneva Protocol I did not, at least at that time, reflect customary law in view of the unwillingness of certain states to recognise the application of the Protocol to nuclear weapons.¹⁴⁵ Closely related to the principle of the persistent objector is the operation of

¹⁴² (1996) ICJ Reports 226 at 242, para. 31. ¹⁴³ *Anglo-Norwegian Fisheries* case (1951) ICJ Reports 131.

¹⁴⁴ Chapter 6, p. 217, below. ¹⁴⁵ See note 142 above and the accompanying text.

acquiescence, according to which the failure of a state to protest against the practice of other states over time will operate to limit or prevent a state from subsequently protesting against the fact that the practice is permitted as a matter of international law. The ICJ considered the principle of acquiescence in the *Anglo-Norwegian Fisheries* case, holding that the ‘notoriety of the facts, the general toleration of the international community, Great Britain’s position in the North Sea, her own interest in the question, and her prolonged abstention would in any case warrant Norway’s enforcement of her system against the United Kingdom’.¹⁴⁶

Regional custom

Rules of customary international law may also develop at the regional level. This was recognised by the ICJ in the *Asylum* case, holding that regional or local custom peculiar to Latin American states could be established where the rule invoked can be proved to be ‘in accordance with a constant and uniform usage practised by the states in question’.¹⁴⁷ This is important in the field of environmental protection, where regional regimes have played a significant role alongside global ones, and in respect of which some regions (Europe and the Antarctic) are particularly well developed. A regional approach allows flexibility in encouraging groups of countries to develop rules that reflect their particular interests, needs and capacities. The Pacific region has been particularly active in developing international treaty rules prohibiting the presence of radioactive materials and the use of driftnet fishing practices in the region, both of which may now reflect rules of customary law for that region. A similar conclusion may be drawn from state practice supporting efforts adopted by African states to limit and prohibit the import of hazardous and other waste onto the African continent, or in respect of certain mineral activities in the Antarctic.

GENERAL PRINCIPLES OF INTERNATIONAL LAW¹⁴⁸

The inclusion of ‘general principles of law recognised by civilised nations’ in Article 38 is widely believed to have been intended to allow the ICJ to consider and apply general principles of municipal law, and in practice they are occasionally relied upon when gaps need to be filled. The ICJ has only rarely relied on general principles, although other international tribunals, such as the ECJ, have relied on general principles of municipal law to assist in reaching conclusions.¹⁴⁹

¹⁴⁶ (1951) ICJ Reports 139.

¹⁴⁷ *Asylum* case (*Colombia v. Peru*) (1950) ICJ Reports 266; in this case, the ICJ found that Colombia had not proved the existence of regional or local custom due to the uncertainty, contradiction, fluctuation, discrepancy and inconsistency in practice, which had also been influenced by political expediency.

¹⁴⁸ General principles of the type discussed in this section should be distinguished from the general obligations and principles that have emerged specifically in relation to international environmental law and are addressed in Chapter 6 below. See generally: B. Cheng, *General Principles of Law as Applied by International Courts and Tribunals* (1953, reprinted 2006); A. McNair, ‘The General Principles of Law Recognised by Civilised Nations’, 33 *British Year Book of International Law* 1 (1957); G. Herczegh, *General Principles of Law and the International Legal Order* (1969); E. Zoller, *La Bonne Foi en Droit International Public* (1977); M. Akehurst, ‘The Application of General Principles of Law by the Court of Justice of the European Communities’, 52 *British Year Book of International Law* 29 (1981); B. Vitanyi, ‘Les Positions Doctrinales Concernant le Sens de la Notion de “Principes Généraux de Droit Reconnus par les Nations Civilisées”’, 86 *Revue Générale de Droit International Public* 48 (1982).

¹⁴⁹ See Case C-2/90, *Commission v. Belgium* [1993] 1 CMLR 365.

The general principles relating to good faith in the exercise of rights and prohibitions on the abuse by a state of a right that it enjoys under international law have been invoked by the ICJ and arbitral tribunals that have considered international environmental issues.¹⁵⁰ The principle of good faith appears to have been relied upon by the President of the Tribunal in the *Fur Seal* arbitration in finding that the exercise of a right for the sole purpose of causing injury to another (abuse of rights) is prohibited.¹⁵¹ The award in the *Trail Smelter* case is also cited as an example of reliance upon the principle of good faith, which governs the exercise of rights, to ensure that a proper balance is struck between a state's rights and obligations and a 'recognition of the interdependence of a person's rights and obligations'.¹⁵² The abuse of rights doctrine is also considered to provide the basis for the rule that a state must not interfere with the flow of a river to the detriment of other riparian states,¹⁵³ and is related to the principle requiring respect for mutual interests which is now reflected in Principle 21 of the Stockholm Declaration and Principle 2 of the Rio Declaration, namely, *sic utere tuo ut alienum non laedas*. The principle of 'good faith' was relied upon by the ICJ in the *Nuclear Tests* cases to enable it to reach its conclusion on the legal effect of a French unilateral declaration that it would cease atmospheric nuclear tests. In recognising that unilateral declarations could have the effect of creating legal obligations which are binding 'if given publicly, and with an intent to be bound, even though not made within the context of international negotiations', the Court stated that:

One of the basic principles governing the creation and performance of legal obligations, whatever their source, is the principle of good faith. Trust and confidence are inherent in international co-operation, in particular in an age when this co-operation in many fields is becoming increasingly essential. Just as the very rule of *pacta sunt servanda* in the law of treaties is based on good faith, so also is the binding character of an international obligation assumed by unilateral declaration. Thus interested states may take cognisance of unilateral declarations and place confidence in them, and are entitled to require that the obligation thus created be respected.¹⁵⁴

The ICJ held that a number of communications made by senior government officers speaking for France created binding legal obligations for that country. States that make unilateral declarations may establish binding environmental obligations. Examples include: the declaration by the UK that it would cease to permit the disposal of sewage sludge in the North Sea by the end of 1998;¹⁵⁵ the declaration by Japan that it would prohibit driftnet fishing by the end of 1993;¹⁵⁶ and the declaration by EU member states committing to cut, by 2020, overall EU greenhouse gas emissions by 20 per cent compared to 1990 levels.¹⁵⁷ It is

¹⁵⁰ On abuse of rights, see R. Jennings and A. Watts (eds.), *Oppenheim's International Law* (1992, 9th edn), vol. I, 407–10; B. Cheng, *General Principles of Law as Applied by International Tribunals* (1953, reprinted 2006), 121–36.

¹⁵¹ Chapter 9, pp. 399–400, below.

¹⁵² Cheng, *General Principles*, 130.

¹⁵³ R. Jennings and A. Watts (eds.), *Oppenheim's International Law* (1992, 9th edn), vol. I, 408 and 585; see generally Chapter 8 below.

¹⁵⁴ *Nuclear Tests* cases (1974) ICJ Reports 267, 268. ¹⁵⁵ Chapter 9, p. 372, below.

¹⁵⁶ See generally Chapter 10 below.

¹⁵⁷ See Commission of the European Communities, *White Paper: Adapting to Climate Change: Towards a European Framework for Action* (2009), 3.

important to recall, however, that these and other such declarations need to be considered carefully, as they are often drafted to allow discretion in the act required by a state, or may only be intended to have political or domestic effects.¹⁵⁸ Other 'general principles' which have relevance for environmental matters include: the obligation to make reparation for the breach of an engagement;¹⁵⁹ the principle that a person may not plead his or her own wrong;¹⁶⁰ the principle that no one may be a judge in his or her own suit;¹⁶¹ and 'elementary considerations of humanity'¹⁶² and 'fundamental general principles of humanitarian law'.¹⁶³

Equity

It is also important to consider the role of 'equity', which allows the international community to take into account considerations of justice and fairness in the establishment, operation or application of a rule of international law. In the *Continental Shelf* case, the ICJ described the concept of equity as being a 'direct emanation of the idea of justice' and a 'general principle directly applicable as law' which should be applied as part of international law 'to balance up the various considerations which it regards as relevant in order to produce an equitable result'.¹⁶⁴ In that case, the ICJ held there were no rigid rules as to the exact weight to be attached to each element in a case, and that equity was not an exercise of discretion or conciliation or the operation of distributive justice.¹⁶⁵ The ICJ has linked equity with acquiescence and estoppel,¹⁶⁶ and applied it to the conservation of fishery resources to achieve an 'equitable solution derived from the applicable law'.¹⁶⁷

Equity can therefore operate as a part of international law to inform the application of a particular rule. It may also be applied by the ICJ to decide a case *ex aequo et bono*, if the parties to a dispute agree, in application of Article 38(2) of the Statute of the ICJ, although no such judgment has yet been given by the ICJ. As described in Chapter 6 below, many environmental treaties refer to or incorporate equity or equitable principles.¹⁶⁸ In applying equity in these treaties, it will be proper to establish its meaning in the context of its use in a particular treaty. Since, however, treaties rarely provide a working definition of equity, states, international organisations and international courts and tribunals may, ultimately, have to refer back to the general concept as interpreted and applied by the ICJ and other international tribunals.

¹⁵⁸ *Military and Paramilitary Activities* case (1986) ICJ Reports 132, holding that a governmental statement did not involve a legally binding commitment; see also the *Case Concerning the Frontier Dispute (Burkina Faso and Mali)* (1986) ICJ Reports 554, 573 and 876.

¹⁵⁹ *Chorzów Factory* case and *Gabčíkovo-Nagymaros* case, Chapter 17, pp. 714–20, below.

¹⁶⁰ *Jurisdiction of the Courts of Danzig*, PCIJ (1928) Ser. B No. 15, 27.

¹⁶¹ *Mosul* case, PCIJ (1925) Ser. B No. 12, 32. ¹⁶² *Corfu Channel* case (1949) ICJ Reports 22.

¹⁶³ *Military and Paramilitary Activities* case (1986) ICJ Reports 113–15 and 129–30.

¹⁶⁴ *Continental Shelf (Tunisia/Libya)* (1982) ICJ Reports 18 at 60. See also the Individual Opinion of Judge Hudson in the *Diversion of the Waters from the Meuse* case, recognising equity as 'a part of international law': PCIJ (1937) Ser. A/B No. 70, 76–7.

¹⁶⁵ *Ibid.* ¹⁶⁶ *Gulf of Maine* case (1984) ICJ Reports 246 at 305.

¹⁶⁷ *Fisheries Jurisdiction* cases (1974) ICJ Reports 3 at 33; Chapter 9, pp. 402–3, below.

¹⁶⁸ Chapter 6, pp. 213–15, below.

SUBSIDIARY SOURCES¹⁶⁹

The main subsidiary sources are the decisions of courts and tribunals and the writings of jurists. The ICJ has only recently come to deal with the substantive aspects of international environmental protection: in the *Nuclear Tests* cases, the dispute was settled by the ICJ before the merits could be addressed. The ICJ has considered the conservation of fisheries resources (*Icelandic Fisheries* cases), guiding principles of general application (*Corfu Channel* case, *North Sea Continental Shelf* cases), the protection of the environment in times of war and armed conflict (Advisory Opinion on *The Legality of the Threat or Use of Nuclear Weapons*), general norms of international environmental law and principles governing the law of shared watercourses (*Gabčíkovo-Nagymaros* case)¹⁷⁰ and the obligation to carry out an environmental impact assessment and consult and share information (*Pulp Mills* case).¹⁷¹ Other international courts dealing with environmental issues are the European Court of Justice (which has been called upon to interpret and apply EU environmental law and international agreements such as the 1973 CITES, the 1979 Berne Convention and the GATT), the European Court of Human Rights, the WTO Appellate Body and the International Tribunal for the Law of the Sea, as well as panels established under the Canada-US Free Trade Agreement and the WTO Dispute Settlement Agreement.¹⁷² Awards of international arbitral tribunals have also contributed to the development of international environmental law. Five stand out in particular: the 1893 decision in the *Pacific Fur Seal* arbitration, the 1941 decision in the much cited *Trail Smelter* case, the 1957 award of the *Lac Lanoux* arbitration, the 2003 award in the *OSPAR Information* case and the 2005 award in the *Iron Rhine* arbitration.¹⁷³ National courts and tribunals are increasingly faced with the task of interpreting international obligations in this field, and the jurisprudence of these tribunals is becoming an increasingly important source of reference in the development of international environmental law and policy.

The writings of jurists have played a less significant role in developing international environmental law. The *Trail Smelter* case relied on the writings of Professor Eagleton, and there is some evidence that international jurisprudence on environmental issues has been influenced by academic and other writings.¹⁷⁴ Resolutions of groups of international jurists acting through the International Law Association and the Institut de Droit International have contributed in important ways to the development of subsequent treaty obligations, particularly in the field of water and atmospheric pollution, as will be seen in the chapters which follow.

¹⁶⁹ R. Jennings and A. Watts (eds.), *Oppenheim's International Law* (1992, 9th edn), vol. I; M. Shaw, *International Law* (2008, 6th edn); P. Daillier and A. Pellet, *Droit International Public* (2002, 7th edn); I. Brownlie, *Principles of Public International Law* (2008, 7th edn); P.-M. Dupuy, *Droit International Public* (2006, 8th edn).

¹⁷⁰ Chapter 8, pp. 313–19, below. ¹⁷¹ Chapter 14, pp. 620–2, below.

¹⁷² Chapter 5, pp. 169–80, below; Chapter 19, pp. 812–15, below.

¹⁷³ Respectively, Chapter 9, pp. 399–400, below; Chapter 7, pp. 239–40, below; Chapter 8, pp. 307–8, below; Chapter 15, p. 651, below; Chapter 6, p. 200, below; at the time of writing, proceedings are also pending before an UNCLOS Annex VII arbitral tribunal brought by Mauritius against the United Kingdom regarding the legality of a 'marine protected area'.

¹⁷⁴ See e.g. the Opinions of Judge Weeramantry in the *Nuclear Tests* case (1995) ICJ Reports 34 *et seq.* and in the *Gabčíkovo-Nagymaros* case (1997) ICJ Reports 92–4.

INTRODUCTION TO REGULATORY APPROACHES

The principles and rules of international environmental law established by treaty and other sources of international law are applied to a range of regulatory techniques. These can broadly be divided into two types: traditional forms of direct regulation (frequently referred to as ‘command-and-control’), and techniques that make use of economic incentives (referred to as ‘economic instruments’).¹⁷⁵ Sometimes included within the latter category are a range of information and incentive-based techniques that make available certain kinds of information to market participants or enhance the incentives markets provide for particular types of behaviour.¹⁷⁶ Awareness of the limited effectiveness of international environmental regulation – particularly in addressing complex environmental problems – has resulted in numerous proposals for a new regulatory approach, referred to as ‘integrated pollution prevention’ (or ‘control’) or ‘integrated environmental management’, which aims to adopt a more comprehensive approach to regulation. Such approaches are beginning to gain favour at the national level and, through activities in Europe and of the OECD, at the international level also.

The regulatory techniques relied upon in international environmental law are themselves the subject of political and ideological differences. The 1990 Ministerial Declaration of the Second World Climate Conference illustrates the tensions that exist as to the proper balance to be achieved in the use of two types of regulation, stating that:

Appropriate economic instruments may offer the potential for achieving environmental improvements in a cost-effective manner. The adoption of any form of economic or regulatory measures would require careful and substantive analyses. We *recommend* that relevant policies make use of economic instruments appropriate to each country’s socio-economic conditions in conjunction with a balanced mix of regulatory approaches.

The Rio Declaration also reflects support for a balanced approach. Principle 10 indicates that states should enact effective environmental legislation, and that ‘environmental standards, management objectives and priorities should reflect the environmental and developmental context to which they apply’. Principle 16, the use of economic instruments, suggests only that national authorities should ‘endeavour to promote’ their use. It is therefore likely that the international use of command-and-control regulation will remain the primary approach, as reflected in instruments such as the Climate Change and Biodiversity Conventions, and supplemented (where a consensus exists) with economic instruments.

¹⁷⁵ For an illustrative list of regulatory techniques, see Annex II to the 1985 Montreal Guidelines on Land-Based Sources of Pollution, Chapter 9 below. See also D. Driesen, ‘Economic Instruments for Sustainable Development’, in Benjamin J. Richardson and Stephan Wood (eds.), *Environmental Law for Sustainability* (2006), 277.

¹⁷⁶ P. N. Grabosky, ‘Green Markets: Environmental Regulation by the Private Sector’, 16(4) *Law and Policy* 419 at 420–1 (1994). Examples include eco-labels and publicly accessible pollutant registers.

DIRECT REGULATION

Under direct regulation ('command-and-control') the state instructs environmental protection or pollution control bodies to adopt and apply standards that are generally applicable in a uniform manner to their addressees. Once they have been 'commanded', the standards are enforced (or controlled) by public authorities (or, in some jurisdictions, by private persons as well). The environmental standards typically fall into four categories: environmental quality standards; product standards; emissions standards; and technology or process standards.

Environmental quality standards

Environmental quality standards prescribe the levels of pollution, nuisance or environmental interference which are permitted and which must not be exceeded in a given environment or particular environmental media. International treaties and other acts frequently use this approach to environmental regulation. The earliest environmental treaties relating to the protection of flora and fauna provided for the designation of areas that were protected from environmental interference. Under the 1940 Western Hemisphere Convention, for example, 'strict wilderness reserves' are to be kept virtually inviolate and the quality of their flora and fauna are to be kept, as far as practicable, pristine.¹⁷⁷ National parks, on the other hand, may be subjected to some environmental interference, although commercial activity is not allowed.¹⁷⁸ International environmental law establishes a range of environmental quality standards that vary from the absolute prohibition of particular activities in order to maintain environmental and natural resources free from any change, to the more limited acceptance that certain changes in the quality of a given environment are inevitable and may be tolerated as a matter of law. Examples of international acts intended to maintain the environment or parts of it absolutely free from further interference by particular substances or activities include: the prohibitions on the dumping of certain hazardous substances at sea;¹⁷⁹ the moratorium on dumping of all radioactive waste at sea;¹⁸⁰ the moratorium on the killing or taking of whales for commercial purposes;¹⁸¹ the prohibitions on mining and related activities in the Antarctic;¹⁸² interference with flora and fauna in certain protected areas;¹⁸³ phase-out of the production and consumption of certain ozone-depleting substances;¹⁸⁴ bans on the production and consumption of certain chemicals;¹⁸⁵ incineration of wastes at sea;¹⁸⁶ and the import of hazardous waste into Africa and other parts of the developing world.¹⁸⁷

Other environmental quality standards recognise that certain levels of environmental interference are the inevitable consequence of human activity. Rather than prohibit the activity and attempt to establish absolute protection of the environment at its existing level, these standards aim to establish a level beyond which pollution, nuisance or environmental interference is not permitted. Early examples of this approach included the limited protection given to certain areas under wildlife treaties. More recently, the same approach sets targets for acceptable levels of environmental interference by setting 'critical loads' which can be

¹⁷⁷ Art. IV. ¹⁷⁸ Art. III. ¹⁷⁹ Chapter 9, pp. 365–71, below. ¹⁸⁰ Chapter 9, p. 368, below.

¹⁸¹ Chapter 13, pp. 423–6, below. ¹⁸² Chapter 13, pp. 582–6, below. ¹⁸³ See generally Chapter 10 below.

¹⁸⁴ Chapter 7, pp. 265–74, below. ¹⁸⁵ Chapter 11, pp. 523–6, below.

¹⁸⁶ Chapter 9, see especially p. 368, below; Chapter 12, pp. 562–4, below. ¹⁸⁷ Chapter 12, pp. 571–2, below.

translated into individual country targets.¹⁸⁸ The climate change regime provides another example: the 1992 Climate Change Convention establishes the general objective of stabilising levels of greenhouse gas concentrations in the atmosphere at ‘a level that would prevent dangerous anthropogenic interference with the climate system’, which is supplemented by specific emission reduction targets for Annex I developed countries in the Kyoto Protocol.¹⁸⁹ A different approach to achieving the same objective is reflected in the 1993 Lugano Convention which imposes strict liability for an operator carrying out certain hazardous activities, but allows a defence where the operator can prove that damage was caused ‘by pollution at tolerable levels under local relevant circumstances’. Implicit in this approach is the recognition that environmental quality standards will have been maintained until a threshold of intolerability has been reached. The Convention does not provide guidance as to when such a threshold will be crossed.

Product standards

Product standards establish levels for pollutants or nuisances which must not be exceeded in the manufacture or emissions of a product, or specify the properties or characteristics of design of a product, or are concerned with the ways in which a product is used. In the past, this approach was only infrequently applied, as it required a degree of specificity unusual for an international treaty. Recently, however, there has been an increased tendency to target specific industrial activities even at the international level. Examples of product standards in international agreements include: the permitted use of certain ozone-depleting substances in manufacture;¹⁹⁰ the use of parts of endangered species in manufacturing;¹⁹¹ and the construction of new oil tankers with ‘double hulls’.¹⁹² Product standards also include specifications relating to testing, packaging, marking, labelling and distribution.¹⁹³

Emissions standards

Emissions standards set levels for pollutants or nuisances that are not to be exceeded in emissions from installations or activities. Examples of their international use include atmospheric emissions from aircraft,¹⁹⁴ and large industrial utilities.¹⁹⁵

Process standards

Process standards can be developed and applied to fixed installations and to mobile installations and activities. Two types are frequently used: ‘installation design standards’, which determine the requirements to be met in the design and construction of installations to protect

¹⁸⁸ 1988 NO_x Protocol, Art. 2; 1994 Sulphur Protocol, Art. 2(1); 1999 Gothenburg Protocol, Chapter 7, pp. 255–7, below.

¹⁸⁹ 1992 Climate Change Convention, Art. 2; Kyoto Protocol, Annex B; Chapter 7, pp. 276–93, below.

¹⁹⁰ 1987 Montreal Protocol, Chapter 7, pp. 265–74, below.

¹⁹¹ 1973 CITES, Chapter 10, pp. 472–9, below.

¹⁹² 1991 amendments to MARPOL 73/78, Chapter 9, pp. 381–5, below.

¹⁹³ Chapter 11, pp. 521–32, below. ¹⁹⁴ Chapter 7, pp. 260–1, below. ¹⁹⁵ Chapter 7, pp. 245–59, below.

the environment; and 'operating standards', which determine the requirements to be met in the course of the operation of installations. Examples of process standards in international agreements include: processes for the incineration of hazardous waste;¹⁹⁶ methods and means of conducting fisheries activities¹⁹⁷ (such as driftnet fishing)¹⁹⁸ and the development of biotechnology.¹⁹⁹ 'Process standards' involve the application of particular types of technology, technique and practice. Many international environmental agreements require their use, although the permissibility of applying national standards to processes carried out beyond a state's jurisdiction is subject to limits under WTO law.²⁰⁰ Examples of obligations imposed upon states include the requirement that they ensure the use of: 'best available techniques';²⁰¹ or 'best environmental practice';²⁰² or 'best available technology';²⁰³ or 'clean production methods';²⁰⁴ or 'environmentally sound management';²⁰⁵ or 'best available technology which is economically feasible'.²⁰⁶

The techniques for implementing these four types of standard at the national level demand a central role for public authorities. It is they who must set the standards (increasingly, by implementing international standards) and implement them through authorising, permitting, licensing and receiving information from potential users. Public authorities are also required, under many international environmental agreements, to enforce international standards at the national level through appropriate administrative, judicial and other means.²⁰⁷ Environmental impact assessment and the broad dissemination of information are other techniques that are increasingly used to ensure the implementation of environmental quality, process and product standards.

ECONOMIC INSTRUMENTS²⁰⁸

The use of economic policy instruments to protect the environment has been under discussion for the past two decades as the international community addresses the fact that many

¹⁹⁶ 1991 Antarctic Environment Protocol, Chapter 13, p. 578, below.

¹⁹⁷ 1980 CCAMLR, Chapter 13, pp. 580–2, below. See also the views of the WTO Appellate Body, Chapter 19, pp. 818–24, below.

¹⁹⁸ 1989 Driftnet Convention, Chapter 9, pp. 430–1, below.

¹⁹⁹ 2000 Biosafety Protocol, Chapter 10, pp. 465–71, below. ²⁰⁰ See, e.g., Chapter 19, p. 831, below.

²⁰¹ 1992 OSPAR Convention, Art. 2(3)(b) and Appendix 1; 2001 POPs Convention, Art. 5(e) and Annex C.

²⁰² 1992 OSPAR Convention, Art. 2(3)(b) and Appendix 1; 1992 Black Sea Convention, Art. 3(3) and Annex II; 2001 POPs Convention, Art. 5(e) and Annex C.

²⁰³ 1992 Baltic Convention, Art. 3(3) and Annex II.

²⁰⁴ 1991 Bamako Convention, Art. 4(3)(g); 1992 OSPAR Convention, Art. 2(3)(b).

²⁰⁵ 1989 Basel Convention, Arts. 2(8) and 4(2)(b); 1995 Waigani Convention, Art. 6(3).

²⁰⁶ 1979 LRTAP Convention, Art. 6; 1988 NO_x Protocol, Art. 2; 1999 Gothenburg Protocol, Arts. 3(6), 3(8)(b) and 4(1)(a) ('best available techniques'), Art. 10(2)(b) ('best available scientific information'); 1998 Aarhus Protocol on Heavy Metals, Annex ('best available techniques').

²⁰⁷ Chapter 5, p. 139, below. Sometimes, non-state actors are also granted an enforcement role: *ibid.*

²⁰⁸ OECD, *Economic Instruments for Environmental Protection* (1989); 'Report of the Working Group of Experts from the Member States on the Use of Economic and Fiscal Instruments in EC Environmental Policy (1990)', 14 *Boston College International and Comparative Law Review* 447 (1991); R. Hahn and R. Stavins, 'Incentive-Based Environmental Regulation: A New Era from an Old Idea?', 18 *Ecology Law Quarterly* 1 (1991); OECD, *Guidelines for the Application of Economic Instruments in Environmental Policy* (1991); R. Wolfrum (ed.), *Enforcing Environmental Standards: Economic Mechanisms as Viable Means* (1996); P. Galizzi, 'Economic Instruments as Tools for the Protection of the International Environment', 6 *European Environmental Law Review* 155 (1997); K. Bosselmann and B. Richardson, *Environmental Justice and Market Mechanisms* (1999); R. Stewart and P. Sands, 'The Legal and Institutional Framework for a Plurilateral Greenhouse Gas Emissions Trading System', in

environmental regulations have not resulted in environmentally cleaner behaviour, technologies or products. It is contended that current mechanisms have failed to provide adequate economic incentives to limit activities that are environmentally damaging and have failed to achieve their environmental objectives. The use of economic instruments is premised on a belief that the market can be used to provide incentives to guide human behaviour:

If environmental resources are properly valued, the costs of using the environment will be taken fully into account in private economic decision-making. This implies that environmental resources are used in 'sustainable' quantities, provided that their prices are based on their scarcity and place an appropriate value on non-renewable resources. Economic instruments are meant to correct current market prices by internalising environmental costs which are treated by the market mechanisms as external.²⁰⁹

Economic instruments 'affect through the market mechanism costs and benefits of alternative actions open to economic agents, with the effect of influencing behaviour in a way which is favourable for the environment'.²¹⁰

The use of economic instruments at the international level to supplement, or supplant, direct regulatory approaches to environmental protection is supported, at least in principle, by a growing number of states. The practical application is nevertheless limited. Insofar as economic instruments are defined by reference to their attempts to use the market to internalise environmental costs, the polluter pays principle first developed by the OECD and the EU in the early 1970s can be seen as a precursor to more recent discussions and proposals.²¹¹ Explicit references in international acts to 'economic instruments' are a relatively recent phenomenon. In May 1990, the UNECE Bergen Ministerial Declaration stated that to support sustainable development it would be necessary 'to make more extensive use of economic instruments in conjunction with . . . regulatory approaches'.²¹² By November 1990, the Ministerial Declaration of the Second World Climate Conference had found support for similar language at the global level.

Support for the use of economic instruments can also be found in other regional and global declarations such as the Rio Declaration. Agenda 21 refers frequently to the need to develop economic instruments. Support for the use of economic instruments is also reflected in soft law instruments and treaties. Examples include the 1992 Climate Change Convention, which requires developed country parties to co-ordinate relevant economic instruments,²¹³ and the 1992 Biodiversity Convention, which, although it does not specifically mention economic instruments, calls on parties to 'adopt economically and socially sound measures that act as incentives for the conservation and sustainable use of components of biological diversity'.²¹⁴

UNCTAD, *Greenhouse Gas Market Perspectives, Trade and Investment Implications of Climate Change* (2001), 82; D. Driesen, 'Economic Instruments for Sustainable Development', in B. Richardson and S. Woods (eds.), *Environmental Law for Sustainability* (2006), 277; T. H. Tietenberg, *Emissions Trading: Principles and Practice* (2006).

²⁰⁹ *Ibid.*, 453–4. ²¹⁰ *Ibid.*, 455.

²¹¹ Chapter 6, pp. 228–33, below. On subsidies and competition, see Chapter 19 below.

²¹² 7 May 1990; see also 1985 Montreal Guidelines, Annex II.

²¹³ Art. 4(2)(e). ²¹⁴ Art. 11.

What are the different types of economic instruments available? The 1991 OECD Council Recommendation on the Use of Economic Instruments in Environmental Policy was one of the first instruments adopted at the international level to provide guidance on the types of economic instruments available.²¹⁵ It recommended that member countries make greater use of economic instruments, improve the allocation and efficient use of natural and environmental resources, and make efforts to reach further agreement at an international level on the use of economic instruments.²¹⁶ The different types of economic instruments envisaged were set out in the Guidelines and Considerations for the Use of Economic Instruments in Environmental Policy contained in the Annex to the Recommendation.²¹⁷ They include charges and taxes, marketable permits, deposit-refund systems and financial assistance. More recently, a 2004 UNEP publication on 'The Use of Economic Instruments in Environmental Policy: Opportunities and Challenges' characterises economic instruments not by type, but rather by their functional objective in the marketplace.²¹⁸ It suggests three main objectives for adoption of economic instruments: first, to redress problems with property rights that contribute to pollution or poor stewardship of resources; second, to establish and enforce prices for resources consumed and environmental damage associated with production; and, third, to subsidise the transition to preferred behaviours.²¹⁹ On this basis, a wide array of mechanisms, extending beyond taxes, charges, marketable permit schemes and financial assistance, may be considered types of economic instruments, including enforcement incentives, administrative charges, liability and compensation for damage, trade measures and consumer information incentives, as well as non-compliance fees and performance bonds. The permissibility of subsidies for environmentally beneficial activities is also premised upon an economic approach to environmental regulation.

Charges and taxes

The rationale behind charges and taxes is that they create an incentive for polluters to limit activities that can be harmful to the environment, such as emissions, the generation of waste and the excessive use of natural resources. The difference between a charge and a tax reflects the different way in which the revenues are allocated: tax revenues are added to the general public budget, while charge revenues are used specifically to finance environmental measures. Charges can also have different purposes. Emission charges, which are levied on all dischargers, can be levied on discharges of effluents and gases and can be calculated on the basis of the quality and/or quantity of the pollution load. User charges are paid for services rendered by authorities, such as the collection and removal of municipal wastewater and solid and hazardous wastes, and are only paid by persons who receive, or are associated with, the services.

²¹⁵ C(90)177 (1991). See also the Report of the Working Party on Economic and Environmental Policy Integration, 'Economic Instruments for Pollution Control and Natural Resources Management in OECD Countries: A Survey' (1999), ENV/EPOC/GEEI(98)35/REV1/FINAL.

²¹⁶ Para. I(i)-(iii).

²¹⁷ The OECD and EEA have since developed a database on economic instruments used for environmental policy: see www2.oecd.org/ecoinst/queries/index.htm.

²¹⁸ UNEP, 'The Use of Economic Instruments in Environmental Policy: Opportunities and Challenges' (2004), p. 25.

²¹⁹ *Ibid.*

Although widely used at the national level, charges and taxes have not yet been the subject of international legal measures. In May 1992, the first supranational environmental tax was proposed by the EU, to contribute to the implementation of its commitment to stabilise carbon dioxide emissions by the year 2000 at 1990 levels. The European Commission proposal was to harmonise the introduction in the EU member states of a tax on certain fossil fuel products (coal, lignite, peat, natural gas, mineral oils, ethyl and methyl alcohol, electricity and heat),²²⁰ levying the tax on the basis of carbon dioxide emissions and energy content.²²¹ The introduction of the tax was, however, conditional upon the introduction by the other OECD members of similar taxes or of measures having a financial impact equivalent to the draft Directive, and was to take account of issues of international competitiveness. The Directive was not adopted and the EU has since proceeded with the implementation of an alternative economic measure for mitigating climate change: an emissions trading scheme.²²²

Joint implementation and tradeable permits

The suggestion that international law might encourage the use of tradeable permits is drawn from developments in the United States under the 1990 amendments to the Clean Air Act.²²³ According to this approach, regions or utilities are granted a limited number of pollution rights; if they manage to use less than the amount allocated to them, they may sell their excess to another region or utility. Although the idea has generated some interest, uptake in international environmental law has been limited. Early environmental agreements allowed parties jointly to implement programmes and measures without specifying any criteria or conditions according to which this is to be achieved,²²⁴ and since they did not establish specific pollution limits there was no intention for inter-state trading. The first elements of possible trading can be found in certain fisheries agreements (under which 'trade' in quotas may take place) and in Article 2(7) of the 1987 Montreal Protocol, which allows member states of a regional economic integration organisation (which currently only includes the EU) to agree to 'jointly fulfil their obligations respecting consumption' of certain ozone-depleting substances provided that their total combined calculated level of consumption does not exceed the levels required by the Montreal

²²⁰ EC Commission Proposal for a Council Directive Introducing a Tax on Carbon Dioxide Emissions and Energy, COM (92) 226 final, 30 June 1992, Arts. 1(1) and 3(1) and (2). The draft excluded certain products: *ibid.*, Art. 3.

²²¹ *Ibid.*, Arts. 1(1) and 9(1).

²²² Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC; and see Directive 2009/29/EC of the European Parliament and of the Council of 23 April 2009, amending Directive 2003/87/EC so as to improve and extend the greenhouse gas emission allowance trading scheme of the Community. However, a draft revision of the Energy Tax Directive was put forward, which includes a carbon tax: see www.inforse.dk/europe/eu_e-tax.htm and www.eaem.co.uk/news/debate-proposed-eu-carbon-tax.

²²³ USC §§ 7401–671 (1988) and amendments in Supp. III to USC (1991). See J. Nash and R. Revesz, 'Markets and Geography: Designing Marketable Permit Schemes to Control Local and Regional Pollutants', 28 *Ecology Law Quarterly* 569 (2001). See generally J. C. Fort and C. A. Faur, 'Can Emissions Trading Work Beyond a National Program?: Some Practical Observations on the Available Tools', 18 *University of Pennsylvania Journal of International Economic Law* 463 (1997); J. R. Nash, 'Too Much Market? Conflict Between Tradeable Pollution Allowances and the "Polluter Pays" Principle', 24 *Harvard Environmental Law Review* 465 (2000); R. B. Stewart, J. L. Connaughton and L. C. Foxhall, 'Designing an International Greenhouse Gas Emissions Trading System', 15 *Natural Resources and Environment* 160 (2001); J. Yelin-Kefer, 'Warming Up to an International Greenhouse Gas Market: Lessons from the US Acid Rain Experience', 20 *Stanford Environmental Law Journal* 221 (2001).

²²⁴ 1974 Paris Convention, Art. 4(2).

Protocol. The 1992 Climate Change Convention allows developed country parties and other parties included in Annex I to implement policies and measures required under Articles 4(2)(a) and (b) 'jointly with other parties', subject to decisions taken by the Conference of the Parties at its first session 'regarding criteria for joint implementation'.²²⁵ The 1997 Kyoto Protocol provides more detailed provisions on joint implementation,²²⁶ as well as the basis for a system of tradeable permits of various kinds (assigned amount units, emission reduction units, certified emission reductions and removal units), generated through parties' use of the Protocol's three flexibility mechanisms: joint implementation, emissions trading and the Clean Development Mechanism.²²⁷ The 'modalities' subsequently developed by the Kyoto Protocol parties to enable trade in emissions permits demonstrate the complexities – and degree of intrusion – that underlie the operation of such arrangements.²²⁸ Their operation is premised on the creation of a common unit of trade (equivalent to the emission of one tonne of carbon dioxide), together with detailed mechanisms for measurement, monitoring, reporting and verification of emission reductions, coupled with stringent non-compliance procedures. In this sense, the use of economic instruments is evidence less of the adoption of a market-based approach in international environmental law than of the emergence of 'legally regulated marketization'.²²⁹

Deposit-refund systems

Deposit-refund systems require a deposit to be paid on potentially polluting products, such as batteries, bottles and other packaging and car hulks. The return of the product or its residuals is intended to avoid pollution and is compensated by a refund of the deposit. The system is frequently used at the national level but has not yet been used at the international level.²³⁰

Subsidies

Governments often seek to justify the grant of subsidies that might otherwise be unlawful on the grounds that they bring environmental benefits. They can nevertheless distort competition and run against the inherent purpose of the polluter pays principle and may, on those grounds, fall foul of international competition and trade rules. A more complicated case arises in the context of measures to promote renewable energy technologies (such as feed-in tariffs) or to offset the adverse competitive effects on domestic industry of national greenhouse gas emissions trading schemes. Do such measures, adopted to address the problem of climate change, amount to a prohibited subsidy under WTO law? This question is currently before the WTO

²²⁵ Art. 4(2)(a) and (d); see Chapter 7, p. 281, below.

²²⁶ Art. 4; see A. Gosseries, 'The Legal Architecture of Joint Implementation', 7 *New York University Environmental Law Journal* 49 (1999).

²²⁷ Arts. 6, 12 and 17. See Chapter 7, pp. 287–91, below. ²²⁸ Chapter 7, pp. 289–91, below.

²²⁹ J. Braithwaite and C. Parker, 'Conclusion', in J. Braithwaite, N. Lacey, C. Parker and C. Scott (eds.), *Regulating Law* (2004), 269 at 269.

²³⁰ The POPs Convention does, however, make several references to recycling, such as in Part V(A)(c) where 'the promotion of the recovery and recycling of waste and of substances generated and used in a process' is listed as a general prevention measure which should be prioritised. Part V(A)(f) also notes that '[w]hen considering proposals to construct new waste disposal facilities, consideration should be given to alternatives such as activities to minimize the generation of municipal and medical waste, including resource recovery, reuse, recycling, waste separation and promoting products that generate less waste'.

dispute settlement system in a challenge brought by Japan to the Canadian feed-in tariff programme for renewable energy.²³¹ International practice under the WTO on the environmental aspects of subsidies is considered further in Chapter 19 below.

Enforcement incentives

Enforcement incentives, such as non-compliance fees and performance bonds, are closely linked to fiscal regulation. Non-compliance fees penalise polluters who exceed prescribed environmental standards, and performance bonds are payments to authorities that are returned when the polluter performs in accordance with its licence. Enforcement incentives in the form of non-compliance fees have not been the subject of international legal measures, although similar mechanisms are emerging. In November 1992, the parties to the Montreal Protocol adopted an indicative list of measures that might be taken by a Meeting of the Parties in respect of non-compliance with the Protocol including, *inter alia*, suspending specific rights and privileges under the Protocol such as those relating to the receipt of funds under the financial mechanism.²³² The Kyoto Protocol non-compliance mechanism makes explicit provision for a make good requirement in the event of a finding of non-compliance with an Annex I party's emission reduction target. Decision 27/CMP.1 specifies that the Enforcement Branch may require a defaulting party to make good any shortfall in emission reductions in a subsequent commitment period together with imposing an additional deduction of 30 per cent.²³³

Liability and compensation for damage

One of the objectives of the rules of international law establishing civil and state liability for environmental and related damage is the establishment of economic incentives for complying with international environmental obligations. As will be seen in Chapter 17, however, the limited state of development of the rules of state liability, and the low financial limits on liability established by most of the international civil liability conventions do not properly fulfil the incentive functions.

Trade measures

Regulations and prohibitions on international trade were among the first economic instruments to be used at the international level in aid of environmental protection objectives, and they are considered in detail in Chapter 19 below. They are designed to influence behaviour (i.e. not killing endangered species or not producing or consuming certain harmful substances) by limiting the availability of markets for certain products or by making the availability of markets

²³¹ WTO Dispute DS412, *Canada – Certain Measures Affecting the Renewable Energy Generation Sector* (13 September 2010).

²³² Fourth Report of the Parties to the Montreal Protocol. UNEP/OzL.Pro.4/15, 25 November 1992, 48 (Annex V); see Chapter 5, p. 164, below.

²³³ Decision 27/CMP.1: Procedures and Mechanisms Relating to Compliance under the Kyoto Protocol, Report of the COP serving as the MOP to the Kyoto Protocol, Montreal, 28 November–10 December 2005, FCCC/KP/CMP/2005/8/Add.3, 30 March 2006.

dependent upon participation in an international regulatory arrangement. Despite their evident attractiveness to government environmental departments as an efficient and effective means to achieve environmental objectives, trade measures remain controversial, and are subject to a trade regime under the WTO that raises questions as to the circumstances in which they may be relied upon.

Investment incentives

Over the past decade, increased attention has been given to identifying incentives for directing investment in clean technologies towards developing countries and countries with economies in transition. The most elaborate arrangement is the Clean Development Mechanism established under the Kyoto Protocol, which provides credits to states whose companies invest in certain greenhouse gas reduction activities in developing countries.²³⁴ It is contemplated that a mechanism for reducing emissions from deforestation and forest degradation (REDD+)²³⁵ will operate in a similar fashion by incentivising activities to preserve and sustainably manage forests in developing countries by making the credits earned through such activities tradeable in the global carbon market.²³⁶ Other arrangements aim to provide financial resources to developing countries to invest in certain clean technologies pursuant to the ozone and other international agreements.²³⁷

Environmental agreements

Alongside legislative and economic instruments, there has also been a growing use of 'environmental agreements', i.e. voluntary agreements between industrial undertakings which supplement regulatory requirements. A prominent example is the agreement reached between associations of European, Japanese and Korean car manufacturers to reduce carbon dioxide emissions from passenger cars sold in the EU to an average 140g/km by 2008 for European manufacturers and 2009 for Japanese and Korean manufacturers.²³⁸ However, the failure of this voluntary agreement to reach the agreed targets has led the EU to propose new regulatory measures for carbon dioxide emissions from new cars.²³⁹

In 1996, the European Commission published a Communication on Environmental Agreements, which identified potential benefits as including a proactive approach by industry, cost-effectiveness and tailor-made solutions, and the faster achievement of environmental objectives.²⁴⁰ In 1999, the OECD published a survey of environmental agreements, identifying more than 300 such agreements in the EU alone.²⁴¹ In 2002, the European Commission published a further Communication, identifying substantive and procedural criteria for the use of environmental agreements at the EU level, in the context of self-regulation

²³⁴ Chapter 7, pp. 288–91, below. ²³⁵ Chapter 7, pp. 295–6, below; Chapter 10, p. 495, below.

²³⁶ See C. Parker, A. Mitchell, M. Trivedi and N. Mardas, *The Little REDD+ Book: An Updated Guide to Governmental and Non-Governmental Proposals for Reducing Emissions from Deforestation and Degradation* (2009).

²³⁷ Chapter 16, pp. 674–678, below. ²³⁸ Recommendations 1999/125/EC, 2000/303/EC and 2000/304/EC.

²³⁹ For details see http://europa.eu/legislation_summaries/internal_market/single_market_for_goods/motor_vehicles/interactions_industry_policies/128200_en.htm.

²⁴⁰ COM (96) 561 final, 2 July 1996.

²⁴¹ OECD, *Voluntary Approaches for Environment Policy – An Assessment* (1999).

(where economic and other actors establish arrangements on a voluntary basis in order to regulate and organise their activities) and co-regulation (where the legislator establishes the essential elements of the regulation and the economic and other actors then agree on the means for giving effect to it).²⁴²

Consumer information incentives

Consumer information incentives targeting the environmental performance of companies, such as eco-labelling and eco-auditing, are designed to capitalise on the perception that many consumers take environmental considerations into account when buying products and services. In 1992, the EU adopted the first international eco-labelling scheme, which now extends to a wide variety of products and services, including cleaning products, appliances, paper products, textiles, home and garden products, lubricants and tourist accommodation.²⁴³ The EU also maintains a labelling regime for food and feed products produced from genetically modified organisms.²⁴⁴ The compatibility of domestic eco-labelling schemes with WTO rules and other international trade agreements continues to be an area of uncertainty in international trade law,²⁴⁵ although an early, unadopted GATT decision suggested some forms of eco-labelling may be consistent with the requirements of the GATT.²⁴⁶

INTEGRATED POLLUTION CONTROL AND INTEGRATED ENVIRONMENTAL MANAGEMENT

The continuous increase in pollution levels and environmental degradation provides evidence of the failure of traditional law-making adequately to change human behaviour and patterns of production and consumption. The traditional approach to environmental regulation has been to address particular activities, substances or environmental media (air, water, soil and biota), and to focus pollution control and prevention efforts on each environmental medium. In reality, different substances and activities can move among, and have effects upon, a range of environmental media. In the case of some pollutants, as they travel along a 'pathway' from a particular source to a particular receptor, they may accumulate in the environment. The regulation and establishment of controls over releases of a substance to one environmental medium can lead to that substance being shifted to another environmental medium.²⁴⁷ Similarly, management of one environmental problem, such as climate change, without reference to its broader environmental effects, may mean that regulations adopted for the purpose of climate change mitigation exacerbate other environmental problems, such as biodiversity loss or water scarcity. In the environmental policy literature, these kinds of complex and integrated environmental issues

²⁴² Environmental Agreements at the Community Level, COM (2002) 412 final, 17 July 2002. The substantive criteria include: cost-effectiveness, representativeness, quantified and staged objectives, involvement of civil society, monitoring and reporting, sustainability, and incentive compatibility.

²⁴³ www.ecolabel.eu. Chapter 15, pp. 658–9, below. ²⁴⁴ Regulation 1830/2003.

²⁴⁵ See e.g. Ilona Cheyne, 'Proportionality, Proximity and Environmental Labelling in WTO Law', 12(4) *Journal of International Economic Law* 927 (2009).

²⁴⁶ Chapter 19, p. 814, below; Chapter 15, pp. 658–9, below.

²⁴⁷ This is recognised by a number of international environmental agreements which include provisions requiring parties not to transfer pollution or environmental damage elsewhere in the implementation of their treaty obligations: see e.g. 1974 Baltic Convention, Art. 3(2); 1982 UNCLOS, Art. 195.

have been termed ‘wicked problems’, which are seen to require innovative and broadly based regulatory approaches.²⁴⁸

In the early 1990s, some states began to recognise that efforts to address each environmental medium separately may not be an efficient or effective way to protect the environment. Beginning at the national level, some began to rely upon strategies such as ‘integrated pollution prevention (or control)’, which was defined in 1991 by the OECD Council as:

taking into account the effects of activities and substances on the environment as a whole and the whole commercial and environmental life-cycles of substances when assessing the risks they pose and when developing and implementing controls to limit their release.²⁴⁹

The 1991 OECD Council Recommendation called on OECD member countries to support integrated pollution prevention and control by addressing impediments to an integrated approach, removing those impediments, and adopting appropriate new laws and regulations, taking account of the Guidance on Integrated Pollution Prevention and Control set out in the Appendix to the Recommendation.²⁵⁰ The Guidance set out, for the first time in an international instrument, a detailed approach to implementing integrated pollution prevention and control and preventing or minimising the risk of harm to the environment taken as a whole; it recognises the integrated nature of the environment by taking account of the substances or activities on all the environmental media (air, water, soil), the living organisms (including people) that these media support, and the stock of cultural and aesthetic assets.²⁵¹ The Guidance identified five important elements of an integrated approach: the ‘cradle-to-grave’ concept; the anticipation of effects in all environmental media of substances and activities; the minimisation of waste quantity and harmfulness; the use of a common means to estimate and compare environmental problems (such as risk assessment); and the complementary use of effects-oriented measures (environmental quality objectives) and source-oriented measures (emission limits).²⁵² In a similar vein are notions of integrated environmental or natural resources management that recognise the interdependence of ecosystems and guard against the problem of cumulative effects.²⁵³

These broader, more holistic approaches to environmental regulation and protection are now reflected in a number of international instruments. In 1992, the Oslo and Paris Commissions endorsed an integrated approach by addressing particular industrial sectors and activities.²⁵⁴ Chapter 10 of Agenda 21 also endorsed an approach of integrated land resources management,²⁵⁵ which has been implemented in treaties such as the 2003 Framework Convention on the Protection and Sustainable Development of the Carpathians.²⁵⁶ In 1996, the EU adopted the first

²⁴⁸ Australian Public Service Commission, *Tackling Wicked Problems: A Public Policy Perspective* (2007).

²⁴⁹ OECD Council Recommendation on Integrated Pollution Prevention and Control, C(90)164/FINAL (1991), para. I(a).

²⁵⁰ Guidance, para. I(b) and (c). ²⁵¹ Guidance, para. 1. ²⁵² *Ibid.*

²⁵³ K. S. Hanna and D. S. Slocombe (eds.), *Integrated Resource and Environmental Management: Concepts and Practice* (2007); J. Cairns Jr and T. V. Crawford (eds.), *Integrated Environmental Management* (1991).

²⁵⁴ 1992 Action Plan of the Oslo and Paris Commissions, Appendix A, in LDC 15/INF.11, Annex 3, 2 October 1992.

²⁵⁵ United Nations Division for Sustainable Development, *Agenda 21* (1992), Chapter 10, A/CONF.151/26/REV.1(VOL.II).

²⁵⁶ Art. 3.

international rules on integrated pollution control, which are now reflected in Directive 2008/1/EC on integrated pollution prevention and control. Moves towards integrated pollution control are also evident in the 1999 Gothenburg Protocol to the LRTAP Convention that applies a 'multi-effect, multi-pollutant approach' to preventing the exceedance of critical loads and levels for covered pollutants contributing to acidification, eutrophication and ground-level ozone.

As the 1991 OECD Recommendation recognised, certain changes to policy settings are 'essential to an effective integrated approach', including sustainable development, the use of no- or low-waste technology and recycling strategies, cleaner technologies and safer substances, precautionary action, public information, the integration of environmental considerations into private and public decision-making, and consistent and effective compliance and enforcement policies.²⁵⁷ An integrated approach shifts the focus of decision-making to a combination of the substances, the sources (including processes, products and economic sectors) and the geographical regions and requires changes in institutional arrangements, management instruments and technical methods. New institutional arrangements for integrated pollution or environmental management would require the establishment of co-ordinating mechanisms within and among government bodies and international co-operative arrangements within and among different levels of government within countries.²⁵⁸ Management instruments might include the following: issuing single permits which cover all releases and processes; linking environmental instruments with land-use planning and natural resource management; undertaking environmental impact assessments for policy proposals and projects; establishing integrated inspection and enforcement authorities; using economic instruments; encouraging and/or subsidising cleaner technologies; and covering whole life-cycle issues in the development of industry management plans.²⁵⁹ An integrated approach to technical methods would encompass such things as life-cycle analysis (from design through manufacture to disposal), analysis of multiple pathways of exposure, the use of inventories of releases and inputs, and more effective monitoring of the condition of environmental media, the biota they support, and the condition of cultural and aesthetic assets.²⁶⁰ The necessity for such changes remains equally apparent with regard to international institutions, in respect of both their internal practices and their external relations.

CONCLUSIONS

From the discussion in this chapter of the different sources of international legal obligation, it will be evident that the principles and rules of international environmental law are set forth or reflected in thousands of acts adopted at the national, bilateral, sub-regional, regional and global levels. There is no international legal text which sets out the principles and rules which are of general application, and it is unlikely that one will be adopted in the foreseeable future, despite the efforts of the IUCN Commission on Environmental Law in the 1990s. The lack of a central legislative authority, or of a coherent set of international legislative arrangements, has resulted in a law-making process and a body of rules that are *ad hoc*, piecemeal and fragmented. The limitations of existing arrangements are well known, and there remains a real need to establish a coherent framework for the co-ordination of existing rules and the development

²⁵⁷ OECD Integrated Pollution Recommendation, para. 2.

²⁵⁸ *Ibid.*, para. 5.

²⁵⁹ *Ibid.*, para. 6.

²⁶⁰ *Ibid.*, para. 7.

of new rules. The UNCED process could have contributed to such a framework, by addressing three priority needs: to establish improved mechanisms for identifying critical issues and priorities for law-making; to ensure that all relevant actors (in particular, developing countries) are able to participate fully and effectively in the international law-making process, including the negotiation, implementation, review and governance of international environmental agreements or instruments; and to rationalise the international law-making process by improving co-ordination between international organisations and their secretariats, in particular those established by environmental agreements. In the twenty years since UNCED, however, it has become apparent that there is an absence of the political will that would be required to overhaul existing international structures.²⁶¹

It will also be clear from this chapter that the limitations and inadequacies of existing techniques for applying standards established by international principles and rules (principally by so-called 'command-and-control' methods) are, and should continue to be, the subject of critical international scrutiny. Developments since UNCED confirm that environmental protection will not be achieved merely by the adoption of a vast body of regulatory obligations. These regulations need fine-tuning, and they may need to be supplemented by introducing and applying a broad range of equitable and effective economic instruments which can provide incentives to improve compliance without exacerbating social injustice, and which take account of the need to ensure that the poorer members of the international community are not disproportionately affected. So far, however, there has been little practical experience at the international level with the use of economic instruments, with the exception of emissions trading under the Kyoto Protocol and in the EU, and more work needs to be done to explore the implications and practical consequences of the various proposed arrangements. The limited experience to date suggests that legal and institutional issues of considerable complexity arise if economic theories are to be translated into practical, acceptable and effective international legal obligations and arrangements. Even so, efforts to devise new economic approaches will no doubt continue, supplemented by the obviously necessary move away from single-sector environmental regulation towards a more integrated approach to pollution prevention and natural resources management which seeks to address all environmental media on a comprehensive basis, and all products on a cradle-to-grave basis. Each of these new initiatives poses challenges to the international legal order. However, it is becoming increasingly clear that more integrated and more diverse regulatory approaches are an important component of the task of adapting international environmental law to respond adequately to the challenge of inherent and fundamental interdependence in the world environment.

²⁶¹ The objectives and themes of the 2012 Rio+20 summit are telling in this regard. They include 'securing political commitment to sustainable development' and improving the institutional framework for sustainable development.

5

Compliance: implementation, enforcement, dispute settlement

INTRODUCTION

Ensuring compliance by members of the international community with their international environmental obligations continues to be a matter of serious concern.¹ This is reflected in the attention the issue received at UNCED, in the negotiation and implementation of recent environmental agreements, and in the growing number of environmental disputes brought before international judicial bodies. The relevance of environmental concerns to international peace and security was affirmed by the UN Security Council in January 1992, when its members declared that 'non-military sources of instability in the . . . ecological fields have become threats to international peace and security'.² The response to those concerns has included the development of existing mechanisms for implementation, enforcement and dispute settlement (such as the specialised rules for arbitrating environmental disputes promulgated by the Permanent Court of Arbitration in 2001), as well as new approaches such as the non-compliance mechanisms established under a number of environmental agreements, and the role given to the UN Compensation Commission over environmental claims.³

¹ R. Bilder, 'The Settlement of Disputes in the Field of the International Law of the Environment', 144 *Recueil des Cours* 139 (1975); M. Koskenniemi, 'Peaceful Settlement of Environmental Disputes', 60 *Nordic Journal of International Law* 73 (1991); P. Sands, 'Enforcing Environmental Security: The Challenges of Compliance with International Obligations', 15 *Journal of International Affairs* 46 (1993); J. Cameron, J. Werksman and P. Roderick (eds.), *Improving Compliance with International Environmental Law* (1995); W. Lang, 'Compliance Control in International Environmental Law', 56 *ZaöRV* 685 (1996); A. Kiss, 'Compliance with International and European Environmental Obligations', *Hague Yearbook of International Environmental Law* 45 (1996); R. Wolfrum, 'Means of Ensuring Compliance with and Enforcement of International Environmental Law', 272 *Recueil des Cours* 9 (1998); J. Collier and V. Lowe, *The Settlement of Disputes in International Law* (1999); C. Romano, *The Peaceful Settlement of International Environmental Disputes: A Pragmatic Approach* (2000); D. French, 'Environmental Dispute Settlement: The First Signs of Spring?', 19 *Hague Yearbook of International Law* 3 (2006); M. Fitzmaurice, 'Compliance with Multilateral Environmental Agreements', 20 *Hague Yearbook of International Law* 19 (2007); T. Stephens, *International Courts and Environmental Protection* (2009); T. Treves, A. Tanzi, C. Pitea, C. Ragni and L. Pineschi (eds.), *Non-Compliance Procedures and Mechanisms and the Effectiveness of International Environmental Agreements* (2009); L. Paddock (ed.), *Compliance and Enforcement in Environmental Law* (2011). See also D. Hunter, J. Salzman and D. Zaelke, *International Environmental Law and Policy* (2011, 4th edn), Chapter 7; D. Bodansky, J. Brunnée and E. Hey (eds.), *The Oxford Handbook of International Environmental Law* (2007), Chapters 42, 43 and 45; D. Bodansky, *The Art and Craft of International Environmental Law* (2010), Chapter 11; M. Fitzmaurice, D. M. Ong and P. Merkouris (eds.), *Research Handbook on International Environmental Law* (2010), Part VI; P. Birnie, A. Boyle and C. Redgwell, *International Law and the Environment* (2009, 3rd edn), Chapter 4.

² Note by the President of the Security Council, 31 January 1992, UN Doc. S23500, 2 (1992).

³ Chapter 17, p. 716, below.

Of the reasons proffered for renewed efforts, at least three are especially relevant. First, it is apparent that states are taking on ever more international environmental commitments, of increasing stringency. Second, the growing demands on access to finite natural resources, such as freshwater and fish, provide fertile conditions for conflicts over the use of natural resources. And, third, as international environmental obligations increasingly intersect with economic interests, states that do not comply with their environmental obligations are perceived to gain unfair competitive advantage from non-compliance. Non-compliance is seen to be important because it limits the effectiveness of legal commitments, undermines the international legal process, and can lead to conflict and instability in the international order. It occurs for different reasons,⁴ and it is widely recognised that the underlying causes require further attention so that existing and new international legal obligations are crafted to ensure their effective implementation. At UNCED, attention was focused on mechanisms to *prevent* disputes and to resolve them peacefully when they arise. Subsequent efforts have reflected a desire to address enforcement and dispute settlement in a non-contentious and non-adversarial manner.

Non-compliance can include a failure to give effect to substantive norms (e.g. to limit atmospheric emissions of sulphur dioxide or greenhouse gases as required by treaty or to allow transboundary emissions of hazardous substances or gases in violation of any rules of customary law); or to fulfil procedural requirements (e.g. to carry out an environmental impact assessment or to consult with a neighbouring state on the construction of a new plant); or to fulfil an institutional obligation (e.g. to submit an annual report to an international organisation). Non-compliance raises three distinct but related issues relating to implementation, enforcement and conflict resolution (traditionally referred to by international lawyers as 'dispute settlement'). These are:

- (1) What formal or informal steps must be taken to implement a state's international legal obligations?
- (2) What legal or natural person may enforce international environmental obligations of other states?
- (3) What techniques, procedures and institutions exist under international law to resolve conflicts or settle disputes over alleged non-compliance with international environmental obligations?

Over the years, a range of techniques has been adopted and used to improve compliance with environmental obligations, drawing upon other developments in international law. Today, techniques and practices specific to environmental matters are being developed. Despite the emergence of the concept of 'environmental security',⁵ the legal issues relating to the environment concerning implementation, enforcement and conflict resolution are not dissimilar to

⁴ Non-compliance may occur for a variety of reasons, including a lack of institutional, financial or human resources, and differing interpretations as to the meaning or requirements of a particular obligation.

⁵ See e.g. Simon Dalby, *Environmental Security* (2002); A. Timoshenko, 'Human and Environmental Security: An Agenda for Change', 16(1) *Review of European Community and International Environmental Law* 111 (2007); J. T. Matthews, 'Redefining Security', 68 *Foreign Affairs* 163 (1989); A. Timoshenko, 'Ecological Security: Global Change Paradigm', 1 *Colorado Journal of International Environmental Law and Policy* 127 (1990); G. Handl, 'Environmental Security and Global Change: The Challenge to International Law', 1 *Yearbook of International Environmental Law* 3 (1990); K. Hulme, 'Environmental Security: Implications for International Law', 19 *Yearbook of International Environmental Law* 3 (2008); C. Webersik, *Climate Change and Security: A Gathering Storm of Global Challenges* (2010).

those of 100 years ago.⁶ Since the *Fur Seal* arbitration of 1893, a considerable number of environmental disputes have been submitted to international dispute resolution arrangements, and the rate of submission appears to have increased significantly within the past decade. These disputes have addressed a broad range of issues, including: transboundary air pollution;⁷ the diversion of the flow of international rivers;⁸ conservation of fisheries resources;⁹ protection of the marine environment;¹⁰ import restrictions adopted to enforce domestic conservation standards;¹¹ the relationship between environmental laws and foreign investment protection treaties;¹² access to environmental information;¹³ procedural obligations relating to notification of information and consultation;¹⁴ environmental impact assessment;¹⁵ responsibility for rehabilitation of mined lands;¹⁶ transboundary effects of pesticide spraying;¹⁷ environmental obligations in relation to seabed activities;¹⁸ the definition of scientific whaling;¹⁹ and the legality of a marine protected area.²⁰ Decided cases illustrate the availability of a growing range of fora for the resolution of disputes over environment and natural resources. In the context of the dispute over the Gabčíkovo-Nagymaros barrages, Hungary and Slovakia explored a range of enforcement and dispute settlement options, including unilateral reference to the ICJ, arbitration, conciliation by the European Commission, and the emergency procedures of the Conference on Security and Co-operation in Europe (CSCE), before they agreed to settle the dispute at the ICJ.²¹ The dispute between Ireland and the United Kingdom concerning the MOX plant at Sellafield was litigated at ITLOS, the ECJ and two separate arbitral tribunals (OSPAR and UNCLOS), and other fora (including the ECHR and the ICJ) were also available. Historically, the available mechanisms were under-utilised, leaving it unclear whether they would be able to deal with the growing range of environmental issues that may require resolution. In the past decade, however, there has been an increasing willingness on behalf of states to invoke these traditional procedures, which have demonstrated an ability to

⁶ See the *Fur Seal* arbitration (*Great Britain v. United States*) (1893), Chapter 9, pp. 399–400, below.

⁷ *Trail Smelter* case, Chapter 7, pp. 239–40, below.

⁸ *Lac Lanoux* arbitration (1957), Chapter 8, pp. 307–8, below, *Gabčíkovo-Nagymaros Project* case, Chapter 8, pp. 313–19, below.

⁹ *Fisheries Jurisdiction* case (1974), Chapter 9, p. 402, below; *Southern Bluefin Tuna* cases, Chapter 9, pp. 420–1, below.

¹⁰ *New Zealand v. France* (1995), Chapter 7, pp. 240–2, below; *MOX* case, Chapter 9, p. 361, below.

¹¹ *Yellow-Fin Tuna* decision (1991), Chapter 19, pp. 813–14, below; *Shrimp/Turtle* case, Chapter 19, pp. 818–24, below; *Brazil Retreaded Tyres* case, Chapter 19, pp. 827–9, below.

¹² *Metalclad v. Mexico*, Chapter 20, pp. 877–80, below.

¹³ *MOX* case, Chapter 9, p. 361, below. ¹⁴ *Pulp Mills* case, Chapter 19, pp. 844–7, below.

¹⁵ *Gabčíkovo-Nagymaros* case, Chapter 8, pp. 313–19, below; *MOX* case, Chapter 9, p. 316, below.

¹⁶ *Certain Phosphate Lands in Nauru* case, Chapter 11, pp. 549–50, below.

¹⁷ *Aerial Herbicide Spraying*, Chapter 7, p. 242, below.

¹⁸ *Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area* (Advisory Opinion) (Seabed Disputes Chamber of the International Tribunal for the Law of the Sea, ITLOS Case No. 17, 1 February 2011).

¹⁹ *Whaling in the Antarctic* case, Chapter 10, pp. 426–8, below.

²⁰ *Dispute Regarding the Marine Protected Area (Mauritius v. UK)*. For the ITLOS press release announcing the appointment of arbitrators in this dispute, see www.itlos.org/start2_en.html.

²¹ A mechanism for consultation and co-operation in emergency situations was adopted by the Berlin Meeting of the CSCE Council in June 1991. The mechanism comprises a process of exchange of information between the states involved, which if unsuccessful may lead to a special meeting of the Committee of Senior Officials, who may then refer the matter to a meeting at ministerial level. If the process does not resolve the situation, the dispute may be referred to the Procedure for Peaceful Settlement of Disputes, involving the Conflict Prevention Centre: see Summary of Conclusion, 30 ILM 1348 (1991), Annexes 2 and 3.

contribute to the resolution of contentious disputes and, in the process, to the development of the rules of international environmental law. This is reflected in cases brought before the ICJ, ITLOS and arbitral tribunals.

IMPLEMENTATION

States implement their international environmental obligations in three distinct phases. First, by adopting national implementing measures; second, by ensuring that national measures are complied with by those subject to their jurisdiction and control; and, third, by fulfilling obligations to the relevant international organisations, such as reporting the measures taken to give effect to international obligations.²²

National law

Once a state has formally accepted an international environmental obligation, usually following the entry into force of a treaty which it has ratified or the act of an international organisation by which it is bound, it will usually need to develop, adopt or modify relevant national legislation, or give effect to national policies, programmes or strategies by administrative or other measures. Some treaties expressly require parties to take measures to ensure the implementation of obligations,²³ or to take appropriate measures within their competence to ensure compliance with the convention and any measures in effect pursuant to it.²⁴ Numerous agreements require parties to designate a competent national authority or focal point for international liaison purposes to ensure domestic implementation.²⁵ The 1982 UNCLOS provides a typical example, its provisions being drawn from different precedents in the field of marine pollution. It includes provisions on implementation of pollution requirements from different sources, and provides specifically for the enforcement by states of their laws and regulations adopted in accordance with the Convention and the implementation of applicable international rules and standards.²⁶ It also requires states to ensure that recourse is available under their legal system for prompt and adequate compensation for damage caused by marine pollution by persons under their jurisdiction.²⁷

Treaty obligations that have not been implemented domestically will usually be difficult to enforce in national courts. EU law provides a notable exception, since it can create rights and obligations enforceable before national courts without being implemented provided that they

²² See generally D. Victor, K. Raustiala and E. Skolnikoff (eds.), *The Implementation and Effectiveness of International Environmental Commitments* (1998); T. Zhenghua and R. Wolfrum, *Implementing International Environmental Law in Germany and China* (2001). See also G. Handl, 'Controlling Implementation of and Compliance with International Environmental Commitments: The Rocky Road from Rio', 5 *Colorado Journal of International Environmental Law and Policy* 305 (1994); L. Boisson de Chazournes, 'La Mise en Oeuvre du Droit International dans le Domaine de l'Environnement', 99 *Revue Générale de Droit International Public* 37 (1995); P. Sand, 'Institution Building to Assist Compliance with International Environmental Law: Perspectives', 56 *ZaöRV* 754 (1996).

²³ Examples include: 1969 Southeast Atlantic Convention, Art. X(1); 1972 London Convention, Art. VII(1), and 1996 Protocol, Art. 10(2); 1989 Basel Convention, Art. 4(4); 1991 Antarctic Environment Protocol, Art. 13.

²⁴ See e.g. 1988 CRAMRA, Art. 7(1). The 1998 Chemicals Convention identifies possible measures to include the establishment of national registers and databases, the encouragement of initiatives by industry, and the promotion of voluntary agreements: Art. 15(1).

²⁵ Examples include: 1989 Basel Convention, Art. 5; 2001 Biosafety Protocol, Art. 19.

²⁶ 1982 UNCLOS, Arts. 213, 214, 216 and 222. ²⁷ Art. 235(2).

fulfil certain conditions, such as being clear and unconditional.²⁸ The failure by EU members to adopt measures implementing EU environmental law has been the subject of enforcement measures taken at the ECJ.²⁹ In dealing with these cases, the ECJ has rejected different arguments by states seeking to justify domestic non-implementation.³⁰

National compliance

Once an obligation has been domestically implemented, the party must ensure that it is complied with by those within its jurisdiction and control. Numerous treaties expressly require parties to ensure such compliance,³¹ or to apply sanctions for failing to implement measures.³² Others specifically provide for the application of criminal penalties or for the 'punishment' of violations.³³ Ensuring national compliance is a matter for the public authorities of each state, although there is much evidence to suggest that domestic compliance with environmental obligations is inadequate and that compliance with international obligations needs to be enhanced.³⁴ National judges meeting shortly before the World Summit on Sustainable Development adopted the Johannesburg 'Principles on the Role of Law and Sustainable Development', which affirmed their adherence to the 1992 Rio Declaration which laid down the basic principles of sustainable development, affirmed that members of the judiciary, as well as those contributing to the judicial process at the national, regional and global levels, are 'crucial partners for promoting compliance with, and the implementation and enforcement of, international and national environmental law', and recognised that 'the rapid evolution of multilateral environmental agreements, national constitutions and statutes concerning the protection of the environment increasingly require the courts to interpret and apply new legal instruments in keeping with the principles of sustainable development'.³⁵

Recognising that public authorities in many countries may not be able to ensure compliance, because of a lack of resources or commitment, and that individuals, groups and business can play a role in ensuring compliance, increasing numbers of states are encouraging private enforcement of national environmental obligations. These are sometimes referred to as 'citizen suits', allowing citizens (and businesses) to enforce national environmental obligations in the

²⁸ EU Treaty, Art. 288 (formerly Art. 249).

²⁹ R. Wagenbaur, 'The European Community's Policy on Implementation of Environmental Directives', 14 *Fordham International Law Journal* 455 (1990); L. Krämer, 'The Implementation of Community Environmental Directives Within Member States: Some Implications of Direct Effect Doctrine', 3 *Journal of Environmental Law* 39 (1991).

³⁰ See e.g. Case 91/79, *Commission v. Italy* [1980] ECR 1099, rejecting Italy's defences that the national legislation already contained provisions which to a large extent secured the realisation of the objects of the Directive, that the Directive was *ultra vires*, and that implementation was 'thwarted by the vicissitudes which were a feature of the brief existence of the seventh legislature of the Italian Parliament, and particularly its premature end': *ibid.*, 1105.

³¹ Examples include: 1973 CITES, Art. VIII(1); 1992 OSPAR Convention, Arts. 22 and 23; 1996 Protocol to the London Convention, Art. 10; 1995 Fish Stocks Agreement, Art. 19.

³² Examples include: 1946 International Whaling Convention, Art. IX(1) and (3); 1969 Southeast Atlantic Convention, Art. X(1); OSPAR Convention, Arts. 22 and 23; 1989 Basel Convention, Art. 4(4).

³³ Examples include: 1989 Basel Convention, Art. 9(5); 1991 Bamako Convention, Art. 9; 2001 Biosafety Protocol, Art. 25(1); see also Resolution on the Role of Criminal Law in the Protection of Nature and the Environment, 8th UN Congress on the Prevention of Crime and the Treatment of Offenders, UN Doc. A/CONF/144/7, paras. 456–62 (1990).

³⁴ Agenda 21, Chapter 39, para. 39.3(d) and (e).

³⁵ 20 August 2002, available at www.inece.org/wssd_principles.html. The Principles also express the judges' view that 'there is an urgent need to strengthen the capacity of judges, prosecutors, legislators and all persons who play a critical role at national level in the process of implementation, development and enforcement of environmental law, including multilateral environmental agreements (MEAs), especially through the judicial process'.

public interest. The importance of national remedies to challenge acts that damage the environment or violate environmental obligations has been recognised and is addressed internationally. Principle 10 of the Rio Declaration states that '[e]ffective access to judicial and administrative proceedings, including redress and remedy, shall be provided'. The European Commission has recognised that individuals and public interest groups 'should have practicable access to the courts in order to ensure that their legitimate interests are protected and that prescribed environmental measures are effectively enforced and illegal practices stopped',³⁶ although the ECJ has not been willing to move away from its traditional and restrictive approach to recognising the rights of individuals and other non-state actors to challenge EU legislative and administrative acts.³⁷ The 1993 Lugano Convention was the first international agreement to elaborate rules governing access to national courts to allow enforcement of environmental obligations in the public interest: Article 18 requires standing to be granted to environmental organisations to allow them to bring certain enforcement proceedings before national courts.³⁸

The 1998 Aarhus Convention goes a great deal further, giving concrete effect to the requirements of Principle 10 of the Rio Declaration on access to justice. Article 9(2) establishes an obligation on parties to ensure that members of the public which have a 'sufficient interest' or who claim an 'impairment of a right' have access to 'a review procedure before a court of law and/or another independent and impartial body established by law, to challenge the substantive and procedural legality of any decision, act or omission' which is subject to the Convention's Article 6. The Convention provides that 'sufficient interest' and 'impairment of a right' are to be determined in accordance with national law and 'consistently with the objective of giving the public concerned wide access to justice', and expressly provides that non-governmental organisations fulfilling certain conditions are deemed to have a 'sufficient interest' and rights capable of being impaired.³⁹ The Convention also provides that members of the public should be able to challenge acts and omissions by private persons and public authorities which contravene national provisions relating to the environment, and that all the procedures available should provide adequate and effective remedies (including injunctive relief) and be fair, equitable, timely and 'not prohibitively expensive'.⁴⁰ In March 2011, the Aarhus Compliance Committee issued draft findings and a recommendation that access to the ECJ did not meet the requirements of Article 9 of the Convention, with regard to access of individuals and NGOs, and that 'a new direction of the jurisprudence of the EU Courts should be established in order to ensure compliance with the Convention'.⁴¹

³⁶ European Commission, Fifth Environmental Action Programme (1992).

³⁷ See Case C-321/95P, *Greenpeace v. Commission* [1998] ECR I-6151 (individuals and associations not 'individually concerned' by a Commission decision dispensing structural funds, and no account is to be taken of the 'nature and specific characteristics of the environmental interests' at stake). The Court of First Instance indicated a desire to adopt a more flexible approach (see Case T-177/01, *Jego-Quere et Cie SA v. Commission* [2002] 2 CMLR 44), but the ECJ has rejected the approach (see Case C-50/00P, *Union de Pequenos Agricultores v. Council* [2002] 3 CMLR 1; also Case C-355/08, *WWF-UK Ltd v. Council of the European Union and the Commission of the European Communities* [2009] ECR I-00073, on which see the decision of the Aarhus Compliance Committee, n. 41, below).

³⁸ Chapter 17, pp. 766–70, below. The Lugano Convention is yet to enter into force.

³⁹ Art. 9(2). Art. 2(5) establishes the conditions for non-governmental organisations, requiring merely that they promote environmental protection and meet 'any requirements under national law'.

⁴⁰ Art. 9(3) and (4). By Art. 9(5), the parties are also to consider establishing appropriate assistance mechanisms to reduce barriers to access to justice.

⁴¹ Draft Findings and Recommendations of the Compliance Committee, with regard to Communication ACCC/C/2008/32, concerning compliance by the European Union.

The question of which state may or must ensure implementation is a difficult one where the environmental obligation relates to a shared natural resource or the global commons.⁴² This can lead to conflicts between states over which has jurisdiction over a particular activity or violation.⁴³ Some treaties allocate enforcement obligations to particular states, and in respect of marine pollution the 1982 UNCLOS is notable for the detailed provisions on national enforcement responsibilities of flag states, port states or coastal states, depending on where a pollution incident occurred.⁴⁴ No equivalent treaty rules apply for other matters, such as atmospheric pollution. However, under the 1979 Moon Treaty, the state of registration retains jurisdiction and control over personnel and equipment and is responsible for ensuring that 'national activities are carried out in conformity with the provisions' of the treaty.⁴⁵ And under the 1988 CRAMRA each party would have been required to ensure that recourse was available in its national courts for adjudicating liability claims under Article 8 of the Convention (and consistently with Article 7), including the adjudication of claims against any operator it had sponsored.⁴⁶

The UNCLOS rules are detailed and may provide a model for enforcement jurisdiction in other matters. Generally, the flag state will be responsible for ensuring that vessels flying its flag or of its registry comply with applicable international pollution rules and standards, and with laws and regulations adopted in accordance with UNCLOS, and for the effective enforcement of such measures 'irrespective of where a violation occurs'.⁴⁷ Port states also have important enforcement functions. They may investigate and institute proceedings in respect of a vessel voluntarily within its port or at an offshore terminal for harmful discharges from that vessel outside the internal waters, territorial sea or exclusive economic zone (EEZ) in violation of international rules and standards.⁴⁸ And they must take measures to prevent vessels from sailing where they have ascertained that the vessel is in violation of applicable international rules and standards relating to seaworthiness that may threaten the marine environment.⁴⁹ A coastal state may institute proceedings against vessels within its port for violations of its laws and regulations adopted in accordance with UNCLOS or applicable international rules and standards for environmental violations occurring in its territorial sea or EEZ.⁵⁰ Where there are grounds for believing that

⁴² Chapter 6, p. 195, below (global commons), and p. 204, below (shared natural resources).

⁴³ On extra-territorial jurisdiction, see Chapter 6, pp. 192–5, below.

⁴⁴ 1982 UNCLOS, Arts. 217–220.

⁴⁵ Arts. 12(1) and 14(1), see Chapter 7 below. Similar provisions apply under the 1967 Outer Space Treaty, Chapter 7, p. 300, below, Arts. VI and VIII.

⁴⁶ Art. 8(10); Chapter 13, pp. 582–6, below. The 1988 CRAMRA is not in force.

⁴⁷ Art. 217(1). See also 1995 Fish Stocks Agreement, Art. 19.

⁴⁸ Art. 218(1). Proceedings in respect of violations taking place in the internal waters, the territorial sea or the EEZ of another state are, however, subject to certain limitations: see Art. 218(2).

⁴⁹ Art. 219. See in this regard the various understandings and agreements on port state controls, including: the 1982 Paris Memorandum of Understanding on Port State Control, as amended (www.parismou.org); the 1992 Latin American Agreement on Port State Control of Vessels, as amended (www.acuerdolatino.int.ar); the 1994 Memorandum of Understanding on Port State Control in the Asia–Pacific Region (www.tokyo-mou.org/memorandum.htm); and the Riyadh Memorandum of Understanding on Port State Control in the Gulf Region (www.riyadhmu.org). See generally E. Molenaar, *Coastal State Jurisdiction over Vessel-Source Pollution* (1998); D. Anderson, 'Port States and Environmental Protection', in A. Boyle and D. Freestone (eds.), *International Law and Sustainable Development* (1999), 325; T. Keselj, 'Port State Jurisdiction in Respect of Pollution from Ships: The 1982 UNCLOS and the MOU', 30 *Ocean Development and International Law* 127 (1999); L. Johnson, *Coastal State Regulation of International Shipping* (2004); E. J. Molenaar, 'Port State Jurisdiction: Toward Comprehensive, Mandatory and Global Coverage', 38(1/2) *Ocean Development and International Law* 225 (2007); Z. Oya Özçayır, 'The Use of Port State Control in Maritime Industry and the Application of the Paris MOU', 14(2) *Ocean Coastal Law Journal* 230 (2009).

⁵⁰ Art. 220(1).

there is a 'substantial discharge causing or threatening significant pollution of the marine environment', the coastal state also has the right to investigate and institute proceedings against vessels navigating in its territorial sea, to obtain information from vessels navigating in its EEZ, and to undertake inspections of vessels in its EEZ. The coastal state may also institute proceedings – with sanctions including detention – against vessels in its territorial sea or EEZ if there is 'clear, objective evidence' that a violation of applicable international rules and standards has occurred which results 'in a discharge causing major damage or threat of major damage to the coastline or related interests of the coastal state, or to any resources of its territorial sea or exclusive economic zone'.⁵¹ UNCLOS does not prejudice the rights of states under international law to take and enforce measures to protect their coastlines or related interests from pollution or a threat of pollution. Such pollution may result from a maritime casualty, including collision or stranding, which may reasonably be expected to have major harmful consequences.⁵²

With regard to the seabed and ocean floor and its subsoil, beyond the limits of national jurisdiction (known as the 'Area') and which constitute the 'common heritage of mankind',⁵³ states parties must ensure that their activities, or the activities of their nationals or those effectively controlled by them or their nationals, are carried out in conformity with Part XI of UNCLOS. States parties are also subject to rules adopted by the International Seabed Authority concerning pollution and other hazards to the marine environment and the protection and conservation of natural resources.⁵⁴ In 2010, the Seabed Disputes Chamber of ITLOS handed down an advisory opinion that clarified the environmental obligations of states parties sponsoring activities in the Area, including duties of due diligence, environmental impact assessment and requirements to implement a precautionary approach.⁵⁵ The allocation of detailed enforcement powers to ensure compliance is not well developed in respect of many other environmental media involving shared resources. In the absence of specific treaty provisions, the applicable principles arise from general rules of international law concerning enforcement jurisdiction. Given the failure of many states, particularly developing states, to implement their international obligations by reason of lack of financial and other resources, an important development is the linkage now established between the extent to which developing countries meet their treaty obligations, and the provision to them of financial resources. The 1990 amendments to the 1987 Montreal Protocol established a mechanism to 'meet all agreed incremental costs' of developing country parties 'to enable their compliance with the control measures of the Protocol'.⁵⁶ The 1992 Climate Change Convention goes further by requiring developed country parties 'to meet the agreed full costs incurred by developing country parties in complying with their [reporting requirements and] agreed full incremental costs' needed by developing country parties for implementing their substantive obligations under the Convention.⁵⁷ Similar provisions exist in other agreements, including the 1992 Biodiversity Convention, the 1994 Desertification Convention and the 2001 POPs Convention.⁵⁸

⁵¹ Art. 220(1), (2), (3), (5) and (6). ⁵² Art. 221.

⁵³ Arts. 1(1) and 136. These provisions are not affected by the 1994 Agreement Implementing Part XI of UNCLOS.

⁵⁴ Arts. 139(1) and 145.

⁵⁵ *Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area* (Advisory Opinion) (Seabed Disputes Chamber of the International Tribunal for the Law of the Sea, ITLOS Case No. 17, 1 February 2011).

⁵⁶ Art. 10(1); Chapter 16, pp. 675–6, below.

⁵⁷ Art. 4(3); Chapter 16, pp. 677–8, see especially fn. 90, below. ⁵⁸ Chapter 16, p. 678, below.

Reporting

The third element of national compliance arises from the requirement that states must usually report national implementing measures. Most environmental agreements expressly require parties to report certain information to the international organisation designated by the agreement. The information to be reported typically includes: statistical information on production, imports and exports;⁵⁹ information on emissions or discharges;⁶⁰ information on the grant of permits or authorisations,⁶¹ including the criteria therefor;⁶² information on implementation measures which have been adopted;⁶³ details of decisions taken by national authorities;⁶⁴ scientific information;⁶⁵ and information on breaches or violations by persons under the jurisdiction or control of the party.⁶⁶

These reports may be required annually or bi-annually, or according to some other time-frame.⁶⁷ They allow the international organisation and the other parties to assess the extent to which parties are implementing their obligations. It is clear, however, that many states fail to fulfil the basic reporting obligation, which suggests that more substantive obligations may also remain unimplemented. One study in the early 1990s considered six environmental treaties which required periodic reports, and found wide variations in compliance.⁶⁸ Some treaties revealed a strong record: all six parties to the International Whaling Convention required to submit information on their 1989 whale harvests did so,⁶⁹ and sixteen of the seventeen parties to the 1988 NO_x Protocol submitted their 1990 report on their emissions in 1987 or another year.⁷⁰ By October 1990, fifty-two of the then sixty-five parties to the 1987 Montreal Protocol had responded to the requirement to report information on their consumption of controlled substances in 1986, of which twenty-nine (representing 85 per cent of world consumption) submitted complete data.⁷¹ At the other end of the scale, however, only nineteen of the sixty-four parties to the 1972 London Convention reported on the number and types of dumping permits they issued in 1987,⁷² and only thirteen of the fifty-seven parties to MARPOL 73/78 (representing only about 27 per cent of the world's gross shipping tonnage) submitted reports summarising violations and penalties they had imposed in 1989.⁷³ Finally, just twenty-five of the 104 parties to the 1973 CITES submitted reports summarising their 1989 import and export certificates for listed endangered species.⁷⁴ These figures suggest the limited ability of many

⁵⁹ E.g. 1987 Montreal Protocol, Art. 7, as amended; 2001 POPs Convention, Art. 15.

⁶⁰ E.g. 1997 Kyoto Protocol, Art. 7(1). ⁶¹ E.g. 1946 International Whaling Convention, Art. VIII(1).

⁶² E.g. 1996 LDC Protocol, Art. 9(4).

⁶³ E.g. 1972 World Heritage Convention, Art. 29(1); 1989 Basel Convention, Art. 13(3)(c); 1992 Climate Change Convention, Art. 12(1); 2000 Biosafety Protocol, Art. 23; 2001 POPs Convention, Art. 15.

⁶⁴ E.g. 1989 Basel Convention, Art. 13(2)(c) and (d).

⁶⁵ E.g. 1946 International Whaling Convention, Art. VIII(3). ⁶⁶ *Ibid.*, Art. IX(4).

⁶⁷ See also 1992 Climate Change Convention, which required initial reports to be submitted within six months of entry into force by OECD countries, within three years of entry into force or upon the availability of financial resources by developing countries, and at their discretion by least-developed countries: Art. 12(5); Chapter 7, p. 279, below.

⁶⁸ See United States General Accounting Office, 'International Environment: International Agreements Are Not Well Monitored', Report to Congressional Requesters, GAO/RCED-92-43 (1992).

⁶⁹ *Ibid.*, 26.

⁷⁰ *Ibid.*, 25. This high rate of reporting occurred even though the Protocol did not enter into force until February 1991.

⁷¹ *Ibid.*, 24–5. Concern over lack of reporting led to the establishment in June 1990 of an Ad Hoc Group of Experts on the Reporting of Data: cited in GAO Report, note 68 above. Reasons found by the Group for incomplete reporting included lack of financial and technical resources, inability to use customs records to track imports and exports because they do not distinguish between different substances, and confidentiality of information.

⁷² *Ibid.*, 26. ⁷³ *Ibid.*, 26–7. ⁷⁴ *Ibid.*, 27–8.

countries, particularly developing countries, to meet their reporting requirements. Subsequent practice has not indicated any real or recent improvements,⁷⁵ although steps are being taken to address the problem. Under the Biodiversity and Climate Change Conventions, financial resources are available to meet the incremental costs for developing countries of fulfilling their reporting requirements, and this has gone some way towards improving compliance.⁷⁶

INTERNATIONAL ENFORCEMENT

Once evidence is available that a state, or a party to a treaty, has failed to implement an international environmental obligation, the question arises as to which persons having international legal personality may enforce that obligation internationally. In this context, 'enforcement' is understood as the right to take measures to ensure the fulfilment of international legal obligations or to obtain a ruling by an appropriate international court, tribunal or other body, including an international organisation, that obligations are not being fulfilled. International enforcement may occur at the instigation of one or more states, or an international organisation, or by non-state actors. In practice, international enforcement usually involves a combination of the three, each acting in different capacities. The extent to which any of these actors may invoke enforcement measures depends on the nature and legal basis of the alleged violation, the subject matter involved, and the international legal obligations at issue. This aspect of enforcement is essentially about the standing required to bring international claims.

Enforcement by states

As the principal subjects of international law, states have the primary role in enforcing rules of international environmental law. To be in a position to enforce a rule of international environmental law, a state must have standing, and to have standing it must be able to show that it is, in the words of the International Law Commission (ILC), an 'injured state'. Article 42 of the ILC's 2001 Articles on State Responsibility provides:

A State is entitled as an injured State to invoke the responsibility of another State if the obligation breached is owed to:

- (a) that State individually; or
- (b) a group of States including that State, or the international community as a whole, and the breach of the obligation:
 - (i) Specially affects that State; or
 - (ii) Is of such a character as radically to change the position of all the other States to which the obligation is owed with respect to the further performance of the obligation.⁷⁷

⁷⁵ D. McEvoy and J. Stranlund, 'Self-Enforcing International Environmental Agreements with Costly Monitoring for Compliance', 42(4) *Environmental and Resource Economics* 491 (2009).

⁷⁶ Chapter 16, pp. 675–8, below.

⁷⁷ ILC Articles on State Responsibility, Part 2, Art. 5(1), *Report of the ILC to the United Nations General Assembly*, UN Doc. A/56/10 (2001). See also the commentary in J. Crawford, *The ILC's Articles on State Responsibility* (2002), 255–60.

The rights concerning the first category include those arising from: a bilateral treaty; a multilateral treaty where particular performance is incumbent under the treaty as between one party and another; a unilateral commitment made by one state to another; or a rule of general international law which may give rise to individual obligations as between two states (for example, rules concerning riparian states and the non-navigational uses of international watercourses).⁷⁸ Rights arising under the second category are considered by the ILC to include a case of pollution of the high seas in breach of Article 194 of UNCLOS which may particularly impact on one or several states whose beaches may be polluted by toxic residues or whose coastal fisheries may be closed and hence considered to be specially affected,⁷⁹ or a nuclear-free zone treaty or any other treaty 'where each parties' performance is effectively conditioned upon and requires the performance of each of the others'.⁸⁰

The ILC Articles also envisage that a state other than an 'injured state' is entitled to invoke the responsibility of another state if:

- (a) The obligation breached is owed to a group of states including that state, and is established for the protection of a collective interest of the group; or
- (b) The obligation breached is owed to the international community as a whole.⁸¹

In cases involving environmental damage, at least three situations are to be distinguished. The first is where a state permits activities which cause damage to its own environment; the second is where a state permits activities which cause damage to the environment of another state; and the third is where a state permits or causes damage to the environment in an area beyond national jurisdiction.⁸²

Damage to a state's own environment

A number of international environmental agreements commit parties to protect environmental resources located exclusively within their territory, for example the conservation of non-migratory species⁸³ or habitats⁸⁴ or watercourses⁸⁵ located within their territories. In these circumstances, other parties to the agreement could claim to be an injured state such as to allow them – at least in theory – to bring an international claim. In practice, this has not happened: it is only where the interference with the environmental resource crosses a national boundary that one or more states have felt compelled to act. Exceptionally, in the EU context the European Commission may institute proceedings for non-compliance with EU environmental rules even in the absence of transboundary consequences.⁸⁶

⁷⁸ See Commentaries on the Articles, 'Report of the International Law Commission on the Work of Its Fifty-Third Session', Official Records of the General Assembly, Fifty-Sixth Session, Supplement No. 10, UN Doc. A/56/10, Chapter IV.E.1, Art. 42 (p. 297).

⁷⁹ *Ibid.*, 299. ⁸⁰ *Ibid.*

⁸¹ Art. 48. The remedy which a non-injured state may make is limited to cessation of the internationally wrongful act, assurances and guarantees of non-repetition, and the performance of the obligation of reparation in the interest of the injured state or of the beneficiaries of the obligation breached: see Art. 49(2).

⁸² For a most helpful discussion (and table), see C. Stone, *The Gnat Is Older Than Man: Global Environment and Human Agenda* (1993), 33 *et seq.*

⁸³ Chapter 10, below. ⁸⁴ Chapter 10, pp. 492–504, below.

⁸⁵ Chapter 8, pp. 310–12, below. ⁸⁶ See pp. 154–5, below.

Damage to the environment of another state

In situations involving damage to its environment, or consequential damage to its people or their property or other economic loss, a state will not find it difficult to claim that it is an 'injured state' and that it may bring an international claim. In the *Trail Smelter* case, the United States invoked its right not to be subjected to the consequences of transboundary air pollution from sulphur emissions in Canada and to bring a claim against Canada for having violated its rights. As a riparian state and a party to an international agreement with France, in the *Lac Lanoux* arbitration Spain relied upon *prima facie* rights to challenge France over proposed works which it alleged would violate its right to use the waters of the River Carol under certain conditions.⁸⁷ Similar considerations applied in respect of the *Gabčíkovo-Nagymaros* dispute submitted by Hungary and Slovakia to the ICJ for a determination of rights on the basis of a bilateral treaty between those two states and 'principles of general international law',⁸⁸ and in the *Pulp Mills* case brought by Uruguay against Argentina.⁸⁹ Australia, in the *Nuclear Tests* case, argued that French nuclear tests deposited radioactive fallout on Australian territory, which violated its sovereignty and impaired its independent right to determine the acts that should take place within its territory.⁹⁰ Ireland, in the *MOX* case, claimed that it was injured by transboundary movements of radioactive substances introduced into the Irish Sea by the United Kingdom in violation of its international commitments.⁹¹ Ecuador, in the *Aerial Spraying* case currently before the ICJ, alleges transboundary harm by Colombia.⁹²

Damage to the environment in areas beyond national jurisdiction

Not all cases will be as straightforward as the *Trail Smelter* case, however. In the *Nuclear Tests* cases, brought by Australia and New Zealand against France calling on the latter to halt its atmospheric nuclear testing in the South Pacific region, the claim raised a more complicated legal question than the allegation of a violation of sovereignty by the deposit of radioactive fallout in its territory: did Australia and New Zealand have the right to bring a claim to the ICJ on the basis of a violation of an obligation owed *erga omnes* to all members of the international community to be free from nuclear tests generally or in violation of the freedom of the high seas?⁹³ Similar questions arose in the *Fur Seals* dispute.⁹⁴ Both cases raised the issue of whether a state had standing to bring an environmental claim to prevent damage to an area beyond national jurisdiction, even if it had not itself suffered any material damage. This raises the possibility of bringing an action on the basis of obligations that are owed *erga omnes*, either on the basis of a treaty or on the basis of customary law. As a general matter, where one party to a treaty or agreement believes that another party is in violation of its obligations under that treaty or agreement, it will have the right, under the treaty or agreement, to seek to enforce the obligations of the party alleged to be in violation, even if it has not suffered material damage.⁹⁵ In most cases involving a violation of a treaty obligation, however, the applicant state is likely to have been induced into bringing a claim because it has suffered some form of material damage and not because it wishes to bring a claim to protect the interests of the international community.⁹⁶ Such an example was Mexico's claim against the United States under the GATT over the US import ban on yellow-fin

⁸⁷ Chapter 8, pp. 307–8, below. ⁸⁸ Chapter 8, pp. 313–19, below.

⁸⁹ Chapter 9, pp. 388–9, below. ⁹⁰ Chapter 7, pp. 240–2, below.

⁹¹ Chapter 9, p. 316, below. ⁹² Chapter 7, p. 242, below.

⁹³ See p. 149, below. ⁹⁴ Chapter 9, pp. 399–400, below. ⁹⁵ *The Wimbledon*, PCIJ (1923) Ser. A No. 1.

⁹⁶ See e.g. the proceedings brought by Australia and New Zealand against Japan in the *Southern Bluefin Tuna* cases, Chapter 9, pp. 420–1, below.

tuna caught by Mexican vessels on the high seas in violation of United States fisheries laws.⁹⁷ More recently, Australia's case, seeking to bring an end to 'scientific' whaling by Japan in the Antarctic, raises allegations of violations of treaty rights in areas beyond national jurisdiction.⁹⁸

For breaches of treaty obligations, the right of a state to enforce obligations will usually be settled by the terms of the treaty. Various human rights treaties permit any party to enforce the obligations of any other party by bringing a claim before the relevant treaty organs.⁹⁹ The EU Treaty allows a member state that considers that another member state has failed to fulfil an EU obligation, including an environmental obligation, to bring the matter before the ECJ.¹⁰⁰ Although this right has been relied upon on numerous occasions to threaten court proceedings, it appears to have resulted in a decision by the ECJ on just one occasion, when France successfully brought proceedings against the United Kingdom for unlawfully having enforced domestic legislation setting a minimum mesh size for prawn fisheries.¹⁰¹ Under EU law, there is also no need to show that the claimant state has suffered damage: the mere violation of EU law is sufficient to allow standing. Given that the environment is, in many instances, a shared natural resource in the protection of which each member of the international community has an interest, compelling policy arguments can be raised to apply the rationale underlying the EU approach to the international legal protection of the environment generally.

The 1995 Fish Stocks Agreement introduced innovative and far-reaching provisions in its Part VI (on compliance and enforcement). Article 19 requires flag states to ensure compliance with sub-regional and regional conservation and management measures for straddling fish stocks and highly migratory fish stocks.¹⁰² Article 20 establishes arrangements for international co-operation in enforcement. These include the requirement that, where a vessel is alleged to have been engaged in unauthorised fishing in an area under the jurisdiction of a coastal state, the flag state must, at the request of the coastal state concerned, 'immediately and fully' investigate the matter.¹⁰³ Moreover, states parties which are members of a regional or sub-regional fisheries management organisation or participants in regional or sub-regional management arrangements may take action to deter vessels which have engaged in activities that undermine or violate the conservation measures established by the organisation or arrangement from fishing on the high seas until appropriate action is taken by the flag state.¹⁰⁴ Article 21 addresses sub-regional and regional co-operation in enforcement. It provides that a state party which is a member of a regional or sub-regional fisheries management organisation or a participant in a regional or sub-regional management arrangement may board and inspect fishing vessels flying the flag of another party to the 1995 Agreement (whether or not that party is a member of the organisation or a participant in the arrangement) in any high seas area covered by an organisation or arrangement, for the purpose of ensuring compliance with conservation and management measures.¹⁰⁵ Article 21 goes on to provide detailed

⁹⁷ Chapter 19, pp. 813–14, below. ⁹⁸ Chapter 10, pp. 426–8, below.

⁹⁹ ECHR, Art. 24. ¹⁰⁰ EU Treaty, Art. 259 (formerly Art. 227); see p. 179, below.

¹⁰¹ Case 141/78, *France v. United Kingdom* [1979] ECR 2923.

¹⁰² The flag state is required, *inter alia*, to enforce measures irrespective of where violations occur and ensure that, where serious violations have been established, the vessel involved does not engage in high seas fishing operations until all outstanding sanctions have been complied with.

¹⁰³ 1995 Fish Stocks Agreement, Art. 20(7). ¹⁰⁴ Art. 20(8). ¹⁰⁵ Art. 21(1).

rules on the enforcement obligations of the flag state and the rights of the state party to the 1995 Agreement, particularly with regard to 'serious violations', including the requirement that actions taken other than by flag states must be proportionate to the seriousness of the violation.¹⁰⁶

The situation in general international law is less well developed, although there is a move in the direction of third state enforcement under some environmental treaties and in international practice. New Zealand's 1995 application to the ICJ challenging France's resumption of underground nuclear tests was premised on the view that it would be unlawful for France to conduct such tests before it had carried out an environmental impact assessment as required (it was argued) by international law.¹⁰⁷ A failure by a party to the 1987 Montreal Protocol to fulfil its obligations under that treaty entitles any other party to the Protocol to enforce the obligation by invoking the non-compliance or dispute settlement mechanisms under the Protocol, without having to show that it has suffered material damage as a result of the alleged failure.¹⁰⁸ The 1989 Basel Convention similarly provides that any party 'which has reason to believe that another party is acting or has acted in breach of its obligations' under the Convention may inform the Secretariat and the party against whom the allegations are made.¹⁰⁹ Most other environmental treaties are less explicit, establishing dispute settlement mechanisms which will settle the question of enforcement rights in accordance with the provisions available under that treaty or related instruments. Some treaties specifically preclude their application to the global commons. The 1991 Espoo Convention, for example, precludes parties from requesting an environmental impact assessment or other measures in respect of harm to the global commons.¹¹⁰

Whether a state has, in the absence of a specific treaty right, a general legal interest in the protection of the environment in areas beyond its national jurisdiction such as to allow it to exercise rights of legal protection on behalf of the international community as a whole (sometimes referred to as *actio popularis*) is a question which remains difficult to answer in the absence of state practice. This may happen in a situation where the activities of a state are alleged to be causing environmental damage to the global commons, such as the high seas, the seabed beyond national jurisdiction, outer space or perhaps the Antarctic, or to living resources found in or passing through those areas. In such cases, the question is which states, if any, have the right to enforce such international legal obligations as may exist to avoid causing environmental damage to an area of the global commons?

The matter has been considered in passing by the ICJ on two occasions, and by some of the ICJ judges in a third case. In the *South West Africa* (Preliminary Objections) case, the ICJ stated that, 'although a right of this kind [*actio popularis*] may be known to certain municipal systems of law, it is not known to international law as it stands at present; nor is the Court able to regard it as imported by the "general principles of law" referred to in Article 38, paragraph 1(c), of its Statute.'¹¹¹ However, a majority of judges in the *Barcelona Traction* case implicitly recognised the possibility of what might be considered to be an *actio popularis* under international law where an obligation exists *erga omnes*. The ICJ held that:

¹⁰⁶ Art. 21(16). 'Serious violations' are defined in Art. 21(11).

¹⁰⁷ *Request for an Examination of the Situation* (1995) ICJ Reports 288 at 291. ¹⁰⁸ See pp. 163–4, below.

¹⁰⁹ 1989 Basel Convention, Art. 19; the information is then to be submitted to the parties.

¹¹⁰ Chapter 14, pp. 610–13, below. ¹¹¹ *South West Africa* case (1966) ICJ Reports 47.

an essential distinction should be drawn between the obligations of a state towards the international community as a whole, and those arising *vis-à-vis* another state in the field of diplomatic protection. By their very nature the former are the concern of all states. In view of the importance of the rights involved, all states can be held to have a legal interest in their protection; they are obligations *erga omnes*.¹¹²

In the *Nuclear Tests* cases, four judges in their joint Dissenting Opinion (Judges Ortyeama, Dillard, Jimenez de Arechaga and Sir Humphrey Waldock) identified the conditions in which the *actio popularis* might be argued:

If the materials adduced by Australia were to convince the Court of the existence of a general rule of international law, prohibiting atmospheric nuclear tests, the Court would at the same time have to determine what is the precise character and content of that rule and, in particular, whether it confers a right on every state individually to prosecute a claim to secure respect for the rule. In short, the question of 'legal interest' cannot be separated from the substantive legal issue of the existence and scope of the alleged rule of customary international law. Although we recognise that the existence of a so-called *actio popularis* is a matter of controversy, the observations of this Court in the *Barcelona Traction, Light and Power Company Ltd* case suffice to show that the question is one that may be considered as capable of rational legal argument and a proper subject of litigation before this Court.¹¹³

Despite the fact that the notion of *actio popularis* and rights and obligations *erga omnes* may be treated as distinct but related concepts, this dissenting opinion suggests that the two are closely linked. There has been little judicial consideration of what rights and obligations exist *erga omnes*, although the lists cited usually include obligations arising from the outlawing of acts of aggression and of genocide and relating to the protection of fundamental human rights.¹¹⁴ Some support has been expressed by commentators for the view that obligations owed *erga omnes* might extend to environmental damage in areas beyond national jurisdiction,¹¹⁵ and support for this view might also be found in the ILC's previous classification of a 'massive pollution' of the

¹¹² *Barcelona Traction Company case (Belgium v. Spain)* (1970) ICJ Reports 4 at 32.

¹¹³ *Nuclear Test case* (1974) ICJ Reports 253 at 369–70. Cf. Judge De Castro: 'The Applicant has no legal title authorizing it to act as spokesman for the international community and ask the Court to condemn France's conduct': *ibid.*, 390. See also Judge Gros (*ibid.*, 290) and Judge Petren (*ibid.*, 224).

¹¹⁴ See R. Jennings and A. Watts (eds.), *Oppenheim's International Law* (1992, 9th edn), vol. I, 5; and M. Ragazzi, *The Concept of International Obligation Erga Omnes* (1997).

¹¹⁵ See Brownlie, calling for a liberal approach to the standing issue in such circumstances: I. Brownlie, 'A Survey of International Customary Rules of Environmental Protection', in L. Teclaff and A. Utton (eds.), *International Environmental Law* (1975), 5; J. Charney, 'Third State Remedies for Environmental Damage to the World's Common Spaces', in F. Francioni and T. Scovazzi, *International Responsibility for Environmental Harm* (1991), 149 at 157; K. Leigh, 'Liability for Damage to the Global Commons' (paper presented at an OECD Symposium on Liability for Nuclear Damage, Helsinki, September 1992), 25. On the suggestion that a coastal state is obliged to the world at large to prevent pollution of the territorial sea, see D. O'Connell, *The International Law of the Sea* (1984), vol. 2, 988–9.

atmosphere or of the seas as an international crime.¹¹⁶ It has also been suggested that obligations *erga omnes* could be created by the actions of a limited number of states.¹¹⁷

There thus appears to be some support favouring the right of a state to bring an action in its capacity as a member of the international community to prevent significant damage to the environment from occurring in areas beyond its national jurisdiction. Although most discussions focus on damage occurring in the global commons, there may be equally compelling policy reasons for allowing the *actio popularis* concept to apply also in respect of damage occurring to the environment within another state's jurisdiction. To the extent, then, that a rational legal argument can be made in favour of the *actio popularis*, in respect of which international environmental obligations could it be relied upon? At this stage, it is most likely to be successfully invoked in a case involving very significant damage to the environment, perhaps even at the level of 'massive pollution' or harm. Likely candidates would probably include those environmental obligations that have been associated with the 'common concern' or 'common heritage' principles.¹¹⁸ They might therefore include the protection of the global environment from significant harm (Principle 21 of the Stockholm Declaration and Principle 2 of the Rio Declaration) and rights established by treaty which relate to, *inter alia*, protection of the high seas, the climate system, the ozone layer, biodiversity (including fisheries), plant genetic resources and, to a lesser extent, wetlands and cultural property, as well as in respect of environmental matters which are associated with human rights obligations.

On a more cautious note, it should be remembered that not all international organisations or their non-compliance bodies are likely to favour the *actio popularis* concept. The GATT Dispute Settlement Panel in the *Yellow-Fin Tuna* case specifically rejected the claim by the United States that it was entitled to take measures to protect dolphins on the high seas, although in that case the Panel applied GATT law and not public international law, and no evidence was presented by the United States that the dolphins were protected or endangered under international law.¹¹⁹ The decision of the WTO Appellate Body in the *Shrimp/Turtle* case, recognising that the United States had a legitimate interest in migratory sea-turtles which were internationally endangered, marks a shift towards recognition of the *actio popularis* concept, although in that case it is important to recall that the species of sea turtle in question (if not the turtles actually harmed) were known to be located from time to time in United States waters.¹²⁰ International law is in this respect still finding its centre of gravity, and states have not generally sought to assert a legal right to act on behalf of the whole international community in the protection of environmental issues on the basis of customary law or national law. Prior to the *Shrimp/Turtle* case, where they have sought to assert a legal right to act on behalf of the whole international community, as in the early *Fur Seal* arbitration and the *Yellow-Fin Tuna* case, they have been rebuffed on the ground that they were seeking to apply *national* laws extra-territorially. In both of the latter cases, the result might have been different if the

¹¹⁶ Draft Articles on State Responsibility, Part I, Arts. 1–35, Art. 19, in *Yearbook of the International Law Commission* (1980-II), Part 2, 30; see Chapter 17, pp. 702–27, below. See also 1998 Statute of the International Criminal Court, Art. 8(b)(iv).

¹¹⁷ See R. Jennings and A. Watts (eds.), *Oppenheim's International Law* (1992, 9th edn), vol. 1, 5, citing the *Reparations for Injuries* case (1949) ICJ Reports 185, and the *Namibia* case (1971) ICJ Reports 56.

¹¹⁸ On 'common concern' and related concepts, see Chapter 6, p. 234, below.

¹¹⁹ Chapter 19, pp. 813–14, below. ¹²⁰ Chapter 19, pp. 818–24, below.

complainant states had relied upon, and could prove the existence of, a rule of customary international law, as Australia and New Zealand sought to do in 1973 in the *Nuclear Tests* cases.

In many respects, the discussion of *actio popularis* at the international level is similar to that which is taking place at the national level. In international affairs, the function of a state might be compared to that of an attorney general in national law. These national discussions suggest a further limitation on the likelihood of actions being brought by public authorities to enforce the environmental rights of the community as a whole. The views of one scholar on the clear limitations of an attorney general's ability to enforce rules to protect the environment on behalf of the community as a whole are equally applicable to international matters:

Their statutory powers are limited and sometimes unclear. As political creatures, they must exercise the discretion they have with an eye towards advancing and reconciling a broad variety of important social goals, from preserving morality to increasing their jurisdiction's tax base. The present state of our environment, and the history of cautious application and development of environmental protection laws long on the books, testifies that the burdens of an attorney general's broad responsibility have apparently not left much manpower for the protection of nature.¹²¹

The reluctance of states to enforce obligations towards the protection of the environment is, regrettably, supported by many examples. One leading example is the failure of any state to seek to enforce compliance by the former Soviet Union with its international legal obligations arising out of the consequences of the accident at the Chernobyl nuclear power plant in 1986.¹²² This and other examples suggest that it is unlikely that the same states would seek to enforce obligations owed to the global commons, the violation of which may only lead to indirect or nominal harm to the state. This suggests the need for an increased enforcement role for international organisations, or other members of the international community, particularly where the mere attempt to enforce obligations may establish a precedent that could subsequently apply to the enforcing state.

Enforcement by international organisations

Whilst international organisations play an important legislative role in the development of international environmental law, their enforcement function is limited. International organisations are international legal persons that may seek to protect their own rights and enforce the obligations that others have towards them.¹²³ Sovereign interests have, however, led states to

¹²¹ C. Stone, 'Should Trees Have Standing? – Towards Legal Rights for Natural Objects', 45 *Southern California Law Review* 450 (1972).

¹²² Chapter 17, pp. 718–20, below.

¹²³ See *Reparations for Injuries* case (1949) ICJ Reports 174, where in an advisory opinion the ICJ determined that the UN had an 'undeniable right' to 'demand that its Members fulfil the obligations entered into by them in the interest of the good working of the Organization' and the capacity to claim adequate reparation for a breach of these obligations, and held that 'fifty states, representing the vast majority of the members of the international community, had the power, in conformity with international law, to bring into being an entity possessing objective international personality and not merely personality recognised by them alone, together with the capacity to bring international claims'.

be unwilling to transfer too much enforcement power to international organisations and their secretariats, although there are some indications that this reluctance is being overcome.

Early examples of limited enforcement roles granted to international organisations include: the right of the River Danube Mixed Commission to ‘work out agreed measures’ for the regulation of fishing in the Danube;¹²⁴ the right of certain international fisheries institutions to ‘recommend’ international enforcement measures or systems;¹²⁵ and the right of the International Commission for the Protection of the Rhine Against Pollution regularly to compare the draft national programmes of the parties to ensure that ‘their aims and means coincide’.¹²⁶ Marginally more ambitious is the obligation of the CITES Secretariat, when it is satisfied that information it has received indicates that certain endangered species are being affected adversely by trade in specimens, to communicate that information to the relevant party or parties, which may then lead to the matter being reviewed by the next Conference of the Parties, which may make whatever recommendations it deems appropriate.¹²⁷

Developments for the protection of the marine environment and the Antarctic environment foresee an enhanced enforcement role for international organisations. The approach of the 1992 Oil Fund Convention is particularly ambitious, since it establishes and endows the Fund with legal personality in the laws of each party and gives it rights and obligations, including being a party in legal and enforcement proceedings before the national courts of that party.¹²⁸ The 1982 UNCLOS also introduces innovative arrangements by endowing some of its institutions with a range of enforcement powers. Thus, the Council of the International Seabed Authority can: ‘supervise and co-ordinate the implementation’ of Part XI of UNCLOS and ‘invite the attention of the Assembly to cases of non-compliance’; institute proceedings on behalf of the Authority before the Seabed Disputes Chamber in case of non-compliance; issue emergency orders ‘to prevent serious harm to the marine environment arising out of activities in the Area’; and direct and supervise inspectors to ensure compliance.¹²⁹ A Legal and Technical Commission, one of the Council’s organs, is entitled to make recommendations to the Council on the institution of proceedings and the measures to be taken following any decision by the Seabed Disputes Chamber.¹³⁰ In 2010, the Council requested the Seabed Disputes Chamber of ITLOS to render an advisory opinion on three questions relating to the responsibilities and obligations of states sponsoring persons and entities undertaking activities in the deep seabed area.¹³¹ ITLOS issued an advisory opinion in the case on 1 February 2011.¹³² The Antarctic Mineral Resources Commission, which would have been established under the 1988 CRAMRA, could draw to the attention of all parties any activity that affected the implementation of CRAMRA or compliance by any party, as well as any activities by a

¹²⁴ 1958 Danube Fishing Convention, Art. 12(1).

¹²⁵ 1969 Southeast Atlantic Convention, Art. X(3); 1978 Northwest Atlantic Fisheries Convention, Art. XI(5); 1982 Convention for the Conservation of Salmon in the North Atlantic Ocean, Art. 4(2).

¹²⁶ 1976 Rhine Chemical Convention, Art. 6(3). ¹²⁷ 1973 CITES, Art. XIII.

¹²⁸ 1992 Oil Pollution Fund Convention, Art. 2(2).

¹²⁹ 1982 UNCLOS, Art. 162(2)(a), (u), (v), (w) and (z); the Authority is granted international legal personality and such legal capacity as may be necessary for the exercise of its functions and the fulfilment of its purposes: Art. 176.

¹³⁰ Art. 165(2)(i) and (j).

¹³¹ *Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area* (Advisory Opinion) (Seabed Disputes Chamber of the International Tribunal for the Law of the Sea, ITLOS Case No. 17, 1 February 2011).

¹³² Chapter 9, pp. 388–9, below.

non-party that affected implementation.¹³³ The Commission could also designate observers,¹³⁴ and 'ensure the effective application' of the provisions in the Convention concerning notification, reporting of mineral prospecting, and keeping under review the conduct of Antarctic mineral resource activities with a view to safeguarding the protection of the Antarctic environment in the interest of all mankind.¹³⁵

The 1988 CRAMRA will not come into force, since it has been 'replaced' by the 1991 Antarctic Environment Protocol. The main environmental institution under this Protocol is the Committee for Environmental Protection.¹³⁶ The Committee's enforcement role under the 1991 Protocol is more limited than that envisaged for the Commission under CRAMRA: the Committee provides advice and adopts recommendations on matters such as the effectiveness of measures taken, the application and implementation of environmental impact assessment procedures, and the state of the Antarctic environment.¹³⁷ The advice and recommendations are to be drawn upon fully by the Antarctic Treaty Consultative Meetings in adopting measures under the 1959 Antarctic Treaty for implementation of the Protocol.¹³⁸ The Committee is not, however, granted any formal enforcement powers.

The 1992 OSPAR Convention also goes some way towards establishing a limited role for the Commission it creates to ensure compliance. Under Article 23, entitled 'Compliance', the Commission has two functions. First, it must 'assess' compliance with the Convention by parties, and make any decisions and recommendations on the basis of the reports submitted by the parties.¹³⁹ Second, when appropriate, the Commission may:

decide upon and call for steps to bring about full compliance with the Convention, and decisions adopted thereunder, and promote the implementation of recommendations, including measures to assist a contracting party to carry out its obligations.¹⁴⁰

Although these provisions do not allow the Commission to take measures such as instituting court proceedings in national courts, or arbitration proceedings, they go beyond the provisions of many other international environmental agreements. Other arrangements endow particular organisations with enforcement or quasi-enforcement functions. In relation to weapons agreements, the UN Security Council may 'take action in accordance with the [UN] Charter' if the consultation and co-operation procedure established under the relevant treaties does not remove doubts concerning fulfilment of obligations under certain nuclear weapons treaties.¹⁴¹ More generally, many of the institutions established by environmental treaties are required, as their primary task, to keep under review the relevant treaty and to promote its effective implementation.¹⁴² This general function could be interpreted, over time and under the right conditions, to allow institutions to play an enforcement role.

¹³³ Art. 7(7) and (8); Chapter 13, pp. 583–4, below. ¹³⁴ Art. 12(1)(b).

¹³⁵ Art. 21 (1)(f) and (x). The 1988 CRAMRA also provides for the establishment of regulatory committees, the functions of which relate, *inter alia*, to monitoring and inspection of exploration and development activities: Art. 31(1)(d) and (f).

¹³⁶ Art. 11; see Chapter 13, p. 588, below. ¹³⁷ Art. 12(1)(a), (d) and (j). ¹³⁸ Art. 10(1) and (2).

¹³⁹ Art. 23(a); see Chapter 9, pp. 590–1, below. ¹⁴⁰ Art. 23(b).

¹⁴¹ 1971 Nuclear Weapons Treaty, Art. III(4); 1972 Biological and Toxic Weapons Convention, Art. VI.

¹⁴² Examples include: 1979 Berne Convention, Art. 14(1); 1992 Climate Change Convention, Art. 7(2).

No discussion of international enforcement powers would be complete without mention of the European Commission, which must, under Article 17(1) of the Treaty on European Union (formerly Article 211 of the EC Treaty), ensure that the provisions of the EU Treaties and the measures taken by the institutions (i.e. secondary legislation) are applied.¹⁴³ Article 258 (formerly Article 226) of the EU Treaty provides that:

If the Commission considers that a Member State has failed to fulfil an obligation under the Treaties, it shall deliver a reasoned opinion on the matter after giving the State concerned the opportunity to submit its observations.

If the member state concerned does not comply with the opinion within the period laid down by the Commission, the Commission may bring the matter before the ECJ.

Before the Commission can bring a member state before the ECJ, it must first present its case and evidence to the member state and request observations. The member state then has an opportunity to make observations, following which the Commission will deliver a 'reasoned opinion'. This allows a full airing of the differences between the Commission and the member state and often allows the matter to be resolved before the case is actually brought to the ECJ. In environmental matters, the Commission has frequently, and controversially, used its powers under Article 258. At any one time, the Commission is likely to have several dozen matters pending under Article 258, and has to date brought several hundred cases to the ECJ alleging violations of EU environmental laws.

The Commission can also apply to the ECJ for interim measures under Article 279 (formerly Article 243) of the EU Treaty – a form of interlocutory relief well established in EU jurisprudence and quite often employed, for example, in competition and antitrust cases. The Commission must show that it has a good, arguable case, that the need for relief is urgent, and that irreparable damage to the EU interest will be done if the order is not granted. The member state can defend itself by establishing that it will suffer irreparable harm if the order is made. The Commission does not have to give a cross-undertaking in damages in the event that it ultimately loses the case. In Case 57/89, *Commission v. Germany*, the ECJ considered the circumstances in which it would be prepared to prescribe necessary interim measures in environmental cases.¹⁴⁴ The case concerned the construction in Germany of a reservoir and related site; the Commission sought a declaration that the construction violated Article 4(1) of the 1979 Wild Birds Directive, and the adoption of interim measures to suspend the work until the ECJ had given its decision on the main application. The ECJ held that, for a measure of this type to be ordered, the application must state the circumstances giving rise to the urgency and

¹⁴³ Since the second edition of this book, the area of EU environmental law has expanded exponentially and is the subject of its own dedicated literature. For this reason, EU environmental law is only briefly treated in this edition. For further discussion of EU environmental law, see the second edition, particularly Chapter 15, and Jan H. Jans and Hans H. B. Vedder, *European Environmental Law* (2008, 3rd edn); Joanne Scott, *Environmental Protection: European Law and Governance* (2009); Maria Lee, *EU Environmental Law: Challenges, Change and Decision-Making* (2005). See also Philippe Sands and Paolo Galizzi, *Documents in European Community Environmental Law* (2006).

¹⁴⁴ [1989] ECR 2849; affirmed in *R. v. Secretary of State for the Environment, ex parte Royal Society for the Protection of Birds* [1996] ECR I-3805.

the factual and legal grounds establishing a *prima facie* case for the interim measures.¹⁴⁵ The ECJ rejected the application on the grounds that the Commission had failed to prove urgency: the application had been submitted after the project was well under way, and the interim measures had not been sought until a large part of the work had already been completed, and it could not be shown that 'it [was] precisely the next stage in the construction work which [would] cause serious harm to the protection of birds'.¹⁴⁶

Enforcement by non-state actors¹⁴⁷

According to traditional rules of public international law, non-state actors are not international legal persons except within the limited confines of international human rights law and its associated fields. It is still difficult to find many textbooks on international law which make any reference to the role of environmental and other non-state actors in the international environmental legal process, although it is widely recognised that they have become in many areas, and particularly in the field of international environmental law, *de facto* international actors who are, in limited circumstances, endowed with *de jure* rights. In practice, non-state actors play a central role in the development and application of international environmental law.¹⁴⁸ Environmental organisations have also been involved in the international implementation and enforcement process although their primary role continues to be at the national level, through political means or by recourse to administrative or judicial procedures for enforcing national measures adopted by a state in implementing its international treaty and other obligations.

Enforcement in the national courts¹⁴⁹

UNCED endorsed a stronger role for the non-governmental sector in enforcing national environmental laws and obligations before national courts and tribunals, as reflected in Agenda 21 and the Rio Declaration,¹⁵⁰ and now applied in the 1998 Aarhus Convention.¹⁵¹ This occurred in the context of earlier treaties and agreements, which had recognised and encouraged their role, particularly where individuals were the victims of pollution or environmental damage in a transboundary context. These earlier efforts sought either to establish principles governing equal access to national courts by victims of transfrontier pollution, or to establish the jurisdiction of courts in the event of transboundary incidents.¹⁵² The 1974 OECD Council

¹⁴⁵ *Ibid.*, 2854. ¹⁴⁶ *Ibid.*, 2855.

¹⁴⁷ D. Shelton, 'The Participation of NGOs in International Judicial Proceedings', 88 *American Journal of International Law* 611 (1994); P. Sands, 'International Law, the Practitioner and "Non-State Actors"', in C. Wickremasinghe (ed.), *The International Lawyer as Practitioner* (2000), 103–24; P. Kalas, 'International Environmental Dispute Resolution and the Need for Access by Non-State Entities', 12 *Colorado Journal of International Environmental Law and Policy* 191 (2001).

¹⁴⁸ Chapter 3, pp. 86–92, above.

¹⁴⁹ 'Judicial Application of International Environmental Law', 7 *Review of European Community and International Environmental Law* 1–67 (1998) (special issue); M. Anderson and P. Galizzi, *International Environmental Law in National Courts* (2001).

¹⁵⁰ Agenda 21, Chapter 27, para. 27.13; Rio Declaration, Principle 10. ¹⁵¹ See p. 140, above.

¹⁵² A distinct aspect is the situation in which a transnational corporation headquartered or based in one state is challenged for the environmental or health consequences of its acts in another state, even where no transboundary pollution (in the classical sense) has occurred. For a review of three such cases (*Ok Tedi*, *Thor Chemicals* and *Connelly*), see J. Cameron and R. Ramsey, 'Transnational Environmental Disputes', 1 *Asia Pacific Journal of Environmental Law* 5 (1996).

Recommendation on Principles Concerning Transfrontier Pollution prepared the ground for the adoption of more detailed principles to ensure the legal protection of persons who suffer transfrontier pollution damage.¹⁵³ The 1976 OECD Council Recommendation on Equal Rights of Access in Relation to Transfrontier Pollution identified the constituent elements of a system of equal rights of access.¹⁵⁴ According to the Recommendation, these were a set of rights recognised by a country in favour of persons who are affected or likely to be affected in their personal or proprietary interests by transfrontier pollution originating in that country. They included rights relating to access to information and participation in hearings and enquiries, and 'recourse to and standing in administrative and judicial procedures' to prevent pollution, have it abated, or obtain compensation for the damage caused.¹⁵⁵ These general rights were further elaborated the following year by a more detailed OECD Council Recommendation for the Implementation of a Regime of Equal Right of Access and Non-Discrimination in Relation to Transfrontier Pollution.¹⁵⁶

The non-binding OECD instruments were supplemented by a range of treaty obligations that address equal access or the jurisdiction of courts over transboundary disputes. The 1974 Nordic Environmental Protection Convention allows any person who is affected or may be affected by a nuisance caused by 'environmentally harmful activities' in another contracting state to bring before the appropriate court or administrative authority of that state the question of the permissibility of such activities, including the questions of compensation and measures to prevent damage.¹⁵⁷ The 1974 Nordic Convention also provides for the appointment of a supervisory authority in each state 'to be entrusted with the task of safeguarding general environmental interests in so far as regards nuisances arising out of environmentally harmful activities in another contracting state', including the right to institute proceedings before or be heard by the courts or administrative authority of another contracting state.¹⁵⁸ The supervisory authority of the state in which damage occurs is also required to facilitate on-site inspections to determine such damage.¹⁵⁹

An enforcement role for individuals is envisaged by several treaties establishing international rules on civil liability. In relation to the jurisdiction of national courts, these fall into two categories: those treaties requiring victims to bring proceedings before the courts of the state in which the transboundary pollution originated, and those allowing victims to choose either the court of the state in which the pollution originated or the courts of the state in which the damage was suffered. The nuclear liability conventions adopted in the 1960s fall into the former category.¹⁶⁰ They require victims of nuclear damage to make their claims before courts which may be several thousands of miles away from the area where the damage occurred, thus imposing an onerous burden. The oil pollution conventions adopted a decade or so later also provide support for the enforcement role of individuals, and are more accessible to individuals since they allow victims to claim before the courts of any contracting state in which an incident has caused pollution damage.¹⁶¹

¹⁵³ OECD Doc. C(74)224. ¹⁵⁴ OECD Doc. C(76)55 (Final) (1976). ¹⁵⁵ Annex, paras. 1 and 2.

¹⁵⁶ OECD Doc. C(77)28 (Final) (1977). ¹⁵⁷ Art. 3. ¹⁵⁸ Art. 4. ¹⁵⁹ Art. 10.

¹⁶⁰ 1960 Paris Convention, Art. 13; 1963 Vienna Convention, Art. XI(1); see Chapter 17 below. A 1997 Protocol to the 1963 Vienna Convention extends the definition of nuclear damage to encompass environmental damage: Art. 2(2).

¹⁶¹ 1969 CLC (as amended), Art. IX(1); 1992 Oil Pollution Fund Convention, as amended, Art. 7(1); Chapter 17, pp. 751–8, below.

The second category of conventions ensuring a role for non-state enforcement establishes private international law rules allocating jurisdiction to national courts over a range of civil and commercial matters, including disputes arising out of the law of tort. These generally allow victims a choice of courts. Although they were not prepared with environmental pollution and disputes in mind, they can apply to transboundary environmental disputes. The 1968 Brussels Convention on Jurisdiction and Enforcement of Judgments in Civil and Commercial Matters (1968 Brussels Convention), to which EU member states alone could become parties, had a number of purposes, including the free circulation of judgments throughout the EU, and had established jurisdiction rules for civil and commercial matters.¹⁶² Under Article 5(3) of the Convention, jurisdiction in matters ‘relating to tort, delict or quasi-delict’ was conferred on the courts of the place ‘where the harmful event occurred’. In *Handelskwekerij G. J. Bier v. Mines de Potasses d’Alsace*, the ECJ was asked to interpret ‘where the harmful event occurred’ in a case in which the defendant was alleged to have discharged over 10,000 tonnes of chloride every twenty-four hours into the Rhine River in France but the damage was suffered by horticultural businesses in the Netherlands.¹⁶³ The Dutch plaintiffs wished to bring proceedings in the Netherlands rather than in France. The ECJ held that Article 5(3) should be interpreted ‘in such a way as to acknowledge that the plaintiff has an option to commence proceedings either at the place where the damage occurred or the place of the event giving rise to it’.¹⁶⁴ This allows victims of transboundary pollution in EU member states to choose the jurisdiction in which they wish to bring environmental cases that could be classified as tortious, delictual or quasi-delictual in nature. In 1988, the Brussels Convention was supplemented by the Lugano Convention on Jurisdiction and Enforcement of Judgments in Civil and Commercial Matters, which applies similar rules to relations between EU countries and members of the European Free Trade Association.¹⁶⁵ In the EU, the two earlier conventions have largely been supplanted by Regulation 44/2001, which is directly applicable to all EU member states.¹⁶⁶

International enforcement

At the international level, opportunities for non-state actors to play an enforcement role are limited, outside the field of human rights. Under some regional human rights treaties, individual victims, including non-governmental organisations, may bring complaints directly to an international body. Thus, the European Convention on Human Rights allows any person, non-governmental organisation or group of individuals claiming to be the victim of a violation of the rights in the Convention by one of the parties to bring a case to the European Court of Human Rights.¹⁶⁷

¹⁶² Brussels, 27 September 1968, in force 1 February 1973, OJ C189, 28 July 1990, 2, 77, Art. 1; 8 ILM 229 (1969).

¹⁶³ Case 21/76, *Handelskwekerij G. J. Bier v. Mines de Potasse d’Alsace* [1976] ECR 1735. ¹⁶⁴ *Ibid.*

¹⁶⁵ 16 September 1988, in force 1 January 1992, 28 ILM 620 (1989); Art. 5(3) is in the same terms as Art. 5(3) of the Brussels Convention. Liechtenstein, Norway, Iceland and Switzerland make up the EFTA states.

¹⁶⁶ Council Regulation (EC) No. 44/2001 on jurisdiction and enforcement of judgments in civil and commercial matters, OJ L12, 16 January 2001, 1.

¹⁶⁷ Art. 34 of the ECHR (as amended by the Eleventh Protocol) (formerly 1950 ECHR, Art. 25(1)); all parties to the Convention have now accepted the right of individual petition. See also the 1969 American Convention on Human Rights, Arts. 44 and 45; and the 1981 African Charter on Human and Peoples’ Rights, Art. 55. On the relationship between these human rights instruments and the protection of the environment, see Chapter 18, pp. 777–80, below.

Similar provisions exist in the Optional Protocol to the 1966 International Covenant on Civil and Political Rights for communications by individuals and groups of individuals to the Human Rights Committee, alleging breaches of the Covenant.¹⁶⁸ The International Covenant on Economic, Social and Cultural Rights will also grant individuals and groups such rights when an Optional Protocol adopted in 2008 enters into force.¹⁶⁹ The Human Rights Council (formerly the UN Commission on Human Rights)¹⁷⁰ has new powers to receive complaints from individuals and organisations about a consistent pattern of gross and reliably attested violations of human rights under a revised Complaints Procedure finalised in 2007. Complaints are reviewed by its subsidiary Working Group on Communications, which then makes recommendations to the Human Rights Council.¹⁷¹ Outside of the human rights regime, non-governmental organisations and individuals have played an active role in supporting the enforcement role of the European Commission, usually by submitting complaints to that institution concerning the non-implementation by member states of their environmental obligations.

It is particularly in their capacity as watchdogs that environmental organisations play an important role in the development, application and enforcement of international environmental law. Environmental organisations have long been active in monitoring and seeking to enforce compliance by states of international environmental laws and standards. In this context, development, application and enforcement are so closely intertwined that it may be misleading to attempt to separate the tasks. In practice, environmental organisations seek to influence government positions at the national and international levels, to participate in international decision-making and law-making, and to enforce rules of international environmental law (at both the national and the international levels).¹⁷² Examples of the ways in which these actors have sought to promote or give effect to international obligations include – at the international level – their role in bringing about requests from the WHO and the UN General Assembly for an advisory opinion on the legality of the use of nuclear weapons from the ICJ,¹⁷³ and informal assistance to states in the preparation (and even presentation) of a case.¹⁷⁴ At the national level, environmental organisations are increasingly active in bringing legal proceedings to enforce international environmental obligations.¹⁷⁵ In recent years, they have also gained a degree of access to some international proceedings from which they were previously excluded, in the sense that they are increasingly recognised as being able to file *amicus curiae* submissions.¹⁷⁶

¹⁶⁸ *Ibid.* ¹⁶⁹ See generally Chapter 18, below. 2008 Optional Protocol, not in force.

¹⁷⁰ Chapter 18, p. 787, below. The General Assembly created the Council by Res. 60/251 of 15 March 2006.

¹⁷¹ *Ibid.* The new complaints procedure was established by the Human Rights Council under the authority of A/HRC/Res/5/1 of 18 June 2008, with provisions on the Working Group on Communications set out at [91]–[95].

¹⁷² P. Sands, 'International Law, the Practitioner and "Non-State Actors"', in C. Wickremasinghe (ed.), *The International Lawyer as Practitioner* (2000), 103–24.

¹⁷³ Chapter 6, pp. 195–9, below.

¹⁷⁴ E.g. the 1995 request to the ICJ by New Zealand to examine the resumption by France of nuclear testing ((1995) ICJ Reports 288) was brought by the government in part as a result of public and NGO pressure, including the preparation by at least one NGO of draft pleadings.

¹⁷⁵ See e.g. *R. v. Secretary of State for Trade and Industry, ex parte Greenpeace* [2000] 2 CMLR 94 (ruling that the 1992 Habitats Directive applies beyond UK territorial seas to areas over which the UK exercises sovereign rights).

¹⁷⁶ *United States – Import of Certain Shrimp and Shrimp Products*, AB-1998-4, 12 October 1998, para. 110; *Methanex v. United States of America*, Decision of the Tribunal on Petitions from Third Persons to Intervene as 'Amici Curiae', 15 January 2001, available at www.iisd.org/pdf/methanex_tribunal_first_amicus_decision.pdf.

INTERNATIONAL CONFLICT RESOLUTION (SETTLEMENT OF DISPUTES)

Introduction

A range of international procedures and mechanisms are available to assist in the peaceful settlement of environmental disputes. Article 33 of the UN Charter identifies the traditional mechanisms, including negotiation, enquiry, mediation, conciliation, arbitration, judicial settlement, resort to regional agencies or arrangements, or other peaceful means of the parties' own choice.¹⁷⁷

These techniques can be divided into two broad categories: diplomatic means according to which the parties retain control over the dispute insofar as they may accept or reject a proposed settlement (negotiation, consultation, mediation, conciliation); and legal means which result in legally binding decisions for the parties to the dispute (arbitration and judicial settlement). Recourse to regional arrangements and international organisations as mediators and conciliators provides something of a middle way: the legal consequences of any decision taken by the institution will depend on the treaty establishing the institution. Many of the earliest environmental treaties did not provide for any dispute settlement mechanisms whether of a diplomatic or legal nature, or of a voluntary or mandatory character.¹⁷⁸ Initially, the trend was towards the use of informal and non-binding mechanisms, such as negotiation and consultation, supplemented by the use of more formal mechanisms, such as conciliation, arbitration and judicial settlement. More recently, there has been a move towards the development of new techniques to establish non-contentious mechanisms. Modern treaties provide parties with a range of options for settling disputes and encouraging implementation. The 1992 Climate Change Convention envisages no fewer than three mechanisms to assist in dispute resolution or non-implementation: a Subsidiary Body for Implementation, to provide assistance in implementation; a multilateral consultative process to address questions regarding implementation in a non-confrontational way; and the settlement of remaining disputes in more traditional ways by negotiation, submission to arbitration or the ICJ, or international conciliation.¹⁷⁹

Diplomatic means of dispute settlement

Negotiation and consultation

The technique of negotiation has been used to resolve a number of environmental disputes. In the *Fisheries Jurisdiction* case, the ICJ set forth the basic objectives underlying negotiation as an appropriate method for the resolution of a dispute. The ICJ held that the objective of negotiation should be:

¹⁷⁷ The 1958 High Seas Conservation Convention, Art. 9(1), specifically refers to Art. 33 of the UN Charter.

¹⁷⁸ 1940 Western Hemisphere Convention; 1946 International Whaling Convention.

¹⁷⁹ 1992 Climate Change Convention, Arts. 10, 13 and 14. See also 1985 Vienna Convention, Art. 11; 1989 Basel Convention, Art. 20; 1992 Biodiversity Convention, Art. 27 and Annex II; 1997 Kyoto Protocol, Arts. 15, 16 and 19; in addition, Art. 18 of the Kyoto Protocol provides for approval of procedures and mechanisms to address cases of non-compliance.

the delimitation of the rights and interests of the parties, the preferential rights of the coastal state on the one hand and the rights of the applicant on the other, to balance and regulate equitably questions such as those of catch-limitation, share allocations and 'related restrictions concerning areas closed to fishing, number and type of vessels allowed and forms of control of the agreed provisions'.¹⁸⁰

The ICJ also set out conditions establishing that future negotiations should be conducted:

on the basis that each must in good faith pay reasonable regard to the legal rights of the other . . . thus bringing about an equitable apportionment of the fishing resources based on the facts of the particular situation, and having regard to the interests of other states which have established fishing rights in the area. It is not a matter of finding simply an equitable solution, but an equitable solution derived from the applicable law.¹⁸¹

Environmental treaties refer, more or less as a matter of standard practice, to the need to ensure that parties resort to negotiation and other diplomatic channels to resolve their disputes before making use of other more formal methods.¹⁸² Since negotiations of this type invariably take place behind closed doors, it is difficult to identify specific examples involving the successful resolution of claims and disputes by negotiation. One case involved the settlement between Canada and the Soviet Union concerning damage caused by the disintegration over Canada of Cosmos 954, a nuclear-powered satellite launched by the Soviet Union. The negotiated settlement was agreed in the context of the Soviet Union's consideration of the question of damage 'in strict accordance with the provisions' of the 1972 Space Liability Convention to which both countries were a party.¹⁸³

Consultation between states is also encouraged by environmental treaties as a technique to avert and resolve disputes and potential disputes between states. In the *Lac Lanoux* arbitration, the arbitral tribunal held that France had a duty to consult with Spain over certain projects likely to affect its interests, and that, in this context,

the reality of the obligations thus undertaken is incontestable and sanctions can be applied in the event, for example, of an unjustified breaking off of the discussions, abnormal delays, disregard of the agreed procedures, systematic refusals to take into consideration adverse proposals or interests, and, more generally, in cases of violation of the rules of good faith.¹⁸⁴

¹⁸⁰ (1974) ICJ Reports 3 at 31.

¹⁸¹ *Ibid.*, 33. The ICJ also invoked its earlier statement in the *North Sea Continental Shelf* cases, that 'it is not a question of applying equity simply as a matter of abstract justice, but of applying a rule of law which itself requires the application of equitable principles': *ibid.*, 47.

¹⁸² Examples include: 1973 CITES, Art. XVIII; MARPOL 73/78, Art. 10; 1972 Space Liability Convention, Art. IX; 1974 Baltic Convention, Art. 18(1); 1979 LRTAP Convention, Art. 13; 1985 Vienna Convention, Art. 11(1) and (2); 1992 Climate Change Convention, Art. 14; 1992 Biodiversity Convention, Art. 27(1).

¹⁸³ By a protocol dated 2 April 1981, the Soviet Union agreed to pay, and Canada agreed to accept, C\$3 million in final settlement: Chapter 17, pp. 728–9, below.

¹⁸⁴ *Lac Lanoux* arbitration, 24 ILR 101 at 128 (1957).

Specific examples of environmental treaties requiring consultation in certain situations include: development plans which may affect the natural resources of another state;¹⁸⁵ measures to prevent the pollution of coastlines from oil pollution incidents on the high seas;¹⁸⁶ the authorisation of ocean dumping in emergency situations;¹⁸⁷ pollution by certain substances from land-based sources;¹⁸⁸ the permissibility of environmentally harmful activities;¹⁸⁹ and generally problems in applying a treaty or the need for and nature of remedial measures for breaches of obligation.¹⁹⁰ The 1979 LRTAP Convention requires early consultations to be held between parties 'actually affected by or exposed to a significant risk of long-range transboundary air pollution' and the parties in which a significant contribution to such pollution originates.¹⁹¹ In the *Pulp Mills* case, the ICJ emphasised the importance of notification and other procedural obligations, and found that Uruguay had violated procedural obligations to inform, notify and negotiate under the 1975 River Uruguay Statute.¹⁹²

Mediation, conciliation, fact-finding and international institutions

Where negotiations and consultations fail, a number of environmental treaties endorse mediation¹⁹³ and conciliation¹⁹⁴ (or the establishment of a committee of experts¹⁹⁵) to resolve disputes, all of which involve the intervention of a third person. In the case of mediation, the third person is involved as an active participant in the interchange of proposals between the parties to a dispute, and may even offer informal proposals. There are few reported examples of mediation being relied upon to resolve environmental disputes. Of note, however, is the outcome of a mediation conducted under the auspices of the OAS, relating to a long-standing territorial dispute between Guatemala and Belize. In September 2002, the two facilitators appointed by the OAS put forward proposals, approved by the two states and Honduras, for a resolution of the dispute, including the establishment of an ecological park and a tri-state sub-regional fisheries commission.¹⁹⁶

In the case of conciliation, the third person assumes a more formal role and often investigates the details underlying the dispute and makes formal proposals for the resolution of the dispute. A recent instance of conciliation occurred in the context of the long-standing dispute between

¹⁸⁵ 1968 African Nature Convention, Art. XIV(3).

¹⁸⁶ 1969 CLC, Art. III(a); 1971 Oil Pollution Fund Convention, Art. 2, as amended by the 1992 Oil Pollution Fund Protocol.

¹⁸⁷ 1996 London Protocol, Art. 8(2). ¹⁸⁸ 1992 OSPAR Convention, Art. 3.

¹⁸⁹ 1974 Nordic Environmental Protection Convention, Art. 11.

¹⁹⁰ 1976 Pacific Fur Seals Convention, Art. XII; 1976 ENMOD Convention, Art. V(1) and Annex, providing for the establishing of a Consultative Committee of Experts.

¹⁹¹ 1979 LRTAP Convention, Art. 5. ¹⁹² Chapter 19, pp. 844–7, below.

¹⁹³ 1968 African Nature Convention, Art. XVIII (referring disputes to the Commission of Mediation, Conciliation and Arbitration of the OAU); 1976 European Convention for the Protection of Animals Kept for Farming Purposes, Art. 10; 1982 UNCLOS, Art. 284 and Annex V, Section 1; 1985 Vienna Convention, Art. 11(2).

¹⁹⁴ 1963 Vienna Convention, Optional Protocol Concerning the Compulsory Settlement of Disputes, Art. III; 1974 Paris LBS Convention, Art. 21 (conciliation by a Commission); 1985 Vienna Convention, Art. 11(4) and (5) (providing for the establishment of a conciliation commission); 1992 Biodiversity Convention, Art. 27(4) and Annex II, Part 2; 1992 Climate Change Convention, Art. 14(5)–(7); 1998 Chemicals Convention, Art. 20; 2001 POPs Convention, Art. 18. See also the Permanent Court of Arbitration, Optional Rules for Conciliation of Disputes Relating to Natural Resources and the Environment, 16 April 2002 (<http://pca-cpa.org/PDF/envconciliation.pdf>).

¹⁹⁵ 1949 FAO Mediterranean Fisheries Agreement, Art. XIII; 1951 International Plant Protection Convention, Art. IX; 1952 North Pacific Fisheries Convention, Protocol, paras. 4 and 5 (special committee of scientists).

¹⁹⁶ OAS, 'Proposals for Resolving Belize–Guatemala Territorial Dispute Win Broad International Support' (OAS Press Release, 1 October 2002) E-101/02, www.oas.org/en/media_center/press_release.asp?sCodigo=E-191/02.

Pakistan and India over India's construction of the Baglihar hydro-electric dam on the Chenab River, which flows from Kashmir into Pakistan. In February 2007, an expert appointed by the World Bank delivered a final verdict acknowledging India's right to construct 'gated spillways' under the Indus Waters Treaty between the two countries.¹⁹⁷ Other examples of conciliation include the role of the International Joint Commission established by Canada and the United States in the 1909 Boundary Waters Treaty,¹⁹⁸ which fulfils a combination of quasi-judicial, investigative, recommendatory and co-ordinating functions. The now defunct European Commission on Human Rights also performed conciliation functions: once a petition had been referred to it, it was required to ascertain the facts, to place itself at the disposal of the parties concerned with a view to securing a friendly settlement of the matter on the basis of respect for human rights as defined in the Convention, and, where no such friendly settlement was reached, to draw up a report on the facts and state its opinion as to whether the facts found disclosed a breach of obligations under the Convention.¹⁹⁹ The Dispute Settlement Panels established under the GATT performed a similar function of conciliation.²⁰⁰ Under Article XXIII(2) of the GATT, the Panels assisted the parties to a dispute to reach a solution and, failing that, made an objective assessment of the matter before them, including an objective assessment of the facts of the case and the applicability of and conformity with the GATT.²⁰¹

The 1997 Watercourses Convention provides that, where negotiation fails to lead to a successful outcome, the parties may jointly seek the good offices of, or request mediation or conciliation by, a third party, or make use, as appropriate, of any joint watercourse institutions that may have been established by them.²⁰² Where a dispute has not been settled within six months of a request for negotiations, any of the parties to the dispute may submit the dispute to impartial fact-finding in accordance with the Convention, unless the parties otherwise agree, and the fact-finding commission is to submit its report to the parties concerned setting forth its findings (with reasons) and such recommendations as it deems appropriate for an equitable resolution of the dispute, which the parties concerned must consider in good faith.²⁰³ Under the 1985 Vienna Convention, the 1992 Biodiversity Convention and the 2001 Treaty on Plant Genetic Resources, conciliation will be used if the parties to the dispute have not accepted compulsory dispute settlement procedures by arbitration or the ICJ.²⁰⁴ In 2002, a working group of the Permanent Court of Arbitration adopted optional rules for the conciliation of disputes relating to the environment and/or natural resources.²⁰⁵

The political organs of international institutions and regional agencies also play an important role in the settlement of disputes. Such organs may be granted an express mandate to consider disputes between two or more parties to the treaty.²⁰⁶ Alternatively, they may attempt

¹⁹⁷ Raymond Laffitte, 'Baglihar Hydroelectric Plant: Expert Determination, Executive Summary' (2007), available at <http://siteresources.worldbank.org/SOUTHASIAEXT/Resources/223546-1171996340255/BagliharSummary.pdf>.

Pakistan has subsequently sought arbitration of the dispute by the PCA. See p. 170, below.

¹⁹⁸ 1909 Boundary Waters Treaty, especially Arts. VIII and IX.

¹⁹⁹ 1950 ECHR, Arts. 28 and 31(1).

²⁰⁰ See also dispute settlement under the NAFTA, Chapter 20 below.

²⁰¹ See BISD 26S/210, Understanding Regarding Notification, Consultation, Dispute Settlement and Surveillance, adopted 28 November 1979. On panel decisions relating to environmental matters, see Chapter 19, pp. 812–30, below.

²⁰² Art. 33(2). ²⁰³ Art. 33(3).

²⁰⁴ 1985 Vienna Convention, Art. 11; 1992 Biodiversity Convention, Art. 27; 2001 Treaty on Plant Genetic Resources, Art. 22.

²⁰⁵ [www.pca-cpa.org/upload/files/ENVIRONMENTAL\(1\).pdf](http://www.pca-cpa.org/upload/files/ENVIRONMENTAL(1).pdf).

²⁰⁶ See e.g. 1982 Jeddah Convention, Art. XXIV(2); 1988 Agreement on the Network of Aquaculture Centres in Asia and the Pacific, Art. 19(1).

to resolve disputes between parties in the absence of a specific mandate to do so. Examples of the latter include the 1985 decision of the Conference of the Parties to CITES concerning the application of the Convention to endangered species acquired prior to the entry into force of the Convention,²⁰⁷ and the 1991 decision of the Executive Committee of the 1971 Oil Pollution Fund Convention to exclude claims by Italy against the Fund for non-quantifiable damage to the marine environment.²⁰⁸

Another example of this approach includes the 1974 Nordic Environmental Protection Convention, which provides for the establishment of a commission upon the demand of any party to give an opinion on the permissibility of environmentally harmful activities that entail considerable nuisance in another party.²⁰⁹ The 1985 South Pacific Nuclear Free Zone Treaty establishes a control system which includes a complaints procedure involving the possible convening of a Consultative Committee to consider complaints and evidence of breach of obligations, with certain inspection powers, and the right to report fully to members of the South Pacific Forum and to give its decision as to whether a breach of obligation has occurred.²¹⁰ Under the 1991 Espoo Convention, if the parties cannot agree on whether a proposed activity is likely to result in a 'significant adverse transboundary impact', any party involved in the disagreement may submit that question to an Inquiry Commission.²¹¹ The Inquiry Commission, comprising three members, will advise and prepare an opinion based on 'accepted scientific principles' on the likelihood of significant adverse transboundary impact, and may take all appropriate measures to carry out its functions.²¹² Finally, the procedure established under the Conference on Security and Co-operation in Europe provides an alternative means of achieving conciliation.²¹³

Non-compliance procedures²¹⁴

One of the most significant developments in the field of international environmental law has been the emergence of non-compliance procedures under various multilateral environmental agreements, occupying a function between conciliation and traditional dispute settlement. Since the early 1990s, a significant number of treaties have established subsidiary bodies to deal with compliance and disputes over non-compliance. The first was the non-compliance procedure established under the 1987 Montreal Protocol, including the Implementation

²⁰⁷ See Chapter 10, pp. 472 *et seq.*, below. ²⁰⁸ See *The Haven* case, Chapter 17, pp. 752–4, below.

²⁰⁹ Arts. 11 and 12. ²¹⁰ Art. 8 and Annex 4. ²¹¹ Art. 3(7). ²¹² Appendix IV. ²¹³ See note 21 above.

²¹⁴ M. Koskenniemi, 'Breach of Treaty or Non-Compliance: Reflections on the Enforcement of the Montreal Protocol', 3 *Yearbook of International Environmental Law* 123 (1992); J. Werksman, 'Compliance and Transition: Russia's Non-Compliance Tests the Ozone Regime', 36 *ZaôRV* 750 (1996); J. Werksman, 'Compliance and the Kyoto Protocol', 9 *Yearbook of International Environmental Law* 48 (1998); M. Fitzmaurice and C. Redgwell, 'Environmental Non-Compliance Procedures and International Law', 31 *Netherlands Yearbook of International Law* 35 (2000); P. Kalas and A. Herwig, 'Dispute Resolution under the Kyoto Protocol', 27 *Ecology Law Quarterly* 53 (2001); T. Crossen, 'Multilateral Environmental Agreements and the Compliance Continuum', 16 *Georgetown International Environmental Law Review* 473 (2004); E. Kirk, 'Noncompliance and the Development of Regimes Addressing Marine Pollution From Land-Based Activities', 39 *Ocean Development and International Law* 235 (2008); T. Treves, A. Tanzi, C. Pitea, C. Ragni and L. Pineschi (eds.), *Non-Compliance Procedures and Mechanisms and the Effectiveness of International Environmental Agreements* (2009); A. Tabau and S. Maljean-Dubois, 'Non-Compliance Mechanisms: Interaction Between the Kyoto Protocol System and the European Union', 21 *European Journal of International Law* 749 (2010); M. Faure and J. Lefevre, 'Compliance with Global Environmental Policy', in R. Axelrod, S. VanDeveer and D. Downie (eds.), *Global Environment: Institutions, Law and Policy* (2011), 172.

Committee established by the second Meeting of the Parties to the Protocol.²¹⁵ Under the non-compliance procedure, any party which has reservations about another party's implementation of its obligations under the Protocol may submit its concerns in writing to the secretariat, with corroborating information.²¹⁶ The secretariat will then determine, with the assistance of the party alleged to be in violation, whether it is unable to comply with its obligations under the Protocol, and will transmit the original submission, its reply and other information to the Implementation Committee.²¹⁷ The Implementation Committee has a membership of ten parties (originally five) elected by the Meeting of the Parties on the basis of equitable geographical distribution for a two-year period. Its functions are to receive, consider and report on submissions made by any party regarding another party's implementation of its obligations under the Protocol, and any information or observations forwarded by the secretariat in connection with the preparation of reports based on information submitted by the parties pursuant to their obligations under the Protocol.²¹⁸ The Committee may, at the invitation of the party concerned, undertake information gathering in the territory of that party, and will also maintain an exchange of information with the Executive Committee of the Multilateral Fund related to the provisions of financial and technical co-operation to developing country parties.²¹⁹ The Committee is to try to secure 'an amicable resolution of the matter on the basis of respect for the provisions of the Protocol' and report to the Meeting of the Parties, which may decide upon and call for steps to bring about full compliance with the Protocol.²²⁰ The fourth Meeting of the Parties also adopted an indicative list of measures that might be taken by a Meeting of the Parties in respect of non-compliance, which comprise:

- appropriate assistance;
- issuing cautions; and
- suspension (in accordance with the applicable rules of international law concerning the suspension of the operation of a treaty) of specific rights and privileges under the Protocol.²²¹

The Committee's report must not contain confidential information and is to be made available to any person upon request.²²² Significantly, resort to the non-compliance procedure does not prejudice the dispute settlement provisions available under Article 11 of the 1985 Vienna Convention, which include negotiation, good offices, mediation, arbitration, submission to the ICJ and the establishment of a conciliation commission.²²³

Following the developments under the Montreal Protocol, non-compliance procedures have been established (or are in the process of being established) under other multilateral environmental agreements, including the 1973 CITES Convention,²²⁴ the 1989 Basel Convention,²²⁵

²¹⁵ See Decision II/5 (non-compliance), Report of the Second Meeting of the Parties to the Montreal Protocol on Substances That Deplete the Ozone Layer, UNEP/OzL.Pro.2/3, 29 June 1990; see now Decision IV/5 and Annexes IV and V, adopting the non-compliance procedure, Report of the Fourth Meeting of the Parties, UNEP/OzL.Pro.4/15, 25 November 1992, 32 ILM 874 (1993); see Chapter 7, pp. 265–74, below.

²¹⁶ Annex IV, para. 1. ²¹⁷ Paras. 2 to 4.

²¹⁸ Para. 7(a) and (b). Decision IV/5 and Annex IV; see note 215 above.

²¹⁹ Para. 7(d) and (e). ²²⁰ Paras. 8 and 9.

²²¹ Fourth Meeting of the Parties to the 1987 Montreal Protocol, note 215 above. Decision IV/5.

²²² Paras. 15 and 16.

²²³ M. Koskenniemi, 'Breach of a Treaty or Non-Compliance? Reflections on Enforcement of the Montreal Protocol', 3 *Yearbook of International Environmental Law* 123 (1992).

²²⁴ Conf 14.3.

²²⁵ See COP Decision V/16, Mechanism for Promoting Implementation and Compliance of the Basel Convention, UNEP/CH.5/29, 10 December 1999.

the 1991 VOC, 1994 Sulphur, 1998 POPs and Heavy Metals and 1999 Gothenburg Protocols to the LRTAP Convention,²²⁶ the 1996 Protocol to the London Convention,²²⁷ the 1998 Chemicals Convention,²²⁸ the 2000 Biosafety Protocol,²²⁹ the 2001 POPs Convention²³⁰ and the 2001 Treaty on Plant Genetic Resources.²³¹ The two most significant arrangements, however, are reflected in the mechanisms established under the 1997 Kyoto Protocol and the 1998 Aarhus Convention.

Article 18 of the Kyoto Protocol called on the Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol to approve, at its first session, ‘appropriate and effective procedures and mechanisms to address cases of non-compliance’, with the caveat that any procedures and mechanisms entailing binding consequences ‘shall be adopted by means of an amendment to [the] Protocol’. In 2001, at the seventh Conference of the Parties, the parties adopted a decision on the compliance regime for the Kyoto Protocol, which is among the most comprehensive and rigorous established thus far.²³² Rules of procedure were adopted in 2006 and updated in 2008. The compliance regime consists of a Compliance Committee made up of two branches: a Facilitative Branch and an Enforcement Branch. The Facilitative Branch provides advice and assistance to parties to promote compliance; the Enforcement Branch has the power to apply consequences to parties not meeting their commitments. Both branches are composed of ten members, including one representative from each of the five official UN regions, one from the small island developing states, and two each from Annex I and non-Annex I parties. Decisions of the Facilitative Branch may be taken by a three-quarters majority, but decisions of the Enforcement Branch require, in addition, a double majority of both Annex I and non-Annex I parties. The Compliance Committee also meets in a plenary composed of members of both branches, and a Bureau supports its work. Certain commitments fall under the remit of one or the other branch. The requirement, for example, of the flexibility mechanisms²³³ to be ‘supplemental’ to domestic action is under the purview of the Facilitative Branch, as is the commitment of Annex I parties to strive to minimise adverse impacts on developing countries. The Facilitative Branch also provides ‘early warning’ of cases where a party is in danger of not complying with its emissions targets. In response to problems, the Facilitative Branch can make recommendations and mobilise financial and technical resources to help parties comply. The Enforcement Branch, for its part, is responsible for determining whether an Annex I party is not complying with its emissions targets or reporting requirements, or has lost its eligibility to participate in the mechanisms. It can also decide whether to adjust a party’s inventory or correct the compilation and accounting database, in the event of a dispute between a party and the expert review team. The remedies it may decide on are to be aimed at the ‘restoration of compliance to ensure environmental integrity’. In the case of compliance with emissions targets, Annex I parties are granted 100 days after the expert review of their final annual emissions inventory has finished to remedy any shortfall in compliance. If, at the end of this period, a party’s emissions are still greater than its assigned amount, it must make up the difference in the second commitment period, plus a penalty of 30 per cent. It may also be barred from ‘selling’ under emissions trading and, within three months, it must develop

²²⁶ Decision 1997/2, LRTAP Convention Executive Body (www.unece.org/env/lrtap/conv/report/eb53_a3.htm).

²²⁷ Art. 11. ²²⁸ Art. 17. ²²⁹ Art. 34. ²³⁰ Art. 17.

²³¹ GB Resolution 2/2009, Annex. Doc. IT/GB-3/09/Report, Appendix A.2.

²³² Decision 24/CP.7, FCCC/CP/2001/13/Add.3, 10 November 2001. ²³³ Chapter 7, pp. 287–91, below.

a compliance action plan detailing the action it will take to ensure that its target is met in the next commitment period. Any party not complying with reporting requirements must develop a similar plan, and parties that are found not to meet the criteria for participating in the mechanisms will have their eligibility withdrawn. In all cases, the Enforcement Branch will make a public declaration that the party is in non-compliance and will also make public the consequences to be applied. A potential compliance problem can be raised either by an expert review team, or by a party about its own compliance, or by a party raising concerns about another party. After a preliminary examination, the matter will be considered in the relevant branch of the Compliance Committee. The Compliance Committee bases its deliberations on reports from expert review teams, the subsidiary bodies, parties and other official sources.²³⁴ Competent intergovernmental and non-governmental organisations may submit relevant factual and technical information to the relevant branch. The non-compliance mechanism under the Kyoto Protocol is now fully operational, functioning in accordance with rules of procedure adopted in 2006.²³⁵ The Enforcement Branch has issued decisions in respect of questions of implementation raised with respect to four parties: Greece, Canada, Croatia and Bulgaria.²³⁶

In October 2002, the parties to the Aarhus Convention established a Compliance Committee to review compliance by the parties with their obligations under the Convention.²³⁷ The Committee consists of nine members, elected from candidates nominated by parties and signatories and – innovatively – non-governmental organisations. The functions of the Committee are to consider any submission, referral or communication made to it, to prepare a report on compliance with or implementation of the provisions of the Convention, and to monitor, assess and facilitate the implementation of and compliance with reporting requirements. In consultation with the party concerned, the Committee may provide advice and facilitate assistance to individual parties regarding the implementation of the Convention. Subject to agreement with the party concerned, the Committee may also:

- make recommendations to the party concerned;
- request the party concerned to submit a strategy to the Committee regarding the achievement of compliance with the Convention and to report on the implementation of this strategy; and
- in cases of communications from the public, make recommendations to the party concerned on specific measures to address the matter raised by the member of the public.

The Meeting of the Parties may, upon consideration of a report and any recommendations of the Committee, decide upon appropriate measures to bring about full compliance with the Convention, including declarations of non-compliance, issuing cautions, suspending special rights and privileges under the Convention, and taking such other non-confrontational, non-judicial and consultative measures as may be appropriate. The Committee receives submissions from parties and referrals from the secretariat. Breaking new ground, the Committee may also

²³⁴ The Marrakesh Accords set out more detailed additional procedures with specific timeframes for the Enforcement Branch, including the opportunity for a party facing the Compliance Committee to make formal written submissions and request a hearing in which it can present its views and call on expert testimony. In the case of non-compliance with emissions targets, the party can also lodge an appeal to the Conference of the Parties/Meeting of the Parties if that party believes it has been denied due process. 27/CMP.1.

²³⁵ Decision 4/CMP.2 and 4/CMP.4.

²³⁶ Meinhard Doelle, 'Early Experience with the Kyoto Compliance System: Possible Lessons for MEA Compliance System Design', 1(2) *Climate Law* 237 (2010).

²³⁷ Decision 1/7, 23 October 2002.

receive communications from the public.²³⁸ Communications from the public are to be addressed in writing to the Committee through the secretariat and supported by corroborating information. In language which will be familiar to human rights lawyers, the Committee is to consider any such communication unless it determines that the communication is anonymous, or an abuse of the right to make such communications, or manifestly unreasonable, or incompatible with the provisions of the decision establishing the Committee or with the Convention. Although there is no rule requiring exhaustion of local remedies, the Committee 'should at all relevant stages take into account any available domestic remedy unless the application of the remedy is unreasonably prolonged or obviously does not provide an effective and sufficient means of redress'.²³⁹ The Committee must bring any communications so submitted to the attention of the party alleged to be in non-compliance, and the party must within five months after any communication is brought to its attention by the Committee submit to the Committee a written statement clarifying the matter and describing any response that it may have made. The Committee may hold hearings, and in its eight years of operation it has received more than fifty communications, of which all but one were initiated by communications from members of the public.

Inspection procedures of multilateral development banks²⁴⁰

In September 1993, the World Bank became the first multilateral development bank to create an Inspection Panel to receive and review requests for inspection from a party that claimed to be affected by a World Bank project, including claims in respect of environmental harm.²⁴¹ This innovation was followed by similar arrangements established at the Inter-American Development Bank (an Independent Investigation Mechanism, established in 1994),²⁴² the Asian Development Bank (1995),²⁴³ the International Finance Corporation and the Multilateral Investment Guarantee Agency (1998),²⁴⁴ the European Bank for Reconstruction and Development (2004)²⁴⁵ and the African Development Bank (2006).²⁴⁶ These mechanisms provide substantive and independent review of the activities of these banks and have enhanced access to international remedies for non-state actors.

²³⁸ Parties may notify the depositary that they will not accept consideration of such communications, but only up to a maximum period of four years: para. 18.

²³⁹ Para. 21.

²⁴⁰ I. Shihata, *The World Bank Inspection Panel* (2000); S. Schlemmer-Schulte, 'The World Bank's Experience with Its Inspection Panel', 58 *ZaōRV* 353 (1998); L. Boisson de Chazournes, 'Le Panel d'Inspection de la Banque Mondiale: A Propos de la Complexification de l'Espace Public International', *Revue Générale de Droit International Public* 145 (2001); G. Alfredsson and R. Ring (eds.), *The World Bank Inspection Panel* (2001); World Bank, *Accountability at the World Bank: The Inspection Panel 15 Years Later* (2009).

²⁴¹ Resolution of the Executive Directors No. IBRD 93-10 and IDA 93-6, 22 September 1993. The resolutions have been subject to Clarifications, adopted on 17 October 1996 and 20 April 1999. See <http://siteresources.worldbank.org/EXTINSPECTIONPANEL/Resources/1996ReviewResolution.pdf>; and <http://siteresources.worldbank.org/EXTINSPECTIONPANEL/Resources/1999ClarificationoftheBoard.pdf>.

²⁴² See www.iadb.org/cont/poli/investig.htm.

²⁴³ *ADB's Inspection Policy: A Guidebook* (1996); see also www.adb.org/Inspection/default.asp. Inspection is carried out by three persons from a roster of sixteen experts.

²⁴⁴ See www.cao-ombudsman.org.

²⁴⁵ The original Independent Recourse Mechanism was replaced in 2010 by a new Project Complaint Mechanism: www.ebrd.com/pages/project/pcm/about.shtml.

²⁴⁶ www.afdb.org/en/about-us/structure/independent-review-mechanism.

The World Bank Inspection Panel became operational in late 1994. An affected party (or, in limited cases, its representatives) may request an inspection if it can

demonstrate that its rights or interests have been or are likely to be directly affected by an action or omission of the Bank as a result of a failure of the Bank to follow its operational policies and procedures with respect to the design, appraisal and/or implementation of a project financed by the Bank ... provided in all cases that such failure has had, or threatens to have, a material adverse effect.²⁴⁷

The Panel, which consists of three members, may make a recommendation to the Executive Directors as to whether a matter complained of should be investigated, having been provided with evidence from the management of the Bank as to its compliance with the Bank's policies and procedures.²⁴⁸ If the Executive Directors decide to investigate the matter, one or more members of the Panel (the Inspector(s)) will conduct an inspection and report to the Panel, which will then submit its report to the Executive Directors on whether the Bank has complied with its relevant policies and procedures.²⁴⁹ The World Bank Inspection Panel, and the review bodies established by other regional development banks, represent an important development in international law, by creating within a multilateral development bank an administrative procedure to permit review of the institution's compliance with its internal law at the instigation of third parties other than employees. The well-developed practice of administrative tribunals addressing employment and contractual matters for Bank staff is, in effect, extended into the fields of environmental and social review. By 2010, the Panel had received over seventy requests, the largest number concerning compliance with the operational directive on environmental assessment (OD 4.01).²⁵⁰ Requests have also addressed the environmental policy for dam and reservoir projects (OD 4.00), environmental aspects of Bank work (OMS 2.36), indigenous peoples (OD 4.20), water resources and management (OP 4.07), wildlands (OPN 11.02) and natural habitats (OP/BP 4.04).²⁵¹

NAFTA Commission on Environmental Cooperation

Citizen access to an independent fact-finding mechanism is available under the NAFTA: the secretariat of NAFTA's Commission on Environmental Cooperation may receive and consider submissions from any non-governmental organisation or person asserting that a party is 'failing to effectively enforce its environmental law', and may request a response from the

²⁴⁷ *Ibid.*, para. 12. 'Operational policies and procedures' consist of the Bank's Operational Policies, Bank Procedures and Operational Directives, and similar documents issued before these series were started. They do not include Guidelines and Best Practices or similar documents or statements: *ibid.*

²⁴⁸ *Ibid.*, paras. 18 and 19.

²⁴⁹ *Ibid.*, paras. 20 and 22. The 1999 Clarifications provide that, if the Panel so recommends the Board will authorise an investigation without making a judgment on the merits of the claimant's request: para. 9.

²⁵⁰ See e.g. Request No. 19 (Lake Victoria Environmental Management Project) (in which the Panel found that Management was not in full compliance with OD 4.01, where Management had made no prior review of the environmental consequences of water disposal, and that environmental and other data necessary for subsequent assessments had not been obtained) and Request No. 22 (Chad-Cameroon Pipeline Projects) (failing to comply with the requirement to carry out a regional environmental assessment).

²⁵¹ See Annual Report, 1 August 2009 to 30 June 2010, available at <http://siteresources.worldbank.org/EXTINSPECTIONPANEL/Resources/32457.pdf>.

party concerned if it determines that the submission so merits.²⁵² The secretariat may be instructed by the Council, by a two-thirds vote, to prepare a 'factual record' which may be made public by the Council.²⁵³ Since 1996, the secretariat has received submissions in respect of seventy-seven matters, of which thirteen are currently active. The secretariat has published factual records in respect of sixteen matters, including: *Cozumel* (24 October 1997),²⁵⁴ *BC Hydro* (11 June 2000),²⁵⁵ *Metales y Derivados* (11 February 2002),²⁵⁶ *Migratory Birds* (24 April 2003),²⁵⁷ *Aquanova* (23 June 2003),²⁵⁸ *BC Logging* (11 August 2003),²⁵⁹ *Oldman River II* (11 August 2003),²⁶⁰ *BC Mining* (12 August 2003),²⁶¹ *Río Magdalena* (11 December 2003),²⁶² *Molymex II* (8 October 2004),²⁶³ *Tarahumara* (9 January 2006),²⁶⁴ *Ontario Logging* (5 February 2007),²⁶⁵ *Ontario Logging II* (5 February 2007),²⁶⁶ *Pulp and Paper* (5 February 2007),²⁶⁷ *ALCA-Iztapalapa II* (2 June 2008)²⁶⁸ and *Montreal Technoparc* (24 June 2008).²⁶⁹

Legal means of dispute settlement

Mediation and conciliation do not produce legally binding decisions. If the parties to a dispute seek such a result, they must opt for arbitration or recourse to an international court.²⁷⁰

Arbitration

International arbitration has been described as having 'for its object the settlement of disputes between states by judges of their own choice and on the basis of respect for the law. Recourse to arbitration implies an engagement to submit in good faith to the award.'²⁷¹ States negotiating environmental treaties have often favoured the inclusion of specific provisions for the establishment of an arbitral tribunal, with the power to adopt binding and final decisions. Early examples providing for the establishment of a body to take binding decisions include the 'special commission' to be established at the request of any of the parties to disputes relating to high seas fishing and conservation,²⁷² and the detailed provisions on the establishment of an arbitral tribunal in the Annex to the 1969 Oil Pollution Intervention Convention.²⁷³

²⁵² Agreement on Environmental Co-operation, Art. 14; see Chapter 19, pp. 859–60, below. See generally www.cec.org/Page.asp?PageID=1226&SiteNodeID=210&BL_ExpandID=156; and Commission for Environmental Cooperation, *Bringing the Facts to Light: A Guide to Articles 14 and 15 of the NAECC* (2000).

²⁵³ Art. 15. The procedure has been used by NGOs in all three of the NAFTA states parties to raise issues of non-compliance with environmental laws. Factual records have been produced in several cases but as yet no arbitral panel has been established to hear a complaint. Records of the submissions made, factual reports and responses of NAFTA parties are made available by the Commission for Environmental Cooperation on its website, www.cec.org/citizen/index.cfm?varlan=english.

²⁵⁴ *Cozumel*, SEM-96-001, 24 October 1997. ²⁵⁵ *BC Hydro*, SEM-97-001, 11 June 2000.

²⁵⁶ *Metales y Derivados*, SEM-98-007, 11 February 2002. ²⁵⁷ *Migratory Birds*, SEM-99-002, 24 April 2003.

²⁵⁸ *Aquanova*, SEM-98-006, 23 June 2003. ²⁵⁹ *BC Logging*, SEM-00-004, 11 August 2003.

²⁶⁰ *Oldman II*, SEM-97-006, 11 August 2003. ²⁶¹ *BC Mining*, SEM-98-004, 12 August 2003.

²⁶² *Río Magdalena*, SEM-97-002, 11 December 2003. ²⁶³ *Molymex II*, SEM-00-005, 8 October 2004.

²⁶⁴ *Tarahumara*, SEM-00-006, 9 January 2006. ²⁶⁵ *Ontario Logging*, SEM-02-001, 5 February 2007.

²⁶⁶ *Ontario Logging II*, SEM-04-006, 5 February 2007. ²⁶⁷ *Pulp and Paper*, SEM-02-003, 5 February 2007.

²⁶⁸ *ALCA-Iztapalapa II*, SEM-03-004, 2 June 2008. ²⁶⁹ *Montreal Technoparc*, SEM-03-005, 24 June 2008.

²⁷⁰ For an assessment of the composition of a court or tribunal on substantive environmental outcomes (in the US Court of Appeals for the District of Columbia), see R. Revesz, 'Environmental Regulation, Ideology and the DC Circuit', 83 *Virginia Law Review* 1717 (1997); and R. Revesz, 'Congressional Influence on Judicial Behaviour? An Empirical Examination of Challenges to Agency Action in the DC Circuit', 76 *New York University Law Review* 1100 (2001).

²⁷¹ 1907 Hague Convention on the Pacific Settlement of International Disputes, Art. 37.

²⁷² 1958 High Seas Conservation Convention, Arts. 9 to 12. ²⁷³ Art. VIII and Annex, Chapter II.

Other environmental treaties include provisions, including annexes or protocols, for the submission of disputes to arbitration at the instigation of one party to a dispute²⁷⁴ or both parties.²⁷⁵ Other treaties refer simply to the possibility of submitting disputes to arbitration without providing details on the establishment of such a body or its working arrangements.²⁷⁶ Certain environmental treaties provide for the submission of disputes to arbitration by mutual consent of the relevant parties²⁷⁷ or allow a party to declare, at the time of signature or ratification, that it is not bound by parts of the dispute settlement provisions, including submission to arbitration,²⁷⁸ or provide for a party to declare, at the time of signature or ratification, or at any time thereafter, its acceptance of compulsory recourse to arbitration and/or the ICJ.²⁷⁹

The *Pacific Fur Seal* arbitration (1893),²⁸⁰ the *Trail Smelter* case (1935/41)²⁸¹ and the *Lac Lanoux* arbitration (1957)²⁸² reflect the historical importance played by arbitration in the development of international environmental law, in inter-state cases. More recently, there is growing evidence that states view arbitration as an attractive means of resolving international disputes. Within the past few years, the 1982 UNCLOS Annex VII arbitration procedure has been invoked on numerous occasions: in 1998 by Australia and New Zealand against Japan, in relation to a dispute concerning the conservation of southern bluefin tuna;²⁸³ in 2001 by Ireland against the United Kingdom, in the dispute concerning the authorisation of the MOX plant;²⁸⁴ in 2005 by Malaysia against Singapore in relation to land reclamation;²⁸⁵ and in 2010 by Mauritius against the United Kingdom on the legality of a marine protected area established around the Chagos Archipelago.²⁸⁶ Additionally, in 1999, the Netherlands and France submitted a dispute to arbitration with the Permanent Court of Arbitration (PCA) concerning the 1976 Rhine Chloride Convention and its 1991 Protocol;²⁸⁷ in 2001, Ireland initiated arbitration proceedings against the United Kingdom in relation to freedom of information under Article 9 of the 1992 OSPAR Convention;²⁸⁸ and, in 2003, Belgium and the Netherlands referred a dispute concerning the Iron Rhine railway line to another PCA arbitral tribunal.²⁸⁹ A further PCA dispute is also pending between India and Pakistan under the Indus River Treaty.²⁹⁰ Against that background, the Permanent Court of Arbitration (which has served as the registry in most of these disputes) has sponsored the adoption of arbitration rules specifically designed to address needs arising from the arbitration of disputes relating to the environment and

²⁷⁴ MARPOL 73/78, Art. 10 and Protocol 11; 1976 Rhine Chemical Pollution Convention, Art. 15 and Annex B; 1976 Convention on the Protection of the Rhine Against Pollution by Chlorides, Art. 13 and Annex B; 1979 Berne Convention, Art. 18; 1992 OSPAR Convention, Art. 32(2); 1994 Danube Convention, Art. 24; 1995 SADC Water Protocol, Art. 7; 1996 LDC Protocol, Art. 16; 1998 Rhine Convention, Art. 16; 2000 SADC Revised Water Protocol, Art. 7.

²⁷⁵ 1976 Barcelona Convention, Art. 22 and Annex A; 1980 CCAMLR, Art. XXV and Annex; 1983 Cartagena Convention, Art. 23 and Annex; 1986 Noumea Convention, Art. 26 and Annex.

²⁷⁶ 1974 Baltic Convention, Art. 18; 1985 Vienna Convention, Art. 11.

²⁷⁷ 1973 CITES, Art. XVIII (to the Permanent Court of Arbitration at The Hague); 1989 Basel Convention, Art. 20 and Annex VI.

²⁷⁸ 1986 Early Notification Convention, Art. 11; 1986 Assistance Convention, Art. 13.

²⁷⁹ 1992 Biodiversity Convention, Art. 27 and Annex II, Part 1; 1992 Climate Change Convention, Art. 14; 1992 Watercourses Convention, Art. 22; 1992 Industrial Accident Convention, Art. 21.

²⁸⁰ Chapter 10, pp. 399–400, below. ²⁸¹ Chapter 7, pp. 239–40, below. ²⁸² Chapter 8, pp. 307–8, below.

²⁸³ Chapter 10, pp. 420–1, below. ²⁸⁴ Chapter 9, p. 316, below. ²⁸⁵ Chapter 6, p. 205, below.

²⁸⁶ Chapter 9, pp. 444–5, below. ²⁸⁷ Chapter 8, p. 321, below.

²⁸⁸ Chapter 15, p. 651, below. ²⁸⁹ Chapter 6, pp. 200–1, below. ²⁹⁰ Chapter 8, pp. 338–9, below.

natural resources.²⁹¹ The growing role of arbitration is also reflected in the case law of arbitral tribunals in investor/state disputes involving allegations of interference with foreign investments occasioned by municipal concerns to protect the environment.²⁹²

International courts

The settlement of international disputes may also be referred to an international court, which is a permanent tribunal competent to deliver a legally binding decision. In the environmental field, a number of international courts have assumed particular importance, namely, the ICJ, the ITLOS, the WTO Appellate Body (and panels), the ECJ,²⁹³ and the courts created by regional human rights treaties. In addition, several non-governmental efforts aim to establish 'international courts' to address international environmental issues. While not creating binding arrangements, these provide a useful way to bring environmental issues to the attention of the public.²⁹⁴ Notwithstanding certain calls for its creation, there is as yet no international environmental court, and none is likely to emerge in the foreseeable future.²⁹⁵

International Court of Justice²⁹⁶

The ICJ, sometimes referred to as the 'World Court' or the 'Hague Court', is the UN's principal judicial organ. It was established as a successor (although not formally the legal successor) to

²⁹¹ Adopted 19 June 2001; available at www.pca-cpa.org/upload/files/ENVIRONMENTAL.pdf. The Rules are available for the use of all parties who have agreed to use them; states, intergovernmental organisations, non-governmental organisations and private entities. The Rules provide for the *optional* use of a panel of arbitrators with experience and expertise in environmental or conservation of natural resources law nominated by the member states and the Secretary General, respectively (Art. 8(3)), and a panel of environmental scientists nominated by the member states and the Secretary General, respectively, who can provide expert scientific assistance to the parties and the arbitral tribunal (Art. 27(5)). The Rules also make provision for the submission to the arbitral tribunal of a document agreed to by the parties, summarising and providing background to any scientific or technical issues which the parties may wish to raise in their memorials or at oral hearings (Art. 24(4)), and empower the arbitral tribunal to order any interim measures necessary to prevent serious harm to the environment, unless the parties agree otherwise (Art. 26). Recognising that time may be an important element in disputes concerning natural resources and the environment, the Rules provide for arbitration in a shorter period of time than under previous PCA Optional Rules or the UNCITRAL Rules. The PCA Rules were recommended for use by the Facilitators in the Belize/Guatemala matter (see note 196 above and the accompanying text), and are also recommended for use in emission reduction purchase agreements by the International Emissions Trading Association.

²⁹² See Chapter 20 (involving arbitration proceedings under ICSID (ICSID Additional Facility) and under UNCITRAL rules).

²⁹³ The ECJ, albeit not an international court, is an example of dispute settlement at the supranational level. In addition, the ECJ in its case law has dealt with questions of the interpretation and application of international environmental law: see p. 179, below.

²⁹⁴ The International Water Tribunal, based in the Netherlands; the International Court for the Protection of the Environment (established by the International Juridical Organization for Environment and Development, Rome, in relation to the 1976 Barcelona Convention). See also A. Postiglione, 'A More Efficient International Law on the Environment and Setting Up an International Court for the Environment Within the United Nations', 20 *Environmental Law* 321 (1990).

²⁹⁵ See A. Postiglione, 'An International Court for the Environment?', 23 *Environmental Policy and Law* 73 (1993); A. Rest, 'An International Court for the Environment: The Role of the PCA', 4 *Asia Pacific Journal of Environmental Law* 107 (1999); P. Sands, 'International Environmental Litigation and Its Future', 32 *University of Richmond Law Review* 1619 (1999); E. Hey, *Reflections on an International Environmental Court* (2000).

²⁹⁶ S. Rosenne, *The Law and Practice of the International Court* (1965); S. Rosenne, *Procedure in the International Court: A Commentary on the 1978 Rules of the ICJ* (1983); R. Jennings, 'The Role of the International Court of Justice in the Development of International Environment Protection Law', 1 *Review of European Community and International Environmental Law* 240 (1992); R. Ranjeva, 'L'Environnement, la Cour Internationale de Justice et Sa Chambre

the Permanent Court of International Justice (PCIJ) in 1945. Jurisdiction of the ICJ over a dispute depends on whether the Court has been invoked in a contentious case between two or more states, or asked to give an advisory opinion on a question of law at the request of states or certain international organisations.²⁹⁷

In July 1993, the ICJ established a seven-member Chamber for Environmental Matters. This decision followed previous consideration by the ICJ on the possible formation of such a chamber, and was taken in view of developments in the field of environmental law and the need to be prepared to the fullest possible extent to deal with any environmental case falling within its jurisdiction.²⁹⁸ The Chamber was periodically reconstituted, but it has not been constituted since 2006, in the absence of any case having been referred to it.

Contentious cases

The contentious jurisdiction of the ICJ can arise in at least two ways. First, under Article 36(1) of its Statute, the ICJ has jurisdiction by agreement between the parties to the dispute, either by a special agreement whereby two or more states agree to refer a particular dispute and defined matter to the ICJ, or by a compromissory clause in a multilateral or bilateral treaty. The treaty could be a general treaty for the peaceful settlement of disputes, a treaty dealing with the general relations between the states, or a treaty regulating a specific topic, such as environmental protection. Many environmental treaties provide for possible recourse to the ICJ to settle disputes. Occasionally, they recognise its compulsory jurisdiction,²⁹⁹ but more usually the reference of a dispute to the ICJ requires the consent, in each case, of all parties to the dispute.³⁰⁰ Recent practice in environmental treaties allows parties at the time of signature, ratification or accession, or at any time thereafter, to accept compulsory dispute settlement by recourse to arbitration or to the ICJ.³⁰¹ Few parties accept this option.

A second way in which contentious cases come before the ICJ is under Article 36(2) of its Statute (the 'Optional Clause'), under which parties to the Statute may declare that they recognise its compulsory jurisdiction, in relation to other states accepting the same obligation, in all legal disputes concerning: the interpretation of a treaty; any question of international law; the existence of any fact which, if established, would constitute a breach of an

Spéciale pour les Questions d'Environnement', *Annuaire Français de Droit International* 433 (1994); M. Fitzmaurice, 'Environmental Law and the International Court of Justice', in V. Lowe and M. Fitzmaurice (eds.), *Fifty Years of the International Court of Justice* (1996), 293; L. Boisson de Chazournes and P. Sands, *International Law, the International Court of Justice and Nuclear Weapons* (1999); P. Sands, 'International Courts and the Application of the Concept of "Sustainable Development"', 3 *Max Planck Yearbook of UN Law* 389 (1999); J. Vinuales, 'The Contribution of the International Court of Justice to the Development of International Environmental Law: A Contemporary Assessment', 32 *Fordham International Law Journal* 232 (2008); A. Akhtarkhavari, 'Power, Environmental Principles and the International Court of Justice', *Australian Yearbook of International Law* 91 (2009); T. Stephens, *International Courts and Environmental Protection* (2009); C. Payne, 'Environmental Impact Assessment as a Duty under International Law: The International Court of Justice Judgment on Pulp Mills on the River Uruguay', 1 *European Journal of Risk Regulation* 317 (2010).

²⁹⁷ In relation to contentious cases, 'only states may be parties in cases before the Court': UN Charter, Art. 34(1).

²⁹⁸ ICJ, Communiqué 93/20, 19 July 1993. The Chamber was established under Art. 26(1) of the Statute of the ICJ; seven judges are elected by secret ballot to serve on the Chamber, which has not yet been utilised.

²⁹⁹ 1963 Vienna Convention, Optional Protocol Concerning the Compulsory Settlement of Disputes, Art. 1 (not in force); 1980 Convention on the Physical Protection of Nuclear Materials, Art. 17(2).

³⁰⁰ Examples include: 1959 Antarctic Treaty, Art. XI(2); 1974 Baltic Convention, Art. 18(2).

³⁰¹ 1985 Vienna Convention, Art. 11(3); 1989 Basel Convention, Art. 20(3); 1992 Climate Change Convention, Art. 14(2); 1992 Biodiversity Convention, Art. 27(3); 1992 Industrial Accidents Convention, Art. 21; 1992 Watercourses Convention, Art. 22; 1998 Chemicals Convention, Art. 20(2); 2001 POPs Convention, Art. 18(2).

international obligation; and the nature or extent of the reparation to be made for the breach of an international obligation.³⁰² Acceptance of the jurisdiction of the ICJ under Article 36(2) may be made unconditionally, or on condition of reciprocity, or for a limited period of time.³⁰³ Additionally, the practice of the ICJ has been to accept reservations or conditions to declarations made under the Optional Clause, as happened in the *Fisheries Jurisdiction* case (*Spain v. Canada*).³⁰⁴

Unlike its predecessor, the PCIJ, the ICJ has been presented with many opportunities to address international environmental disputes – raising matters concerning environment and natural resource conservation – and has given judgments that establish – or imply – important general principles. Relevant cases before the PCIJ included the *Diversion of the Waters of the River Meuse*³⁰⁵ and the *Territorial Jurisdiction of the International Commission of the River Oder*.³⁰⁶ Early cases before the ICJ, which influenced the development of international environmental law, included: the *Corfu Channel* case, where the ICJ affirmed ‘every state’s obligation not to allow knowingly its territory to be used for acts contrary to the rights of other states’;³⁰⁷ the *Fisheries Jurisdiction* case, where the ICJ set forth basic principles governing consultations and other arrangements concerning the conservation of shared natural resources;³⁰⁸ and the *Nuclear Tests* cases.³⁰⁹ The ICJ has since had a number of cases before it which it considers as having important implications for international law ‘on matters relating to the environment’: the *Certain Phosphate Lands in Nauru* case, concerning the obligation, if any, of trustee states for, *inter alia*, the physical destruction of the island as a unit of self-determination accompanied by a failure to rehabilitate the land, as well as the nature and extent of obligations relating to permanent sovereignty over natural resources and entitlement to the costs of rehabilitation;³¹⁰ the *Gabčíkovo-Nagymaros Project (Hungary/Slovakia)* case, addressing, *inter alia*, the use of international watercourses and international environmental law in relation to an agreement for the construction of two barrages which would have resulted in the diversion of the Danube River;³¹¹ the *Request for an Examination of the Situation*, brought by New Zealand in relation to the resumption of underground nuclear tests by France;³¹² the *Fisheries Jurisdiction* case, where Spain challenged the enforcement of fisheries conservation measures taken by Canada in areas beyond its exclusive economic zone;³¹³ and the *Pulp Mills* case, concerning claims by Argentina that Uruguay had violated procedural and substantive obligations under the 1975 River Uruguay Statute.³¹⁴ Pending cases before the ICJ involving river dredging (Costa Rica and Nicaragua),³¹⁵ aerial herbicide spraying (Ecuador and Colombia)³¹⁶ and whaling (Australia and Japan)³¹⁷ also have the potential to make an important contribution

³⁰² Statute of the ICJ, Art. 36(2). As of 12 October 2011, sixty-six states had made declarations recognising as compulsory the jurisdiction of the ICJ, as set out in the Optional Clause.

³⁰³ Art. 36(3).

³⁰⁴ (1998) ICJ Reports 432, giving effect to (and finding that the dispute was covered by) Canada’s reservation (made in its Declaration of 10 May 1994 under Art. 36(2)) excluding from the jurisdiction of the Court ‘disputes arising out of or concerning conservation and management measures taken by Canada with respect to vessels fishing in the NAFO Regulatory Area . . . and the enforcement of such measures’. On the dispute, see Chapter 9, pp. 402–3, below.

³⁰⁵ PCIJ Ser. A/B No. 70. ³⁰⁶ Chapter 8, p. 306, below. ³⁰⁷ Chapter 6, p. 197, below.

³⁰⁸ Chapter 9, pp. 402–3, below. ³⁰⁹ Chapter 7, pp. 240–2, below.

³¹⁰ Chapter 11, pp. 549–50, below; the case was settled in September 1993.

³¹¹ Chapter 8, pp. 313–9, below. ³¹² Chapter 7, pp. 240–2, below.

³¹³ Chapter 9, pp. 402–3, below. ³¹⁴ Chapter 8, pp. 330–3, below.

³¹⁵ Chapter 8, p. 307, below. ³¹⁶ Chapter 7, p. 242, below.

³¹⁷ Chapter 10, pp. 426–8, below.

to the development of international environmental law, at least insofar as the ICJ is prepared to give substantive and real effect to environmental legal principles.

Advisory opinions

The UN Charter allows the General Assembly or the Security Council to request the ICJ to give an advisory opinion on any legal question,³¹⁸ and allows other organs of the UN and specialised agencies authorised by the General Assembly to request advisory opinions of the ICJ on legal questions arising within the scope of their activities.³¹⁹ Advisory opinions are not binding in law upon the requesting body, although in practice they are accepted and acted upon by that body. Although no legal question on an environmental issue has been the subject of a request for an advisory opinion, this route could provide a useful and non-contentious way of obtaining independent international legal advice on environmental matters. In July 1996, the ICJ gave an advisory opinion on the legality of the use of nuclear weapons in the context of their effects on human health and the environment, arguably one of the most significant of the ICJ's pronouncements on international environmental law.³²⁰

Interim measures of protection

If it considers that the circumstances so require, the ICJ has the power to indicate interim measures of protection to preserve the rights of the parties to a dispute.³²¹ The irreparability of serious environmental damage makes the availability of interim measures particularly important in cases concerning environmental protection. During the preliminary phase of the *Nuclear Tests* cases, the ICJ indicated interim measures of protection, asking the parties to ensure that no action should be taken which might aggravate or extend the dispute or prejudice the rights of another party, and calling on France to 'avoid nuclear tests causing the deposit of radioactive fall-out on Australian territory'.³²² Interim measures of protection were also indicated in the *Fisheries Jurisdiction* cases,³²³ but were refused by the ICJ in the *Passage Through the Great Belt* case,³²⁴ and in ten cases brought by the Federal Republic of Yugoslavia to bring a halt to a bombing campaign, where it was argued, *inter alia*, that attacks on oil refineries and chemical plants were having 'serious environmental effects on cities, towns and villages in the Federal Republic of Yugoslavia'.³²⁵ In the *Pulp Mills* case, where the ICJ also rejected a request to order interim measures, it set out a test to be met in environmental cases: the Court ruled that Argentina had not established that 'the very decision by Uruguay to authorize the construction

³¹⁸ UN Charter, Art. 96(1).

³¹⁹ Art. 96(2). ECOSOC, the Trusteeship Council and fifteen of the specialised agencies have been authorised by the General Assembly, as have the IAEA, the Interim Committee of the General Assembly and the Committee for Applications for Review of the UN Administrative Tribunal. UNEP and the Commission on Sustainable Development have not been so authorised by the General Assembly.

³²⁰ Chapter 18, p. 792, below.

³²¹ Statute of the ICJ, Art. 41. The ICJ has ruled that its provisional measures are legally binding: *Lagrand* case (*Germany v. United States*) (2001) ICJ Reports 466; 40 ILM 1069 (2001).

³²² Order for Interim Measures, (1973) ICJ Reports 99; (*New Zealand v. France*), Order for Interim Measures, (1973) ICJ Reports 135.

³²³ *UK v. Iceland*, Order for Interim Measures, (1972) ICJ Reports 12; *Federal Republic of Germany v. Iceland* (1972) ICJ Reports 30.

³²⁴ *Finland v. Denmark* (1991) ICJ Reports 9.

³²⁵ E.g. *Case Concerning the Legality of the Use of Force (Yugoslavia v. United Kingdom)* (1999) ICJ Reports 826, para. 3.

of the mills poses an imminent threat of irreparable damage to the aquatic environment of the River Uruguay', or persuaded the Court that 'the construction of the mills presents irreparable damage to the environment', or provided evidence that suggested that 'any pollution resulting from the commissioning of the mills would be of a character to cause irreparable damage to the River Uruguay'.³²⁶ This judgment appears to set the bar very high in order to obtain interim measures in an environmental case, an approach that does not accord well with notions of precautionary action in circumstances of scientific uncertainty. More recently, in the case brought by Costa Rica against Nicaragua concerning activities in an area in which two wetlands of international importance are located, the ICJ was prepared to order interim measures of protection. This permitted Costa Rica to dispatch civilian personnel charged with the protection of the environment to the disputed territory, insofar as 'necessary to avoid irreparable prejudice being caused to the part of the wetland where that territory is situated', and subject to consultations with the secretariat of the Ramsar Convention and in consultation with Nicaragua.³²⁷

UNCLOS and ITLOS³²⁸

Part XV of the 1982 UNCLOS addresses compulsory dispute settlement, allowing states at the time of signature, ratification or accession or at any time thereafter to designate any of the following dispute settlement procedures: the International Tribunal for the Law of the Sea (established in accordance with Annex VI to UNCLOS); the ICJ; an arbitral tribunal (constituted in accordance with Annex VII to UNCLOS); and a special arbitral tribunal (constituted in accordance with Annex VIII to UNCLOS).³²⁹ A state that does not designate one of these means is deemed to have designated arbitration in accordance with Annex VII, and where two or more states have designated different means the dispute will go to arbitration (unless the parties agree otherwise).³³⁰

The compulsory dispute settlement procedure is limited to certain disputes under the Convention. The exercise by a coastal state of its sovereign rights or jurisdiction under UNCLOS is only subject to the compulsory procedures when it is alleged that a coastal state has violated

³²⁶ *Pulp Mills on the River Uruguay (Argentina v. Uruguay)*, Provisional Measures, Order of 13 July 2006, (2006) ICJ Reports 113 at 131 (paras. 73–6); see also Order of 23 January 2007, (2007) ICJ Reports 3.

³²⁷ *Certain Activities Carried Out by Nicaragua in the Border Area (Costa Rica v. Nicaragua)*, Provisional Measures, Order of 8 March 2011, para. 80.

³²⁸ A. O. Adede, *The System for Settlement of Disputes under the United Nations. Convention on the Law of the Sea* (1987); S. Rosenne, 'Establishing the International Tribunal for the Law of the Sea', 89 *American Journal of International Law* 806 (1995); T. Treves, 'The Jurisdiction of the International Tribunal for the Law of the Sea', 37 *Indian Journal of International Law* 396 (1997); A. Boyle, 'Problems of Compulsory Jurisdiction and the Settlement of Disputes Relating to Straddling Fish Stocks', 14 *International Journal of Marine and Coastal Law* 1 (1999); G. Eiriksson, *The International Tribunal for the Law of the Sea* (2000); T. Stephens, 'The Limits of International Adjudication in International Environmental Law: Another Perspective on the Southern Bluefin Tuna Case', 19 *International Journal of Marine and Coastal Law* 177 (2004); S. Rosenne, *Provisional Measures in International Law: The International Court of Justice and the International Tribunal for the Law of the Sea* (2005); M. Doelle, 'Climate Change and the Use of the Dispute Settlement Regime of the Law of the Sea Convention', 37 *Ocean Development and International Law* 319 (2006); N. Klein, 'Litigation Over Marine Resources: Lessons for Law of the Sea, International Dispute Settlement and International Environmental Law', *Australian Yearbook of International Law* 131 (2009).

³²⁹ 1982 UNCLOS, Art. 287(1). ³³⁰ Art. 287(3) and (5).

certain UNCLOS provisions, including internationally lawful uses of the exclusive economic zone (EEZ) or specified international rules and standards for the protection and preservation of the marine environment which are applicable to that state and which are established under UNCLOS or by a competent international organisation or diplomatic conference.³³¹ Fisheries disputes are subject to the compulsory procedure, except for disputes over the sovereign right of a coastal state regarding the living resources of the EEZ (including the discretionary powers for determining allowable catch, harvesting capacity, the allocation of surpluses and the terms and conditions of its conservation and management laws and regulations).³³² Such disputes may be submitted to the conciliation procedure if it is alleged that the coastal state has manifestly failed to comply with its obligations to maintain the living resources in the EEZ.³³³ Parties may also optionally declare that the compulsory procedures do not apply to disputes concerning boundary delimitations, military activities, and those in respect of which the Security Council is exercising its functions.³³⁴

Disputes relating to the exploration and exploitation of the international seabed and ocean floor (known as the 'Area') and its resources are subject to special, and rather complex, dispute settlement procedures, which will generally involve disputes going to the Seabed Disputes Chamber of ITLOS.³³⁵ The Seabed Disputes Chamber has jurisdiction over a wide range of disputes, including environmental disputes involving those engaged in activities in the Area (states parties, the International Seabed Authority, state enterprises, legal or natural persons, and prospective contractors).³³⁶

The jurisdiction of ITLOS may also be invoked in certain circumstances where the parties to UNCLOS have not designated its use. Article 290(5) of the Convention provides that ITLOS may prescribe provisional measures pending the constitution of an arbitral tribunal to which a dispute is submitted. This provision has been invoked on several occasions: in 1998, Australia and New Zealand requested – and obtained – provisional measures from ITLOS in respect of fishing for southern bluefin tuna by Japanese vessels;³³⁷ in 2001, ITLOS prescribed a provisional measure requiring Ireland and the United Kingdom to co-operate pending the constitution of the Annex VI arbitral tribunal;³³⁸ and, in 2003, ITLOS prescribed provisional measures requiring co-operation between Malaysia and Singapore on the effects of a land reclamation project, and directed Singapore 'not to conduct its land reclamation in ways that might cause irreparable prejudice to the rights of Malaysia or serious harm to the marine environment'.³³⁹ In the *M/V Louisa* case, where Saint Vincent and the Grenadines contended that there was 'a definite threat to the environment by leaving [the] ship docked . . . for any significant additional time', ITLOS declined to order provisional measures.³⁴⁰

ITLOS also has jurisdiction pursuant to Article 292 of UNCLOS to order the 'prompt' release of vessels apprehended by a coastal state, and has given judgment on the merits in several cases involving vessels alleged to have been engaged in illegal fishing activities. In addressing these

³³¹ Art. 297(1). ³³² Art. 297(3)(a). ³³³ Art. 297(3)(b)(i).

³³⁴ Art. 298. ³³⁵ Arts. 186–191, and Annex VI, Arts. 35–40.

³³⁶ Art. 187. Certain disputes, at the request of the relevant parties, may be submitted to the International Tribunal for the Law of the Sea, to an *ad hoc* chamber of the Seabed Disputes Chamber, or to commercial arbitration under UNCITRAL rules: *ibid.*, Art. 188.

³³⁷ Chapter 9, pp. 420–1, below. ³³⁸ Chapter 9, p. 316, below.

³³⁹ ITLOS, Order of 8 October 2003; see Chapter 6, p. 205, below.

³⁴⁰ *M/V Louisa* case (*Saint Vincent and the Grenadines v. Spain*), Order of 23 December 2010, paras. 73–6.

cases, ITLOS has sought to avoid expressing views on the underlying merits of the case, although in one case – between Russia and Australia involving the Volga – its judgment expressed understanding as to ‘international concerns about illegal, unregulated and unreported fishing’ and appreciation as to the objectives ‘behind the measures taken by states, including the states parties to CCAMLR, to deal with the problem’.³⁴¹

Finally, ITLOS also has the possibility of issuing advisory opinions. In 2011, the Seabed Disputes Chamber rendered an opinion on *Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area*, at the request of the International Seabed Authority. This advisory opinion addressed a number of important international environmental issues, including procedural and substantive obligations, and issues of liability.³⁴² Moreover, by Article 138 of its Rules of Procedure, ITLOS has accorded to itself the ability to give an advisory opinion ‘on a legal question if an international agreement related to the purposes of the Convention specifically provides for the submission to the Tribunal of a request for such an opinion’. This route, which has not yet been utilised, appears to provide a means for ITLOS to render advisory opinions on environmental and other matters, beyond the limited possibility set out in UNCLOS in relation to the International Seabed Authority.

WTO Dispute Settlement Body³⁴³

The 1994 WTO Agreement introduced as an Annex the ‘Understanding on Rules and Procedures Governing the Settlement of Disputes’ (DSU). The DSU is intended to prevent and resolve disputes arising under the WTO Agreement and related instruments. It replaced the arrangements that had emerged in the context of the GATT, principally a system of panels with the power to make non-binding recommendations. Under the prior system, the adoption of panel recommendations could be blocked by any single contracting party. One of the principal innovations of the new WTO system is that panel decisions (as well as those of the standing Appellate Body) will be adopted and become legally binding unless there is a consensus to the contrary. The new WTO system therefore constitutes a system of compulsory third party adjudication with binding effects for its members. In this sense, it has potentially the most far-reaching and important jurisdiction of any of the global judicial bodies. Its past nearly two decades of operation suggest that, despite having a focus on trade-related issues, it exercises a significant influence over the development of international environmental law.

³⁴¹ Judgment of 22 December 2002, para. 68. See also the *Camouco* case (*Panama v. France*), Judgment, 7 February 2000; the *Monte Cafourco* case (*Seychelles v. France*), Judgment, 18 December 2000; and the *Grand Prince* case (*Belize v. France*), Judgment, 20 April 2001.

³⁴² Chapter 9, pp. 388–9, below.

³⁴³ E. Petersmann, ‘International Trade Law and International Environmental Law – Prevention and Settlement of International Disputes in GATT’, 27 *Journal of World Trade* 43 (1993); A. Lowenfeld, ‘Remedies Along with Rights: Institutional Reform in the New GATT’, 88 *American Journal of International Law* 477 (1994); John H. Jackson, *The World Trading System: Law and Policy of International Economic Relations* (1997, 2nd edn); J. Cameron and K. Campbell (eds.), *Dispute Resolution in the World Trade Organization* (1998); M. Harris, ‘Beyond Doha: Clarifying the Role of the WTO in Determining Trade–Environment Disputes’, *Law in Context* 307 (2004); P. C. Mavroidis and A. O. Sykes (eds.), *The WTO and International Trade Law Dispute Settlement* (2005); N. Bernasconi-Osterwalder, *Environment and Trade: A Guide to WTO Jurisprudence* (2006).

The DSU established a dispute settlement system consisting of three bodies – the Dispute Settlement Body (DSB), *ad hoc* panels and the Appellate Body – all based in Geneva. The DSB is a political body, comprising representatives of all WTO members. It administers the dispute settlement process. The WTO system establishes a detailed ‘road map’ for intergovernmental dispute settlement, characterised by its speed and relative procedural clarity. In the event of a dispute between members of the WTO over their respective trade-related obligations, one party may request the other to enter into consultations and notify the DSB of this request. If the consultations fail, each party may propose that other traditional dispute settlement procedures (good offices, conciliation or mediation) be employed, with the possible assistance of the WTO Director General. If this fails to settle the dispute, the DSB may be asked to establish an *ad hoc* panel. Once established, a panel will conduct hearings and issue a non-binding report on the merits of the case. The recommendations of a panel become binding only after they have been adopted by the DSB (adoption is automatic, unless there is a consensus against it in the DSB). Unlike the old GATT system, the panel report may be appealed on legal grounds to a permanent seven-member Appellate Body. The appeal is heard before a three-judge division of the Appellate Body, which may uphold, modify or reverse the legal findings of the panel. The report of the Appellate Body is then adopted by the DSB and given binding force, unless the DSB unanimously decides otherwise.

The WTO dispute settlement system is governed principally by Articles III and IV of the WTO Agreement and the DSU. Working Procedures have been adopted for panel and Appellate Body proceedings,³⁴⁴ as have Rules of Conduct.³⁴⁵ The substantive law to be applied by the panels and the Appellate Body is to be found in the 1994 WTO Agreement,³⁴⁶ and in the various multilateral and plurilateral side-agreements to the GATT (including the Multilateral Agreement on Trade in Services, the General Agreement on Trade in Services, the Sanitary and Phytosanitary Measures Agreement, the Agreement on Technical Barriers to Trade, and the Agreement on Trade-Related Aspects of Intellectual Property Rights).³⁴⁷ In its first decision, the Appellate Body stated that these trade rules were ‘not to be read in clinical isolation from public international law’.³⁴⁸ It has subsequently referred to – and applied – principles and rules of international environmental law in the *Beef Hormones* case (precautionary principle), the *Shrimp/Turtle* case (including sustainable developments, fisheries conventions, the 1973 CITES, the 1992 Biodiversity Convention and the 1982 UNCLOS), and the *Asbestos* case.³⁴⁹ In other important cases, panel decisions have not been appealed, most notably in relation to 2006 panel decisions that found violations of the WTO’s Sanitary and Phytosanitary Measures Agreement in the *EU – Biotech* case on genetically modified organisms.³⁵⁰

³⁴⁴ Working Procedures for Appellate Review (consolidated), WTO Doc. WT/AB/WP/6, 16 August 2010. The Working Procedures have been amended six times since 1995.

³⁴⁵ Rules of Conduct for the Understanding on Rules and Procedures Governing the Settlement of Disputes, WTO Doc. WT/DSB/RdC/1, 11 December 1996.

³⁴⁶ General Agreement on Tariffs and Trade, Geneva, 30 October 1947, as revised on 15 April 1994, 33 ILM 28 (1994).

³⁴⁷ DSU, Appendix 1.

³⁴⁸ Case AB-1996-1, *US – Standards for Reformulated and Conventional Gasoline*, Report of the Appellate Body, 29 April 1996, at 18, WTO Doc. WT/DS2/9.

³⁴⁹ Chapter 19, pp. 832–8; 818–24 and 824–8 below, respectively. ³⁵⁰ Chapter 19, pp. 844–7, below.

European Court of Justice and Court of First Instance³⁵¹

The European Court of Justice is the judicial institution of the European Union, and is required to ensure that, in the interpretation and application of the EU Treaties, 'the law is observed'.³⁵² Environmental cases brought before the ECJ may raise issues concerning the interpretation and application of international environmental law, in addition to relevant rules of EU law.³⁵³ Environmental cases reach the ECJ in a number of ways. The most frequent route is under Article 258 (formerly Article 226) of the EU Treaty,³⁵⁴ and since 1980 the European Commission has brought hundreds of cases to the ECJ alleging the failure of a member state to comply with its environmental obligations, most of which have been successful. In 2004, the ECJ ruled for the first time that it had jurisdiction to entertain a claim brought by the European Commission alleging that a member state had violated a multilateral environmental agreement to which the EU and its member states were party: the ECJ ruled that France had failed to provide adequate protections to the Etang de Berre (an area of sea west of Marseille) and had violated Articles 4 and 8 of the 1976 Barcelona Convention.³⁵⁵ This opened the door to a singularly important judgment, in which the Commission obtained a ruling that Ireland had, by instituting proceedings against the UK under UNCLOS in respect of the MOX plant, violated EU law. As the EU was party to UNCLOS, the ECJ ruled that the UNCLOS provisions on the prevention of marine pollution relied on by Ireland 'clearly cover a significant part of the dispute relating to the MOX plant' and 'come within the scope of Community competence which the Community has elected to exercise by becoming a party to the Convention'. Accordingly, it held that the relevant UNCLOS provisions were 'rules which form part of the Community legal order', and that the dispute was thus one 'concerning the interpretation or application of the EC Treaty, within the terms of Article 292 EC'. On this basis, the ECJ found that Ireland had violated its obligation to respect the ECJ's exclusive competence.³⁵⁶ The case appears to lead to the conclusion that, henceforth, any claim by a third State against an EU Member State alleging the breach of a multilateral environmental agreement to which the EU is also a party, and in respect of which it has competence, should be brought against the EU and not just the member state.

Under Article 263 (formerly Article 230) of the EU Treaty, the ECJ may review the legality of certain acts of the Council, Commission, Parliament and European Central Bank on the grounds

³⁵¹ Only a brief discussion of the role of the ECJ is undertaken here. For further information, see the second edition of this book, especially Chapter 15. The enforcement of EU environmental law by the ECJ is the topic of a dedicated literature: see N. Brown and F. Jacobs, *The Court of Justice of the European Communities* (1989); H. G. Schermers and D. Waelbroeck, *Judicial Protection in the European Communities* (1992); K. P. E. Lasok, *The European Court of Justice – Practice and Procedure* (1994, 2nd edn; 3rd edn forthcoming); D. Anderson, *References to the European Court* (1995); N. March Hunnings, *The European Courts* (1996); R. Macrory, 'The Enforcement of Community Environmental Laws: Some Critical Issues', 29 *Common Market Law Review* 347 (1992); P. Sands, 'European Community Environmental Law: Legislation, the European Court of Justice and Common Interest Groups', 53 *Modern Law Review* 685 (1990); P. Sands, 'The European Court of Justice: An Environmental Tribunal?', in H. Somsen (ed.), *Enforcing EC Environmental Law: The National Dimension* (1996), 23–35; R. Macrory, *Regulation, Enforcement and Governance in Environmental Law* (2010).

³⁵² EU Treaty, Art. 19 (formerly Art. 220). The ECJ also has competence in relation to the interpretation and application of the 1950 ECSC and 1957 Euratom Treaties.

³⁵³ A full discussion of EU environmental law is not included in this edition, given the exponential growth of this body of law. See further, the second edition of this book, Chapter 15, and note 143 above.

³⁵⁴ Under Art. 259 (formerly Art. 227) of the EU Treaty, a member state that believes another member state has breached its obligations has a similar right to bring a matter before the ECJ.

³⁵⁵ Case C-239/03, *Commission v. France* [2004] ECR I-9325.

³⁵⁶ Case C-459/03, *Commission v. Ireland* [2006] ECR I-4635, paras. 149–51.

of lack of competence, infringement of an essential procedural requirement, infringement of the EU Treaties or any rule relating to its application, or misuse of powers. Actions may be brought by a member state or by a Union institution, other than the institution complained against, or by any legal or natural person provided that the act concerned is a decision addressed to that person or is of direct or individual concern to it.³⁵⁷ Under this head, the ECJ has considered the legality of the treaty basis of EU environmental legislation,³⁵⁸ and received applications from environmental groups alleging violations by the European Commission of its legal obligations under the EU Treaties.³⁵⁹ The ECJ also has jurisdiction under Article 265 (formerly Article 232) under conditions similar to those governing Article 263, to challenge the failure of the Union institutions (in particular, the Council or Commission) to act in pursuance of its environmental obligations under the EU Treaties. To date, no environmental case appears to have been brought under this provision.

Finally, the ECJ has also considered environmental questions on the basis of its jurisdiction under Article 267 (formerly Article 234), the 'preliminary reference procedure'. Under this provision, the national courts of the EU member states may refer to the ECJ questions concerning the interpretation of the EU Treaties and the validity and interpretation of acts of the EU institutions, provided that a decision on the question is necessary to enable the national court to give a ruling on the question. Preliminary references from national courts to the ECJ are used when a dispute before the national courts raises a complex question of EU law or where the dispute turns on the EU law point and no appeal lies against the decision of the national court. The preliminary reference procedure has been used on many occasions in relation to environmental matters.

In 1988, the Council, acting under an amendment to the EC Treaty introduced by the 1986 Single European Act, established the Court of First Instance (CFI) with limited jurisdiction (over staff and competition cases and cases arising under the 1957 ECSC Treaty) and a right of appeal on points of law to the ECJ.³⁶⁰ In 1993, following amendments to the EC Treaty made by the 1992 EU Treaty, the competence of the CFI was extended and it may now hear environmental cases brought under, *inter alia*, Articles 263 and 265 of the EU Treaty, although it cannot hear and determine preliminary references requested under Article 267 (formerly Article 234). Appellate review on points of law for the extended jurisdiction remains with the ECJ.³⁶¹

Human rights courts

The human rights courts established under regional human rights conventions³⁶² may also have jurisdiction over environmental matters, although so far only the European Court of

³⁵⁷ EU Treaty, Art. 263 (formerly Art. 230).

³⁵⁸ Case C-300/89, *Commission v. Council* [1991] ECR I-2867 (judgment of 11 June 1991), declaring void Council Directive 89/428/EEC of 21 June 1989 for harmonising the programmes for the reduction and eventual elimination of pollution caused by waste from the titanium dioxide industry, on the ground that the Council adopted the Directive on the basis of the wrong Treaty provision; but see also Case C-155/91, *Commission v. Council* [1993] ECR I-939.

³⁵⁹ See further Chapter 15 of the second edition of this book.

³⁶⁰ EU Treaty, Art. 256 (formerly Art. 225); and Decision 88/591, OJ C251, 21 August 1988, 1.

³⁶¹ Decision 93/350/Euratom, ECSC, EEC, OJ L144, 18 June 1993, 21.

³⁶² The relevant courts are the European Court of Human Rights, the Inter-American Court of Human Rights and the African Court on Human and Peoples' Rights.

Human Rights appears to have addressed such issues in a sustained manner.³⁶³ From 1950 to 1998, the European Convention's machinery consisted of two organs, a Commission and a Court. Following the entry into force in November 1998 of the Eleventh Protocol to the Convention, the Commission was abolished and most of its functions transferred to the Court. As a result, claimants (whether states parties or individuals) now submit applications directly to the Court. The Court provides for traditional inter-state dispute resolution, as well as the rights of recourse by victims of violations. By Article 33, any state party may bring to the Court a case against any other state party that is alleged to have breached the provisions of the Convention or its Protocols. In fact, very few inter-state cases have been brought. Individuals, NGOs and groups of individuals, who claim to have been victims of a human rights violation,³⁶⁴ may also bring a case against the state party that has committed the alleged violation.³⁶⁵ In the past few years, the Court has given far-reaching judgments in relation to Article 8 (privacy) and Article 1 of the First Protocol (property rights), subject areas that have also been addressed by the Inter-American Commission or Court of Human Rights, and that are likely to be addressed in the future by the African Court on Human and Peoples' Rights.

CONCLUSIONS

Whereas the 1972 Stockholm Conference did not really address the compliance issue, the subject was more central at UNCED. Principles 10 and 26 of the Rio Declaration called on states to provide, at the national level, 'effective access to judicial and administrative proceedings, including redress and remedy', and internationally to 'resolve all their environmental disputes peacefully and by appropriate means and in accordance with the Charter of the United Nations'. Agenda 21 recognised the limitations of existing arrangements, including the inadequate implementation by parties of their obligations, the need to involve international institutions and environmental organisations in the implementation process, and the gaps in dispute settlement mechanisms. It called upon parties to international agreements to 'consider procedures and mechanisms to promote and review their effective, full and prompt implementation', and on the international community more broadly to consider broadening and strengthening the capacity of mechanisms in the UN system to identify, avoid and settle international disputes in the field of sustainable development, taking into account existing bilateral and multilateral agreements for the settlement of such disputes.³⁶⁶ As this chapter shows, the increased attention given to compliance in the ensuing two decades has generated new measures in the environmental field, to supplement those measures available under general international law. Of particular note in this regard is the proliferation of non-compliance procedures under a number of multilateral environmental treaties – although states have also shown renewed interest in recourse to more traditional forms of dispute settlement for environmental disputes, such as arbitration proceedings. By contrast, the decision by the ICJ to

³⁶³ Chapter 18, pp. 382–5, below.

³⁶⁴ The European Court and Commission of Human Rights have construed the term 'victim' narrowly. The Court has held that an individual cannot bring an *actio popularis* against a law *in abstracto*: *Klass v. Germany*, 2 EHRR 214 (1978). In addition, the Commission declined on several occasions to regard organisations, bringing complaints on behalf of their members, specific persons or the general public, as 'victims' under the Convention. See e.g. *Church of X v. UK*, App. No. 3798/68, 12 *Yearbook of the European Convention on Human Rights* 306 (1969).

³⁶⁵ ECHR, Art. 34. ³⁶⁶ Agenda 21, Chapter 39, para. 39.3(h).

establish a Chamber for Environmental Matters has ultimately proved to be unsuccessful, and the Chamber has not been constituted since 2006. This reflects the reality that two states are usually not likely to agree that a dispute between them has an essentially environmental character: an environmental dispute for one state may be a dispute on the law of treaties or state responsibility for the other, which will not wish to make a concession by characterising a dispute as environmental. It is also for this reason that states are unlikely to agree, in the foreseeable future, on the establishment of an international environmental court.

The limitations inherent in international arrangements for ensuring compliance with international environmental obligations are well apparent, and developments in international law alone will not be sufficient to overcome the political, economic and social reasons lying behind non-compliance. Nevertheless, the law, processes and institutions can make a difference, and recent developments suggest that changes in the importance attached by the international community to compliance reflect the changing structure of the traditional international legal order. Important developments within the past two decades include the broadening and strengthening of non-compliance mechanisms under various multilateral environmental agreements, the Permanent Court of Arbitration's rules on arbitration of environmental disputes, the 'environmental justice' provisions of the 1998 Aarhus Convention, and a significant body of environmental jurisprudence at the ICJ, ITLOS and the WTO Appellate Body.

Addressing compliance requires a comprehensive effort to develop rules and institutional arrangements at three levels: implementation, enforcement and dispute settlement. First, with regard to implementation, the provision of technical, financial and other assistance to states, particularly developing states, highlights the growing 'internationalisation' of the domestic implementation and legal process, and an awareness that international environmental law will not achieve its objectives if it does not also take account of the need, and techniques available, for improving domestic implementation of international environmental obligations.

Second, with regard to enforcement, states have often been unwilling, for a variety of reasons, to bring international claims to enforce environmental rights and obligations. Within the past decade, however, it appears that this reluctance is being replaced by an increasing willingness by states to have resort to international adjudicatory mechanisms to enforce international environmental obligations, and important decisions have been handed down by the ICJ, ITLOS, arbitral tribunals and the WTO Appellate Body. Nevertheless, the role of states can be reinforced by the supplementary role of international organisations and, to a lesser extent, non-state actors in the international enforcement process. Broadening the category of persons formally entitled to identify violations and to take measures to remedy them is a process that is underway and which should be further encouraged if states and other members of the international community are to be subjected to the sorts of pressure that will lead them to improve compliance with their obligations.

Third, as the disputes before various international courts have shown, the availability of a broad and growing range of mechanisms for dispute settlement, including the compulsory jurisdiction of certain regional and sectoral courts and other international bodies, suggests an important and growing role for independent, international adjudication. This does not mean that the existing arrangements may be said to be adequate: states increasingly have a choice of international fora before which to take an environmental dispute, and the factors they will take into account in electing to take a case before one international court or tribunal, rather than another, will include the likely costs, the speed of the proceedings, and the possible

outcome, as well as the ability of a particular court or tribunal to engage with scientific and technical issues of some complexity. As the *Pulp Mills* judgment of the ICJ made clear, issues such as the treatment of expert evidence,³⁶⁷ and the possible use of court-appointed experts, are giving rise to a range of views.³⁶⁸ There is thus considerable potential for states to engage in 'forum-shopping' in their selection of dispute settlement fora, a phenomenon which may contribute to fragmentation in the interpretation and application of principles of international environmental law.³⁶⁹

³⁶⁷ *Pulp Mills* case, Chapter 8, pp. 330–3, below, paras. 165–8, at para. 167 ('Regarding those experts who appeared before it as counsel at the hearings, the Court would have found it more useful had they been presented by the Parties as expert witnesses under Articles 57 and 64 of the Rules of Court, instead of being included as counsel in their respective delegations. The Court indeed considers that those persons who provide evidence before the Court based on their scientific or technical knowledge and on their personal experience should testify before the Court as experts, witnesses or in some cases in both capacities, rather than counsel, so that they may be submitted to questioning by the other party as well as by the Court.').

³⁶⁸ *Ibid.* Joint Dissenting Opinion of Judges Al-Khasawneh and Simma, paras. 2–25 (especially para. 14); also P. Sands, 'Water and International Law: Science and Evidence in International Litigation', 22 *Environmental Law and Management* 15 (2010).

³⁶⁹ For a range of views on the issue of fragmentation in international law, see P.-M. Dupuy, 'The Danger of Fragmentation or Unification of the International Legal System and the International Court of Justice', 31 *New York University Journal of International Law and Politics* 791 (1999); Martti Koskenniemi and Päivi Leino, 'Fragmentation of International Law? Postmodern Anxieties', 15 *Leiden Journal of International Law* 552 (2002); Gerhard Hafner, 'Pros and Cons Ensuing from Fragmentation of International Law', 25 *Michigan Journal of International Law* 849 (2004); Pemmaraju Rao, 'Multiple International Judicial Forums: A Reflection of the Growing Strength of International Law or Its Fragmentation?', 25 *Michigan Journal of International Law* 929 (2004); and Bruno Simma, 'Fragmentation in a Positive Light', 25 *Michigan Journal of International Law* 845 (2004). See also the ILC's report on the issue: Martti Koskenniemi, 'Fragmentation of International Law: Difficulties Arising from the Diversification and Expansion of International Law' (A/CN.4/L.682, International Law Commission, 2006).

PART II

Principles and rules establishing standards

6

General principles and rules

INTRODUCTION

This chapter describes the general principles and rules of international environmental law as reflected in treaties, binding acts of international organisations, state practice, and soft law commitments.¹ The existence and applicability of ‘principles of international environmental law’ were confirmed by the arbitral tribunal in the *Iron Rhine* case.² Such principles are general in the sense that they are potentially applicable to all members of the international community across the range of activities that they carry out or authorise and in respect of the protection of all aspects of the environment. From the large body of international agreements and other acts it is possible to discern general rules and principles that have broad, if not necessarily universal, support and are frequently endorsed in practice. These are:

- (1) the obligation reflected in Principle 21 of the Stockholm Declaration and Principle 2 of the Rio Declaration, namely, that states have sovereignty over their natural resources and the responsibility not to cause transboundary environmental damage;
- (2) the principle of preventive action;
- (3) the principle of co-operation;
- (4) the principle of sustainable development;
- (5) the precautionary principle;
- (6) the polluter pays principle; and
- (7) the principle of common but differentiated responsibility.

In the absence of clear judicial authority, and in view of the conflicting interpretations under state practice, it is frequently difficult to establish the parameters or the precise international legal status of each general principle or rule. The application of each principle in relation to a particular activity or incident, and its consequences, must be considered on the facts and

¹ See also D. Hunter, J. Salzman and D. Zaelke, *International Environmental Law and Policy* (2011, 4th edn), Chapter 8; D. Bodansky, J. Brunnée and E. Hey (eds.), *The Oxford Handbook of International Environmental Law* (2007), Chapters 22–30; D. Bodansky, *The Art and Craft of International Environmental Law* (2010), Chapters 5 and 9; M. Fitzmaurice, D. M. Ong and P. Merkouris (eds.), *Research Handbook on International Environmental Law* (2010), Part III; and P. Birnie, A. Boyle and C. Redgwell, *International Law and the Environment* (2009, 3rd edn), Chapter 3.

² *Belgium/Netherlands (Iron Rhine)* arbitration, Award of 24 May 2005, Permanent Court of Arbitration Award Series, *The Iron Rhine (IJzeren Rijn)* arbitration (*Belgium–Netherlands*) Award of 2005 (2007) (the ‘*Iron Rhine* case’), para. 223.

circumstances of each case, having regard to several factors, including: the source of the principle; its textual content and language; the particular activity at issue; the environmental and other consequences of the activity; and the circumstances in which it occurs (including the actors and the geographical region). Some general principles or rules reflect customary law, others may reflect emerging legal obligations, and yet others might have a less developed legal status. In each case, however, the principle or rule has broad support and is reflected in extensive state practice through repetitive use or reference in an international legal context.

Of these general principles and rules, Principle 21/Principle 2, the prevention and co-operation principles, are sufficiently well established to provide the basis for an international cause of action; that is to say, to reflect an international customary legal obligation the violation of which would give rise to a free-standing legal remedy. The same may be said generally in respect of the precautionary principle in the European context, and perhaps also more globally in respect of particular activities or subject areas. The status and effect of the other principles are less clear, although they may bind as treaty obligations or, in particular contexts, as customary obligations. Whether they give rise to actionable obligations of a general nature is open to question. Finally, the principles and rules described in this chapter should be distinguished from the general principles described in Chapter 4,³ as well as the substantive rules establishing environmental standards (i.e. air and water quality, conservation of biodiversity) and rules establishing techniques for implementing those standards (i.e. environmental impact assessment, participation in decision-making, access to information, economic instruments).

Principles and rules

References to principles and rules of general application have long been found in the preambles to treaties and other international acts, and in the jurisprudence of international courts and tribunals. More recently, however, principles of general or specific application have been incorporated into the operative part of some treaties. Article 3 of the 1992 Climate Change Convention lists 'Principles' intended to guide the parties '[i]n their actions to achieve the objective of the Convention and to implement its provisions'. Article 3 of the 1992 Biodiversity Convention introduces the text of Principle 21 of the Stockholm Declaration as the sole 'Principle'. Other treaties follow a similar approach.⁴

What consequences flow from the characterisation of a legal obligation as a legal principle or a legal rule? This question has hardly been addressed in detail by international courts and tribunals, although it was referred to by the arbitral tribunal in the *Iron Rhine* case, noting that there was

considerable debate as to what, within the field of environmental law, constitutes 'rules' or 'principles'; what is 'soft law'; and which environmental treaty law or principles have contributed to the development of customary international law.⁵

³ See Chapter 4, pp. 117–19, above.

⁴ See e.g. 1992 OSPAR Convention, Art. 2 (General obligations); 1992 Baltic Convention, Art. 3 (Fundamental principles and obligations); 1992 Watercourses Convention, Art. 2 (General provisions); 1992 Industrial Accidents Convention, Art. 3 (General provisions); 2002 ASEAN Transboundary Haze Pollution Agreement, Art. 3 (Principles); 2003 Carpathian Convention, Art. 2; 2009 Southern Ocean Fisheries Resources Convention, Art. 3 (Conservation and Management Principles and Approaches).

⁵ *Iron Rhine* case, para. 58.

The umpire in the *Gentini* case, in 1903, adopted the following distinction, which may provide some guidance about the legal effect of principles and their relationship to rules:

A 'rule' 'is essentially practical and, moreover, binding . . . [T]here are rules of art as there are rules of government' while principle 'expresses a general truth, which guides our action, serves as a theoretical basis for the various acts of our life, and the application of which to reality produces a given consequence'.⁶

In this sense, positive rules of law may be treated as the 'practical formulation of the principles', and the 'application of the principle to the infinitely varying circumstances of practical life aims at bringing about substantive justice in every case'.⁷ This view suggests that principles and rules

point to particular decisions about legal obligations in particular circumstances, but they differ in the character of the direction they give. Rules are applicable in an all-or-nothing fashion . . . [A principle] states a reason that argues in one direction, but does not necessitate a particular decision . . . All that is meant, when we say that a particular principle is a principle of our law, is that the principle is one which officials must take into account, if it is relevant, as a consideration inclining in one way or another.⁸

This distinction finds some support in the practice of international courts,⁹ and allows the conclusion that principles 'embody legal standards, but the standards they contain are more general than commitments and do not specify particular actions', unlike rules.¹⁰ The fact that legal principles, like rules, can have international legal consequences has focused attention on their content while being elaborated in treaties. The negotiations of the 1992 Climate Change Convention reflected differing views on the need to adopt a section on 'Principles' at all: generally, developing countries supported the inclusion of principles, whereas developed countries opposed them. The US and some other 'common law' delegations were concerned that the requirements included in Article 3 might be subject to the Convention's dispute settlement provisions or create specific commitments beyond those set out in Article 4 and elsewhere. Although the US failed in its efforts to have the whole of Article 3 deleted, or for the text to be amended to make clear that Article 3 could not be subject to the dispute settlement provisions, the US amendments were accepted to limit the application of principles to informing obligations under the Convention. A similar concern to limit the scope of application of a principle was reflected by the UK declaration made upon signature of the 1992 Biodiversity Convention, declaring the understanding that 'Article 3 of the Convention . . . sets out a guiding

⁶ *Gentini* case (*Italy v. Venezuela*) 10 RIAA 551, in J. H. Ralston and W. T. S. Doyle, *Venezuelan Arbitrations of 1903 Etc.* (1904), 720, 725, cited in B. Cheng, *General Principles of Law as Applied by International Courts and Tribunals* (1953), 376.

⁷ *Ibid.*, 376. ⁸ R. Dworkin, *Taking Rights Seriously* (1977), 24, 26.

⁹ Case C-2/90, *Commission v. Belgium* [1993] 1 CMLR 365, where the ECJ relied on the principles of self-sufficiency and proximity (in the Basel Convention) to help it justify a conclusion: *ibid.*, paras. 34–5.

¹⁰ D. Bodansky, 'The United Nations Framework Convention on Climate Change: A Commentary', 18 *Yale Journal of International Law* 451 at 501 (1993).

principle to be taken into account in the implementation of the Convention', implying that no legal consequences arose outside the Convention, and that within the Convention Article 3 did not give rise to a rule in the sense proposed by the umpire in the *Gentini* case. It is far from clear, however, that the plain meaning of Article 3 supports the UK's understanding, especially when the text is compared to Article 3 of the Climate Change Convention, and in particular the introductory 'chapeau' which seeks to limit the effect of the principles identified thereunder.

The international community has not adopted a binding international instrument of global application that purports to set out the general rights and obligations of the international community on environmental matters. No equivalent to the Universal Declaration of Human Rights, the International Covenant on Civil and Political Rights or the International Covenant on Economic, Social and Cultural Rights has yet been adopted, and none appears imminent. Any effort to identify general principles and rules of international environmental law must necessarily be based on a considered assessment of state practice, including the adoption and implementation of treaties and other international legal acts, as well as the growing number of decisions of international courts and tribunals.¹¹ The efforts of governmental and non-governmental lawyers in assessing the evidence which supports the existence of principles and rules has provided some guidance, and has influenced subsequent international law-making. The 1978 UNEP Draft Principles and the 1986 WCED Legal Principles supplemented the 1972 Stockholm Declaration and influenced the 1992 Rio Declaration, which continues to reflect 'to the extent any international instrument can do so, the current consensus of values and priorities in environment and development'.¹² Since UNCED, further guidance may be obtained from the International Law Commission's draft Articles on Prevention of Transboundary Harm from Hazardous Activities (2001)¹³ and the International Law Association's New Delhi Declaration of Principles of International Law Relating to Sustainable Development (2002).¹⁴

SOVEREIGNTY OVER NATURAL RESOURCES AND THE RESPONSIBILITY NOT TO CAUSE DAMAGE TO THE ENVIRONMENT OF OTHER STATES OR TO AREAS BEYOND NATIONAL JURISDICTION¹⁵

The rules of international environmental law have developed within the context of two fundamental objectives pulling in opposing directions: that states have sovereign rights over

¹¹ On sources of state practice, see Chapter 4, pp. 112–14, above.

¹² I. Porras, 'The Rio Declaration: A New Basis for International Co-operation', 1 *Review of European Community and International Environmental Law* 245 (1992).

¹³ ILC, Draft Articles on Prevention of Transboundary Harm from Hazardous Activities, 'Report of the International Law Commission on the Work of Its Fifty-Third Session', *Yearbook of the International Law Commission* (2001-II), Part 2, 148.

¹⁴ Rather less assistance is to be derived from the Institut de Droit Internationale's Resolution on the Environment (1997), www.idi-ii.org/idiE/resolutions/E1997_str_02_en.pdf; see P. Sands, 'The New "Architecture of International Environmental Law" (or "The Law Professor and the Strange Case of the Missing Green Glasses")', RBDI 512 (1997). See also the IUCN Covenant on Environment and Development (2010, 4th edn).

¹⁵ B. Bramsen, 'Transnational Pollution and International Law', 42 *Nordisk tidsskrift for International Ret* 153 (1972); L. K. Caldwell, 'Concepts in Development of International Environmental Policies', 13 *Natural Resources Journal* 190 (1973); G. Handl, 'Territorial Sovereignty and the Problem of Transnational Pollution', 69 *American Journal of International Law* 50 (1975); A. L. Springer, *The International Law of Pollution: Protecting the Global Environment in a World of Sovereign States* (1983); World Commission on Environment and Development, *Our Common Future* (1987); R. D. Munro and J. Lammers, *Environmental Protection and Sustainable Development: Legal Principles and*

their natural resources; and that states must not cause damage to the environment. These objectives are set out in Principle 21 of the Stockholm Declaration, which provides that:

States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction.

Principle 21 remains the cornerstone of international environmental law; twenty years after its adoption, states negotiating the Rio Declaration were unable to improve significantly upon, develop, scale back or otherwise alter the language in adopting Principle 2. At UNCED, two words were added to recognise that states have the right to pursue ‘their own environmental *and developmental* policies’. Principle 21 and Principle 2 each comprise two elements which cannot be separated without fundamentally changing their sense and effect: the sovereign right of states to exploit their own natural resources; and the responsibility, or obligation, not to cause damage to the environment of other states or of areas beyond the limits of national jurisdiction. Taken together (state practice since 1972 has assiduously avoided their decoupling), they establish the basic obligation underlying international environmental law and the source of its further elaboration in rules of greater specificity. That Principle 21 reflects customary law was confirmed by the ICJ’s 1996 Advisory Opinion on *The Legality of the Threat or Use of Nuclear Weapons*.

Sovereign rights over natural resources

The principle of state sovereignty allows states within limits established by international law to conduct or authorise such activities as they choose within their territories, including activities that may have adverse effects on their own environment. This fundamental principle underlies the first part of Principle 21/Principle 2. The extension of the sovereignty principle into environmental affairs pre-dates the Stockholm Declaration and is rooted in the principle of permanent sovereignty over natural resources as formulated in various resolutions of the UN General Assembly adopted from time to time after 1952.¹⁶ These resolutions were closely related to arrangements between states and foreign private companies for the exploitation of natural resources, particularly oil and minerals, in developing countries. They addressed the need to balance the rights of the sovereign state over its resources with the desire of foreign companies to ensure legal certainty in the stability of investments.¹⁷ A landmark resolution was

Recommendations (1987); Shimizu, ‘Legal Principles and Recommendations on Environmental Protection and Sustainable Development’, 14 *Nippon Seikyo Kenkyusho-Kiyo* 13 (1990); N. Schrijver, *Sovereignty Over Natural Resources* (1997); F. Perrez, *Co-operative Sovereignty: From Independence to Interdependence in International Environmental Law* (2000); R. Bratspies and R. Miller, *Transboundary Harm in International Law: Lessons from the Trail Smelter Arbitration* (2006); A. Akhtarkhavari, *Global Governance of the Environment: Environmental Principles and Change in International Law and Politics* (2010).

¹⁶ See e.g. UNGA Res. 523 (VI) (1950); Res. 626 (VII) (1952); Res. 837 (IX) (1954); Res. 1314 (XIII) (1958); Res. 1515 (XV) (1960).

¹⁷ See Chapter 20 below.

adopted by the UN General Assembly in 1962, when it resolved that the 'rights of peoples and nations to permanent sovereignty over their natural wealth and resources must be exercised in the interest of their national development of the well-being of the people of the state concerned'.¹⁸ The resolution reflects the right to permanent sovereignty over national resources as an international legal right, and has been accepted by some international tribunals as reflecting customary international law.¹⁹

By the 1970s, limits to the application of the principle of state sovereignty over natural resources were emerging as the international community recognised a need to co-operate to protect the environment. In 1972, before the Stockholm Conference, the UN General Assembly declared that 'each country has the right to formulate, in accordance with its own particular situation and in full enjoyment of its national sovereignty, its own national policies on the human environment'.²⁰ The relationship between permanent sovereignty over natural resources and responsibilities for the environment was formally recognised by Principle 21.

The importance placed by states on the principle of permanent sovereignty over natural resources is also reflected by its frequent invocation, in various forms, in international environmental agreements and during their negotiation. The 1933 London Convention affirmed that all animal trophies were 'the property of the Government of the territory concerned'.²¹ The 1971 Ramsar Convention emphasised that the inclusion of national wetland sites in its List of Wetlands did 'not prejudice the exclusive sovereign rights of . . . the party in whose territory the wetland is situated'.²² The 1983 International Tropical Timber Agreement recalled 'the sovereignty of producing members over their natural resources'.²³ More recent treaties also refer to the sovereign rights of states over natural resources in their territory: the Preamble to the 1989 Basel Convention recognised that 'all states have the sovereign right to ban the entry or disposal of foreign hazardous wastes and other wastes in their territory'; the Preamble to the 1992 Climate Change Convention reaffirmed 'the principle of sovereignty of states in international co-operation to address climate change'; and the 1992 Biodiversity Convention more specifically reaffirmed that states have 'sovereign rights . . . over their natural resources', and that 'the authority to determine access to genetic resources rests with the national governments and is subject to national legislation'.²⁴ The 2010 Nagoya Protocol to the Biodiversity Convention, governing access to genetic resources within the territory of states parties, establishes a requirement for prior informed consent of the party providing such resources '[i]n exercise of sovereign rights over natural resources'.²⁵

Sovereignty and extra-territoriality

The sovereign right to exploit natural resources includes the right to be free from external interference over their exploitation. This aspect of Principle 21/Principle 2 is brought into question in disputes over the extra-territorial application of environmental laws of one state to

¹⁸ UNGA Res. 1803 (XVII) (1962).

¹⁹ *Texaco Overseas Petroleum Co. and California Asiatic Oil Co. v. Libya*, 53 ILR 389 (1977), para. 87; *Kuwait v. American Independent Oil Co.*, 21 ILM 976 (1982).

²⁰ UNGA Res. 2849 (XXVI) (1971). ²¹ Art. 9(6). ²² Art. 2(3).

²³ Art. 1. See now 2006 International Tropical Timber Agreement, Preamble, para. (d).

²⁴ Art. 15(1). Cf. the 1983 FAO Undertaking on Plant Genetic Resources and the 1989 Agreed Interpretation, recognising that plant genetic resources are a 'common heritage of mankind': Chapter 10, p. 507, below.

²⁵ Art. 6.

activities taking place in areas beyond its national jurisdiction, either within the jurisdiction of another state or in activities beyond national jurisdiction (this is to be distinguished from the situation identified by the arbitral tribunal in the *Iron Rhine* case, expressing the view that, 'where a state exercises a right under international law within the territory of another state, considerations of environmental protection also apply').²⁶ In 1893, the arbitral tribunal in the *Fur Seal* arbitration rejected a claim by the US to be entitled to protect fur seals in areas beyond the three-mile limit of the territorial sea and the right to interfere in the internal affairs of other states to secure the enjoyment of their share in the 'common property of mankind'.²⁷ Nearly 100 years later, the US banned the import of yellow-fin tuna caught by Mexican vessels, in Mexico's exclusive economic zone and on the high seas, with purse-seine nets the compliance of which with US environmental protection standards could not be proved. This 'extra-jurisdictional' application of US environmental standards was rejected by a GATT panel as being contrary to the GATT, holding that a country 'can effectively control the production or consumption of an exhaustible natural resource only to the extent that the production or consumption is under its jurisdiction' and that to allow the 'extra-jurisdictional' application of its environmental law would allow the US to 'unilaterally determine the conservation policies' of Mexico.²⁸ However, in *Shrimp/Turtle* the WTO Appellate Body took a broader approach, and recognised the existence of a 'sufficient nexus' between migratory and endangered populations of sea-turtles located in Asian waters and the United States to allow the latter to claim an interest in their conservation.²⁹ The traditional and absolute prohibition on extra-territorial (or extra-jurisdictional) application of national environmental laws recognised by the earlier decisions is consistent with the principle of absolute sovereignty over natural resources. Those decisions do not rest easily, however, with a more modern conception of an ecologically interdependent world in which limits are placed on the exercise of sovereignty or sovereign rights, an approach to which the Appellate Body seemed sympathetic.³⁰

In the absence of generally accepted international standards of environmental protection and conservation, states with strict national environmental standards may seek to extend their application to activities carried out in areas beyond their territory, particularly where they believe that such activities cause significant environmental damage to shared resources (such as migratory species, transboundary watercourses, or air quality and the climate system) or affect vital economic interests. For 'shared natural resources' such as the high seas and atmosphere, it will often be difficult, if not impossible, to draw a clear line between natural resources over which a state does and does not have sovereignty or exercise sovereign rights. In such circumstances, it is unlikely that the principle of territorial sovereignty, or permanent sovereignty over natural resources, can provide much assistance in allocating rights and responsibilities of states over environmental policy.

The permissibility of the extra-territorial application of national laws remains an open question in international law. The PCIJ stated that 'the first and foremost restriction imposed

²⁶ *Iron Rhine* case, para. 223. ²⁷ Chapter 9, pp. 399–400, below. ²⁸ Chapter 19, pp. 813–14, below.

²⁹ *Shrimp/Turtle* case, para. 133 (the decision is difficult to square with the Appellate Body's claim that it was not 'pass[ing] upon the question of whether there is an implied jurisdictional limitation in Article XX(g), and, if so, the nature or extent of that limitation'). See further Chapter 19, pp. 818–24, below.

³⁰ See also the Appellate Body's decision in *Brazil - Retreaded Tyres*, which appears to adopt a more permissive approach in evaluating the link between trade measures and complex public health or environmental problems (para. 151); Chapter 19, pp. 827–9, below.

by international law upon a state is that – failing the existence of a permissive rule to the contrary – it may not exercise its power in any form in the territory of another state outside its territory except by virtue of a permissive rule derived from international custom or from a convention'.³¹ However, in the same case, the PCIJ went on to state that 'international law as it stands at present' does not contain 'a general prohibition to states to extend the application of their laws and the jurisdiction of their courts to persons, property and acts outside their territory', and that the territoriality of criminal law was 'not an absolute principle of international law and by no means coincides with territorial sovereignty'.³² Subsequent state practice, as well as decisions of international tribunals, has not determined precisely the circumstances in which a state may take measures over activities outside its territory in relation to the conservation of shared resources. In the *Fisheries Jurisdiction* case, Spain challenged the application and enforcement by Canada of its fisheries conservation legislation in areas beyond its exclusive economic zone, but the ICJ declined jurisdiction, and the case did not reach the merits phase.³³ The right of states to exercise jurisdiction, either by legislation or adjudication, over activities in other states, or in areas beyond national jurisdiction, which are harmful to the environment at the global, regional or local level, could be justified on several grounds. First, corporations carrying on activities abroad might be subject to the environmental laws of their state of registration or incorporation, by application of the 'nationality' principle of jurisdiction. International law does not prevent a state from exercising jurisdiction within its own territory over its nationals (including corporations) who reside in a foreign state, although the power to enforce such laws depends upon the nationals being in the territorial jurisdiction or having assets therein against which judgment can be enforced.³⁴ The application of the 'nationality' principle is likely to cause difficulty, however, since the foreigner abroad might be subject to the concurrent jurisdiction of the home state of registration or incorporation and the host state in which it carries out its activities, with the home state having more stringent rules of environmental protection.³⁵ This may lead to jurisdictional disputes where some states use lower standards of environmental protection perhaps to gain economic advantage and attract foreign investment, and other states apply the nationality principle and require their companies to apply national environmental protection rules wherever they carry out their activities. In such circumstances, it has been suggested that the home state must not require compliance with its laws at the expense of its duty to respect the territorial sovereignty of the host state. When faced with such a conflict, a court would be likely to balance the public policy of the home state, the interests of the host state, and the damage to international comity if it gave precedence to the laws of the home state, and only accord priority to those laws 'where the balance of interest clearly lies in that direction'.³⁶ The factors applied by a court will also need

³¹ *Lotus case (France v. Turkey)*, PCIJ Ser. A No. 10, 19–20. ³² *Ibid.*

³³ Chapter 9, pp. 402–3, below.

³⁴ R. Jennings and A. Watts (eds.), *Oppenheim's International Law* (1992, 9th edn), vol. I, Part 1, 462. In application of this approach, see *Dow Chemical Co. v. Alfaro*, 768 SW 2d 674 at 681 (Texas, 1990), where a Texan court held that Costa Rican farm workers were entitled to bring a claim for injuries caused by a pesticide manufactured in the United States and exported to Costa Rica. On enforcement jurisdiction generally, see Chapter 5, pp. 144–58, 173, above.

³⁵ On this point, see the OECD Guidelines on Multinationals, Chapter 3, p. 90, above.

³⁶ R. Jennings and A. Watts (eds.), *Oppenheim's International Law* (1992, 9th edn), vol. I, Part 1, 464–6, citing, *inter alia*, *Timberlane Lumber Co. v. Bank of America*, 66 ILR 270 (1976–7); *Laker Airways v. Pan American World Airways*, 23 ILM 748 at 751 (1984). See also *Gagarimabu v. Broken Hill Proprietary Co. Ltd* [2001] VSC 517 (21 December 2001).

to be applied by reference to the environment that is being affected or damaged. It would be difficult to justify a home state's taking measures where only the environment of the host state was being damaged. But, if the damage was being caused to the environment of the home state or to areas beyond national jurisdiction (global commons), then the home state might have a stronger basis for asserting jurisdiction extra-territorially.

This latter situation creates a second possible basis for allowing the extra-territorial application of national laws: where activities carried out in one state have, or are likely to have, 'effects' in another state, recourse might be had to the 'objective' application of the territorial principle, otherwise known as the 'effects' doctrine. However, the application of the 'effects' principle is said to have 'doubtful consistency' with international law: the justification for assertions of jurisdiction on the basis of an alleged 'effects' principle of jurisdiction has not been generally accepted, and the matter is still one of controversy.³⁷

The extra-territorial application of national environmental laws has been particularly controversial in relation to trade issues. Principle 12 of the Rio Declaration declares that unilateral actions addressing environmental challenges 'outside the jurisdiction of the importing country should be avoided' and that 'environmental measures should, as far as possible, be based on an international consensus'. The Rio Declaration and Agenda 21 did not, however, prohibit *per se* all unilateral environmental measures,³⁸ an approach which was subsequently endorsed by the WTO Appellate Body (subject to certain conditions being satisfied) and in the WSSD Plan of Implementation.³⁹ The challenge for the international community in coming years will be to determine the circumstances in which, in the absence of international consensus on agreed environmental standards, a state will be permitted, under the general rules of international law and specific WTO rules, to adopt unilateral environmental measures and apply them extra-territorially.⁴⁰ This issue is likely to be particularly critical in the climate change context, given the ongoing uncertainty surrounding future international legal arrangements and indications by some states that they are considering unilateral measures to promote climate change mitigation and the uptake of renewable energy technologies.⁴¹

Responsibility not to cause environmental damage

The second element of Principle 21/Principle 2 reflects the view of states that they are subject to environmental limits in the exercise of their rights under the principle of permanent sovereignty over natural resources.⁴² In the form presented by Principle 21/Principle 2, the responsibility not to cause damage to the environment of other states or of areas beyond national jurisdiction has been accepted as an obligation by all states, without prejudice to its application on a case-by-case basis. Following the ICJ's 1996 Advisory Opinion on *The Legality of the*

³⁷ R. Jennings and A. Watts (eds.), *Oppenheim's International Law* (1992, 9th edn), vol. I, Part 1, 475. That said, the decision in *Shrimp/Turtle* may be seen to be connected to the application of the 'effects' doctrine: see note 29 above.

³⁸ Agenda 21, para. 39.3(d), includes a number of factors applicable to trade-related environmental measures, which may also provide guidance on the permissibility of other extra-territorial environmental measures: see Chapter 19, pp. 806–7, below.

³⁹ WSSD Plan of Implementation, para. 95 (restating the language of the Rio Declaration and Agenda 21).

⁴⁰ On the trade/environment issue, see generally Chapter 19, below.

⁴¹ On trade and climate change measures, see WTO–UNEP, *Trade and Climate Change*, WTO–UNEP Report (2009).

⁴² For an excellent account of the negotiating history of Principle 21, which tends to support this view, see L. Sohn, 'The Stockholm Declaration on the Human Environment', 14 *Harvard International Law Journal* 423 at 485–93 (1972).

Threat or Use of Nuclear Weapons, there can be no question but that Principle 21 reflects a rule of customary international law, placing international legal constraints on the rights of states in respect of activities carried out within their territory or under their jurisdiction.

Saying that Principle 21/Principle 2 reflects customary international law is not, however, decisive, and will be of only partial assistance in support of an international claim. In the context of activity that causes pollution and environmental degradation, Principle 21/Principle 2 indicates the need to address other questions. What is environmental damage? What environmental damage is prohibited (any damage, or just damage which is serious or significant)? What is the standard of care applicable to the obligation (absolute, strict or fault-based)? What are the consequences of a violation (including appropriate reparation)? And what is the extent of any liability (including the measure of damages)? These and related questions are considered in Chapter 17 below.

The responsibility of states not to cause environmental damage in areas outside their jurisdiction pre-dates the Stockholm Conference, and is related to the obligation of all states 'to protect within the territory the rights of other states, in particular their right to integrity and inviolability in peace and war'.⁴³ This obligation was subsequently relied upon, and elaborated, by the arbitral tribunal in the much-cited *Trail Smelter* case, which stated that:

Under the principles of international law . . . no state has the right to use or permit the use of territory in such a manner as to cause injury by fumes in or to the territory of another of the properties or persons therein, when the case is of serious consequence and the injury is established by clear and convincing evidence.⁴⁴

Most writers accept this formulation as a rule of customary international law. For example, the Rapporteur to the ILA Committee on Legal Aspects of the Environment concluded from an examination that state practice was founded upon the rule in the *Trail Smelter* case.⁴⁵ It was also cited, with apparent approval, by Judge de Castro in his dissent in the *Nuclear Tests* case.⁴⁶ In that case, Australia had asked the ICJ to declare that the carrying out of further atmospheric nuclear tests was inconsistent with applicable rules of international law and would be unlawful 'in so far as it involves the modification of the physical conditions of and over Australian territory [and] pollution of the atmosphere and of the resources of the seas'.⁴⁷

In fact, consistent state practice is not readily discernible. As will be seen in Chapter 17, there are relatively few claims which have been brought by states relying upon the rule reflected in Principle 21/Principle 2, and one is left to rely upon state practice as evidenced in particular by participation in and support for treaties and other international acts, as well as states' statements

⁴³ PCA, *Palmas* case, 2 HCR (1928) 84 at 93.

⁴⁴ *United States v. Canada*, 3 RIAA 1907 (1941); citing Eagleton, *Responsibility of States* (1928), 80; see Chapter 7, pp. 239–40, below; and Chapter 17, pp. 716–17, below.

⁴⁵ International Law Association, 'Report of the Committee on Legal Aspects of the Environment', 60th Conference Report, 157 at 163.

⁴⁶ *Australia v. France* (1974) ICJ Reports 253 at 389. He stated: 'If it is admitted as a general rule that there is a right to demand prohibition of the emission by neighbouring properties of noxious fumes, the consequences must be drawn, by an obvious analogy, that the Applicant is entitled to ask the Court to uphold its claim that France should put an end to the deposit of radio-active fall-out on its territory.'

⁴⁷ *Nuclear Tests* cases, ICJ Pleadings, vol. I, 27; see further Chapter 7, pp. 240–2, below.

as to what they consider to be the extent of their obligations. Following the Chernobyl accident in 1986, a discussion under the auspices of the IAEA threw some light on the views of states, although the record on this discussion alone cannot be considered as representing a comprehensive view.⁴⁸

The general rule relied upon in the *Trail Smelter* case derives from an extension of the principle of good-neighbourliness. Although the UN Charter does not expressly address environmental issues, Article 74 of the Charter reflects the agreement of the UN members that ‘their policy in their metropolitan areas must be based on the general principle of good neighbourliness’ and must take account of ‘the interests and well-being of the rest of the world, in social, economic and commercial matters’. The principle of good-neighbourliness underlies the *dicta* of the ICJ that the principle of sovereignty embodies ‘the obligation of every state not to allow its territory to be used for acts contrary to the rights of other states’.⁴⁹ In the *Lac Lanoux* arbitration, involving the proposed diversion of an international river by an upstream state, the arbitral tribunal affirmed that a state has an obligation not to exercise its rights to the extent of ignoring the rights of another:

France [the upstream state] is entitled to exercise her rights; she cannot ignore the Spanish interests. Spain [the downstream state] is entitled to demand that her rights be respected and that her interests be taken into consideration.⁵⁰

The thread was further developed in 1961 when the UN General Assembly declared, specifically in relation to radioactive fallout, that:

The fundamental principles of international law impose a responsibility on all states concerning actions which might have harmful biological consequences for the existing and future generations of peoples of other states, by increasing the levels of radioactive fallout.⁵¹

By 1972, shortly before the Stockholm Conference, the General Assembly was able to direct that the Conference must ‘respect fully the exercise of permanent sovereignty over natural resources, as well as the right of each country to exploit its own resources in accordance with its own priorities and needs and in such a manner as to avoid producing harmful effects on other countries’.⁵²

The development of the second element of Principle 21/Principle 2 can also be traced to earlier environmental treaties. The 1951 International Plant Protection Convention expressed the need to prevent the spread of plant pests and diseases across national boundaries.⁵³ The 1963 Nuclear Test Ban Treaty prohibits nuclear tests if the explosion would cause radioactive debris ‘to be present outside the territorial limits of the state under whose jurisdiction or control such explosion is conducted’;⁵⁴ and the 1968 African Conservation Convention requires

⁴⁸ Chapter 17, pp. 718–20, below.

⁴⁹ *Corfu Channel* case (*UK v. Albania*) (1949) ICJ Reports 4 at 22.

⁵⁰ *Spain v. France*, 12 RIAA 285.

⁵¹ UNGA Res. 1629 (XVI) (1961).

⁵² UNGA Res. 2849 (XXVI) (1972), para. 4(a).

⁵³ Preamble.

⁵⁴ Art. I(1)(b).

consultation and co-operation between parties where development plans are 'likely to affect the natural resources of any other state'.⁵⁵ Under the 1972 World Heritage Convention, the parties agreed that they would not take deliberate measures which could directly or indirectly damage heritage which is 'situated on the territory' of other parties.⁵⁶

Principle 21 can thus be said to have developed earlier state practice. It has since been affirmed in many General Assembly resolutions and acts of other international organisations. Shortly after the Stockholm Conference, Principle 21, with Principle 22, was expressly stated by UN General Assembly Resolution 2996 to lay down the 'basic rules' governing the international responsibility of states with regard to the environment. It was also the basis of Article 30 of the Charter of Economic Rights and Duties of States, which provides that:

All states have the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other states or of areas beyond the limits of national jurisdiction.⁵⁷

It was endorsed by the 1975 Final Act of the Helsinki Conference on Security and Co-operation in Europe,⁵⁸ Principle 3 of the 1978 UNEP Draft Principles (which requires states to ensure that 'activities within their jurisdiction or control do not cause damage to the natural systems located within other states or in areas beyond the limits of national jurisdiction') and the 1982 World Charter for Nature (which declares the need to 'safeguard and conserve nature in areas beyond national jurisdiction').⁵⁹ Perhaps more compelling is the reference to Principle 21 in later treaties. It has been referred to,⁶⁰ or wholly incorporated,⁶¹ in the preamble to several treaties, and was fully reproduced in the operational part of a treaty, for the first time, as Article 3 of the 1992 Biodiversity Convention without express limitation to matters within the scope of the Convention.⁶² Principle 2 of the Rio Declaration is incorporated into the Preamble to the 1992 Climate Change Convention.

Similar language to the second element of Principle 21 also appears in treaties. The 1978 Amazonian Treaty fudges the issue of the legal status of Principle 21, declaring that 'the exclusive use and utilisation of natural resources within their respective territories is a right inherent in the sovereignty of each state and that the exercise of this right shall not be subject to any restrictions other than those arising from International Law'.⁶³ The 1981 Lima Convention goes a little further by requiring activities to be conducted so that 'they do not cause damage by pollution to others or to their environment, and that pollution arising from incidents or activities under their jurisdiction or control does not, as far as possible, spread beyond the areas where [they] exercise sovereignty and jurisdiction'.⁶⁴ The 1982 UNCLOS transforms the 'responsibility' into a 'duty', although it is unclear what was intended by the change. Under Article 193 of UNCLOS, states have the sovereign right to exploit their natural resources pursuant to their environmental policies and in accordance with their duty to protect and preserve the marine environment. UNCLOS shifts the emphasis from a negative obligation to

⁵⁵ Art. XVI(1)(b). ⁵⁶ Art. 6(3). ⁵⁷ UNGA Res. 3281 (XXVII) (1974).

⁵⁸ 14 ILM 1292 (1975), 1 August 1975. ⁵⁹ Para. 21(e). ⁶⁰ See e.g. 1992 Baltic Convention.

⁶¹ See e.g. 1972 London Convention (but note that Principle 21 does not appear in the 1996 London Protocol); 1979 LRTAP Convention; 1985 Vienna Convention.

⁶² Cf. UK Declaration, Chapter 4, p. 104, above. ⁶³ Art. IV. ⁶⁴ Art. 3(5); 1983 Quito LBS Protocol, Art. XL.

prevent harm to a positive commitment to preserve and protect the environment. To that end, however, Article 194(2) does provide that states:

shall take all measures necessary to ensure that activities under their jurisdiction or control are so conducted as not to cause damage by pollution to other states and their environment, and that pollution arising from incidents or activities under their jurisdiction or control does not spread beyond the areas where they exercise sovereign rights in accordance with [the] Convention.⁶⁵

The 1985 ASEAN Convention goes further, by recognising the second element of Principle 21 as a 'generally accepted principle of international law'.⁶⁶

Against this background, the time was plainly ripe for confirmation of the customary status of the obligation not to cause transboundary environmental harm. France's 1995 announcement of its resumption of underground nuclear tests provided the unlikely catalyst. In its Order rejecting New Zealand's request, the ICJ stated, somewhat cryptically, that its Order was 'without prejudice to obligations of States to respect and protect the natural environment, obligations to which both New Zealand and France have in the present instance reaffirmed their commitment'.⁶⁷ A review of the pleadings indicates that New Zealand's affirmation that Principle 21/Principle 2 reflected a 'well established proposition of customary international law' was not opposed by France.⁶⁸ It was also endorsed by Judge Weeramantry in his dissenting opinion.⁶⁹

Within two months of the ICJ's Order, oral arguments opened at the ICJ in the *Legality of the Threat or Use of Nuclear Weapons* Advisory Opinion proceedings. Several states argued that Principle 21/Principle 2 reflected customary law, and none challenged that view (although some argued that they did not consider the principles to be of relevance to the case).⁷⁰ In its Advisory Opinion, the ICJ stated that:

The existence of the general obligation of States to ensure that activities within their jurisdiction and control respect the environment of other States or of areas beyond national control is now part of the corpus of international law relating to the environment.⁷¹

It is noteworthy that the ICJ did not merely restate the language of Principle 21 and Principle 2, but not immediately apparent that the ICJ intended to effect any material changes with its reformulation. In certain respects, the formulation adopted by the ICJ may be broader than that of Principle 21/Principle 2.⁷²

⁶⁵ 1986 South Pacific Natural Resources Convention, Art. 4(6). ⁶⁶ Art. 20.

⁶⁷ (1995) ICJ Reports 288, para. 64.

⁶⁸ New Zealand Request, para. 98, also CR/95/20, 10–12; and CR/95/20, 91. See also *Yearbook of International Environmental Law* 531 at 533 (1995); and P. Sands, 'Pleadings and the Pursuit of International Law: Nuclear Tests II (New Zealand v. France)', in A. Anghie and G. Sturgess (eds.), *Legal Visions of the 21st Century: Essays in Honour of Judge Weeramantry* (1998), 601.

⁶⁹ (1995) ICJ Reports 347. See also Judges Koroma (*ibid.*, 378) and Ad Hoc Judge Palmer (*ibid.*, 408, para. 80).

⁷⁰ For a summary of the arguments, see *Yearbook of International Environmental Law* 542 (1995). On war and the environment, see Chapter 18, pp. 789–97, below.

⁷¹ (1996) ICJ Reports 241, para. 29; cited with approval in the *Iron Rhine* case (2005), at para. 222.

⁷² The word 'respect' could be seen as encompassing consequences where no 'harm' has arisen.

Conclusion

The support given to the rule reflected in Principle 21 (and now Principle 2) by states, by the ICJ and by other international actors over the past four decades indicates the central role now played by the rule. The rule has been developed through the adoption of environmental agreements that establish specific and more detailed obligations giving effect to the basic objectives, as well as national environmental laws. The scope and application of the rule, in particular to the difficult question of what constitutes ‘environmental harm’ (or damage) for the purposes of triggering liability and allowing international claims to be brought, are considered in Chapter 17 below. At the very least, Principle 21 and Principle 2 confirm that the rights of states over their natural resources in the exercise of permanent sovereignty are not unlimited,⁷³ and are subject to significant constraints of an environmental character. Beyond that, the rule may provide a legal basis for bringing claims under customary law asserting liability for environmental damage. The specific application of the rule will turn on the facts and circumstances of each particular case or situation.

PRINCIPLE OF PREVENTIVE ACTION

Closely related to the Principle 21/Principle 2 obligation is the principle requiring the prevention of damage to the environment, and otherwise to reduce, limit or control activities that might cause or risk such damage.⁷⁴ The arbitral tribunal in the *Iron Rhine* recognised that ‘[t]oday, in international environmental law, a growing emphasis is being put on the duty of prevention’ and that ‘[m]uch of international environmental law has been formulated by reference to the impact that activities in one territory may have on the territory of another’. It declared that the ‘duty of prevention’ is now ‘a principle of general international law’ that ‘applies not only in autonomous activities but also in activities undertaken in implementation of specific treaties between the Parties’.⁷⁵ The approach was confirmed in the *Pulp Mills* case, where the ICJ pointed out that ‘the principle of prevention, as a customary rule, has its origins in the due diligence that is required of a State in its territory’.⁷⁶ The interconnection of the obligation to prevent harm and a requirement to exercise due diligence was underscored by the ICJ, which characterised the obligation ‘to act with due diligence’ as:

an obligation which entails not only the adoption of appropriate rules and measures, but also a certain level of vigilance in their enforcement and the exercise of administrative control applicable to public and private operators, such as the monitoring of activities undertaken by such operators.⁷⁷

This reflects the approach taken by the ILC in Article 3 of its draft Articles on Prevention of Transboundary Harm from Hazardous Activities (2001),⁷⁸ which requires states to ‘take all

⁷³ See the ILC’s 2001 Draft Articles on Prevention of Transboundary Harm from Hazardous Activities, Preamble. See also Art. 4 (Prevention).

⁷⁴ D. Goba, ‘Le Principe de Prévention en Droit International de l’Environnement’, 36 *Revue Ivoirienne de Droit* 9 (2004).

⁷⁵ *Iron Rhine* case (2005), paras. 59 and 222. ⁷⁶ *Pulp Mills* case, para. 101. ⁷⁷ *Ibid.*, para. 197.

⁷⁸ ILC, Draft Articles on Prevention of Transboundary Harm from Hazardous Activities, Art. 3.

appropriate measures to prevent significant transboundary harm or at any event to minimize the risk thereof'. The Commentary to the draft Articles emphasises that the duty of due diligence

is not intended to guarantee that significant harm be totally prevented, if it is not possible to do so. In that eventuality, the State of origin is required . . . to exert its best possible efforts to minimize the risk. In this sense, it does not guarantee that the harm would not occur.⁷⁹

The Seabed Disputes Chamber of ITLOS has also followed and confirmed this approach. In its *Advisory Opinion on Responsibilities and Obligations in the Area*, it noted that the content of due diligence obligations 'may not easily be described in precise terms', since the concept is variable and may change over time, although the standard 'has to be more severe for the riskier activities'.⁸⁰ As a consequence, 'measures considered sufficiently diligent at a certain moment may become not diligent enough in light, for instance, of new scientific or technological knowledge', and can 'change in relation to the risks involved in the activity'.⁸¹ The Chamber concluded that due diligence requires a State sponsoring activities in the Area 'to take [reasonably appropriate] measures within its legal system'.⁸² In this way, the obligation to prevent pollution is also closely connected to procedural obligations, including the requirement to carry out an environmental impact assessment.⁸³

The prevention obligation is distinguishable from Principle 21/Principle 2 in two ways. First, the latter arise from the application of respect for the principle of sovereignty, whereas the preventive principle seeks to minimise environmental damage as an objective in itself. This difference of underlying rationale relates to the second distinction: under the preventive principle, a state may be under an obligation to prevent not only transboundary harm, but also damage to the environment within its own jurisdiction,⁸⁴ including by means of appropriate regulatory, administrative and other measures.

The preventive principle requires action to be taken at an early stage and, if possible, before damage has actually occurred.⁸⁵ The principle is reflected in state practice with regard to a broad range of environmental objectives. Broadly stated, it prohibits activity that causes or may cause damage to the environment in violation of the standards established under the rules of international law. The preventive principle is supported by an extensive body of domestic environmental protection legislation that establishes authorisation procedures, as well as the adoption of international and national commitments on environmental standards,

⁷⁹ Commentaries to the Draft Articles on Prevention of Transboundary Harm from Hazardous Activities, *Yearbook of the International Law Commission* (2001-II), Part 2, para. 7.

⁸⁰ *Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area* (Advisory Opinion) (Seabed Disputes Chamber of the International Tribunal for the Law of the Sea, ITLOS Case No. 17, 1 February 2011), para. 117.

⁸¹ *Ibid.* ⁸² *Responsibilities and Obligations in the Area*, paras. 117–20. ⁸³ *Pulp Mills* case, para. 204.

⁸⁴ See Judge N. Singh, 'Foreword', in R. D. Munro and J. G. Lammers (eds.), *Environmental Protection and Sustainable Development: Legal Principles and Recommendations* (1986), xi–xii; in this regard, see also the principle of sustainable development, pp. 206–17, below.

⁸⁵ In the *Gabčíkovo-Nagymaros* case, the ICJ noted that it was 'mindful that, in the field of environmental protection, vigilance and prevention are required on account of the often irreversible character of damage to the environment and of the limitations inherent in the very mechanism of reparation of this type of damage': (1997) ICJ Reports 7 at 78, para. 140.

access to environmental information, and the need to carry out environmental impact assessments in relation to the conduct of certain proposed activities. The preventive principle may, therefore, take a number of forms, including the use of penalties and the application of liability rules.

The preventive approach was endorsed, directly or indirectly, by the 1972 Stockholm Declaration,⁸⁶ the 1978 UNEP Draft Principles⁸⁷ and the 1982 World Charter for Nature. Further, Principle 11 of the 1992 Rio Declaration required states to enact 'effective environmental legislation'.⁸⁸ More significant for its development as an international legal principle is the fact that the principle has been relied upon or endorsed in a large number of treaties dealing with particular environmental media or activities.⁸⁹ These include international environmental treaties aiming to prevent, *inter alia*:

- the extinction of species of flora and fauna;⁹⁰
- the spread of occupational disease, including radioactive contamination of workers;⁹¹
- the introduction and spread of pests and diseases;⁹²
- pollution of the seas by oil,⁹³ radioactive waste,⁹⁴ hazardous waste and substances,⁹⁵ from land-based sources,⁹⁶ or from any source;⁹⁷
- pollution of water resources generally,⁹⁸ and of rivers;⁹⁹
- radioactive pollution of the atmosphere;¹⁰⁰
- hostile environmental modification;¹⁰¹
- adverse effects of activities that prevent the migration of species;¹⁰²
- air pollution;¹⁰³
- modification of the ozone layer;¹⁰⁴
- degradation of the natural environment;¹⁰⁵
- all pollution;¹⁰⁶
- significant adverse environmental impacts;¹⁰⁷

⁸⁶ Principles 6, 7, 15, 18 and 24. ⁸⁷ Principle 1.

⁸⁸ Other relevant provisions include Principle 14 (calling on states to prevent the relocation and transfer to other states of hazardous activities or substances) and Principle 15 (precautionary approach).

⁸⁹ E.g. 1991 Alpine Convention, Art. 2(c); Integrated Coastal Zone Management Protocol, Art. 10(1); 2003 Carpathians Convention, Art. 2.

⁹⁰ 1933 London Convention, Art. 12(2), and Protocol, para. 1; 1980 CCAMLR Convention Art. 2(3)(a); 2007 Gorilla Conservation Agreement, Art. 3(2)(j).

⁹¹ 1949 Agreement for the Establishment of a General Fisheries Council for the Mediterranean, Art. [III]IV(h); 1960 Ionising Radiation Convention, Art. 3(1).

⁹² 1951 Plant Protection Convention, Art. 1(1).

⁹³ 1954 Oil Pollution Prevention Convention, Preamble; 1969 CLC, Art. 1(7).

⁹⁴ 1958 High Seas Convention, Art. 25.

⁹⁵ 1992 OSPAR Convention, Art. 2; 1996 London Protocol, Art. 2; MARPOL 73/78, Preamble and Art. 1(1).

⁹⁶ 1974 Paris LBS Convention, Art. 1; 2009 Revised Protocol to the 1992 Black Sea Convention, Arts. 1, 4, 6, 14 and 15; 2010 Nairobi Protocol, Preamble and Arts. 4, 6, 7 and 8.

⁹⁷ 1982 UNCLOS, Art. 194(1); 1991 Madrid Protocol, Annex IV; 2003 Tehran Convention, Art. 4.

⁹⁸ 2003 Lake Victoria Basin Protocol, Art. 4. ⁹⁹ 1958 Danube Fishing Convention, Art. 7.

¹⁰⁰ 1963 Test Ban Treaty, Art. 1(1). ¹⁰¹ 1977 ENMOD Convention, Art. 1(1).

¹⁰² 1979 Bonn Convention, Art. III(4)(b). ¹⁰³ 1979 LRTAP Convention, Art. 2.

¹⁰⁴ 1985 Vienna Convention, Art. 2(2)(b); 1987 Montreal Protocol, Preamble.

¹⁰⁵ 1985 ASEAN Convention, Art. 11. ¹⁰⁶ 1986 Noumea Convention, Art. 5(1).

¹⁰⁷ 1991 Espoo Convention, Preamble and Art. 2(1); 2003 Revised African Nature Convention, Art. 4; and 2008 Bucharest Agreement to the 1991 Espoo Convention, Preamble.

- transboundary impacts generally;¹⁰⁸
- loss of fisheries¹⁰⁹ and other biodiversity,¹¹⁰ including as a result of the release of genetically modified organisms;¹¹¹
- damage to health and the environment from chemicals,¹¹² persistent organic pollutants,¹¹³ production technologies¹¹⁴ and ship recycling;¹¹⁵
- hazards created by ship wrecks;¹¹⁶ and
- the effects of natural hazards,¹¹⁷ in particular of climate change.¹¹⁸

Taken together, this extensive body of international commitments provides compelling evidence of: the wide support for the principle of preventive action; the different environmental media for which general preventive measures are required; the types of activities which should be regulated; and the basis upon which states should carry out their commitment to enact effective national environmental legislation pursuant to the general requirement of Principle 11 of the Rio Declaration.

CO-OPERATION

The principle of ‘good-neighbourliness’ enunciated in Article 74 of the UN Charter in relation to social, economic and commercial matters has been translated into the development and application of rules promoting international environmental co-operation. This is traditionally considered by reference to the application of the maxim *sic utere tuo et alienum non laedas*. The principle is reflected in many treaties and other international acts, and is supported also by state practice, particularly in relation to hazardous activities and emergencies.¹¹⁹ Principle 24 of the Stockholm Declaration reflects a general political commitment to international co-operation in matters concerning the protection of the environment, and Principle 27 of the Rio Declaration states rather more succinctly that ‘States and people shall co-operate in good faith and in a spirit of partnership in the fulfilment of the principles embodied in this Declaration and in the further development of international law in the field of sustainable development’. The importance attached to the

¹⁰⁸ 1992 UNECE Transboundary Waters Convention, Art. 2(1) and (2); 2003 Carpathians Convention, Art. 5(3)(d); 2006 Central Asian Sustainable Development Framework Convention, Art. 3.

¹⁰⁹ 1995 Fish Stocks Agreement, Art. 5(h); see also ITLOS, *Southern Bluefin Tuna* cases, Chapter 9, pp. 420–1, below; 2007 West Central Gulf of Guinea Fishery Committee Convention, Preamble; 2009 Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing, Preamble and Art. 1; 2009 Southern Ocean Fishery Resources Convention, Art. 3(1)(iii).

¹¹⁰ 1992 Biodiversity Convention, Preamble and Arts. 8(h) and 14(1)(d).

¹¹¹ 2000 Biosafety Protocol, Art. 2 and 2010 Nagoya Protocol, Arts. 2(2)(d)(i) and 5; 2003 Carpathians Convention, Art. 4(3).

¹¹² 1998 Chemicals Convention, Preamble and Art. 1. ¹¹³ 2001 POPs Convention, Annex C, Part V(B).

¹¹⁴ 2003 Carpathians Convention, Art. 10(1). ¹¹⁵ 2009 Ships Recycling Convention, Art. 1.

¹¹⁶ 2007 Wrecks Convention, Preamble and Art. 1(7).

¹¹⁷ Such as floods: 2003 Carpathians Convention, Arts. 6(a) and 7.

¹¹⁸ 1992 Climate Change Convention, Art. 2; 2008 Integrated Coastal Zone Management Protocol, Arts. 5(b) and 6.

¹¹⁹ The maxim was invoked, for example, as a ‘fundamental rule’ by Hungary in its Original Application in the *Gabčíkovo-Nagymaros Project* case, para. 32 (citing in support of the maxim the *Corfu Channel* case (1949), the *Trail Smelter* case (1941), the Stockholm Declaration (1972), the World Charter for Nature (1982), the ILC Draft Articles on International Liability (1990) and the Rio Declaration (1992)).

principle of co-operation, and its practical significance, is reflected in many international instruments, such as the Preamble to the 1992 Industrial Accidents Convention, which underlined (in support of the Convention's specific commitments) 'the principles of international law and custom, in particular the principles of good-neighbourliness, reciprocity, non-discrimination and good faith', and the procedural rules reflected in the 1997 Watercourses Convention.¹²⁰

The obligation to co-operate is affirmed in virtually all international environmental agreements of bilateral and regional application,¹²¹ and global instruments.¹²² It also underscores the ICJ's reminder of the need to establish suitable common regimes.¹²³ The obligation may be in general terms, relating to the implementation of the treaty's objectives,¹²⁴ or relating to specific commitments under a treaty.¹²⁵ The general obligation to co-operate has also been translated into more specific commitments through techniques designed to ensure information sharing and participation in decision-making. These specific commitments, which are considered in more detail in subsequent chapters, include: rules on environmental impact assessment (see Chapter 14); rules ensuring that neighbouring states receive necessary information (requiring information exchange, consultation and notification) (see Chapter 15); the provision of emergency information (see Chapter 11); and transboundary enforcement of environmental standards (see Chapter 5). The extent to which these commitments are interrelated is reflected in Principle 7 of the 1978 UNEP Draft Principles, which stated that:

Exchange of information, notification, consultation and other forms of co-operation regarding shared natural resources are carried out on the basis of the principle of good faith and in the spirit of good neighbourliness.

A similar commitment is expressed in Article 4 of the ILC's draft Articles on Prevention of Transboundary Harm (2001).

State practice supporting good-neighbourliness and international co-operation is further reflected in the decisions and awards of international courts and tribunals discussed in subsequent chapters, including the *Lac Lanoux* case,¹²⁶ the *MOX* (Provisional Measures) case and the *Land Reclamation* case between Malaysia and Singapore. The nature and extent of the obligation to co-operate was a central issue in the dispute between Hungary and Slovakia in the *Gabčíkovo-Nagymaros Project* case, at least as originally formulated by

¹²⁰ Chapter 8, pp. 310–12, below.

¹²¹ Early examples include the 1933 London Convention, Art. 12(2); 1940 Western Hemisphere Convention, Art. VI; 1991 Alpine Convention, Art. 2(1).

¹²² Examples include: 1982 UNCLOS, Arts. 123 and 197; 1985 Vienna Convention, Art. 2(2); 1992 Biodiversity Convention, Art. 5.

¹²³ See *Case Concerning the Kasikili/Sedudu Island (Botswana/Namibia)* (1999) ICJ Reports 1045, para. 102.

¹²⁴ See e.g. 1968 African Nature Convention, Art. XVI(1); 1992 Biodiversity Convention, Art. 5.

¹²⁵ See e.g. 1992 Climate Change Convention, Art. 4(1)(e) (co-operation on preparation for adaptation to the impacts of climate change).

¹²⁶ See p. 197, above.

Hungary (claiming that Czechoslovakia and then Slovakia had not co-operated in good faith in the implementation of principles affecting transboundary resources, including the obligation to negotiate in good faith and in a spirit of co-operation, to prevent disputes, to provide timely notification of plans to carry out or permit activities which may entail a transboundary interference or a significant risk thereof and to engage in good faith consultations to arrive at an equitable resolution of the situation).¹²⁷ However, the ICJ did not address in any detail what the obligation to co-operate entailed, beyond recalling what it had said earlier in the *North Sea Continental Shelf* cases, as well as the principle of good faith which obliged the parties to apply their 1977 treaty 'in a reasonable way and in such a manner that its purpose can be realized'.¹²⁸

The requirements of the obligation to co-operate were at the heart of the *MOX* (Provisional Measures) case. In its application instituting arbitration proceedings under the 1982 UNCLOS, Ireland claimed that the United Kingdom had failed to co-operate as required by Articles 123 and 197 of UNCLOS, for example by failing to reply to communications and requests for information in a timely manner or at all, by withholding environmental information requested by Ireland, and by refusing to prepare a supplementary environmental statement.¹²⁹ In its Provisional Measures Order, the ITLOS affirmed that:

the duty to co-operate is a fundamental principle in the prevention of pollution of the marine environment under Part XII of the Convention and general international law and that rights arise therefrom which the Tribunal may consider appropriate to preserve under article 290 of the Convention.

The Tribunal ordered the parties to co-operate and, for that purpose, to enter into consultations forthwith to '(a) exchange further information with regard to possible consequences for the Irish Sea arising out of the commissioning of the *MOX* plant; (b) monitor risks or the effects of the operation of the *MOX* plant for the Irish Sea; (c) devise, as appropriate, measures to prevent pollution of the marine environment which might result from the operation of the *MOX* plant'.¹³⁰ Two years later, the same approach was applied by the Tribunal in its Provisional Measures Order in the *Land Reclamation* case, when it ordered Malaysia and Singapore to co-operate by entering into consultations to establish a group of independent experts to conduct a study on the effects of Singapore's land reclamation and to propose measures to deal with any adverse effects, and to exchange information.¹³¹

¹²⁷ Chapter 8, pp. 313–19, below; Hungary's Original Application, 22 October 1992, paras. 27, 29 and 30.

¹²⁸ (1997) ICJ Reports 78–9, paras. 141–2. In the *North Sea Continental Shelf* cases, the ICJ said: '[The parties] are under an obligation so to conduct themselves that the negotiations are meaningful, which will not be the case when either of them insists upon its own position without contemplating any modification of it': (1969) ICJ Reports 47, para. 85.

¹²⁹ Application, 25 October 2001, para. 33.

¹³⁰ Provisional Measures Order, 3 December 2001, para. 83. The ITLOS order was affirmed by the Annex VII Tribunal by its Order of 24 June 2003, with a recommendation to establish further arrangements to address the Tribunal's concern that 'co-operation and consultation may not always have been as timely or effective as it could have been': paras. 66–7.

¹³¹ *Land Reclamation* case, Provisional Measures Order, paras. 92 and 106(1).

SUSTAINABLE DEVELOPMENT¹³²

Introduction

The general principle that states should ensure the development and use of their natural resources in a manner that is sustainable emerged in the run-up to UNCED. Although the ideas underlying the concept of sustainable development have a long history in international legal instruments, and the term itself began to appear in treaties in the 1980s, the general ‘principle of sustainable development’ appears to have been first referred to in a treaty in the Preamble to the 1992 EEA Agreement.¹³³ The term now appears with great regularity in international instruments of an environmental, economic and social character. It has been invoked by various international courts and tribunals, and is established as an international legal concept.¹³⁴

The term ‘sustainable development’ is generally considered to have been coined by the 1987 Brundtland Report, which defined it as ‘development that meets the needs of the present without compromising the ability of future generations to meet their own needs’. It contains within it two concepts:

- (1) the concept of ‘needs’, in particular the essential needs of the world’s poor, to which overriding priority should be given; and
- (2) the idea of limitations imposed, by the state of technology and social organisation, on the environment’s ability to meet present and future needs.¹³⁵

State practice, however, suggests that the idea of ‘sustainability’ has been a feature in international legal relations since at least 1893, when the United States asserted a right to ensure the legitimate and proper use of seals and to protect them, for the benefit of mankind, from wanton destruction.¹³⁶ Since then, many treaties and other international instruments, as well as decisions of international courts, have supported, directly or indirectly, the concept of sustainable development and the principle that states have the

¹³² W. Clark and R. Munn (eds.), *Sustainable Development of the Biosphere* (1986); R. D. Munro and M. Holdgate (eds.), *Caring for the Earth: A Strategy for Sustainable Development* (1991); P. Sands, ‘International Law in the Field of Sustainable Development’, 65 *British Year Book of International Law* 303 (1994); W. Lang (ed.), *Sustainable Development and International Law* (1995); United Nations, Department for Policy Co-ordination and Sustainable Development, *Report of the Expert Group Meeting on Identification of Principles of International Law for Sustainable Development* (UN, 26–28 September 1995); A. Boyle and D. Freestone (eds.), *International Law and Sustainable Development* (1999); EC Commission, *The Law of Sustainable Development: General Principles* (2000); D. French, *International Law and Policy of Sustainable Development* (2005); K. Bosselmann, *The Principle of Sustainability: Transforming Law and Governance* (2008); C. Voigt, *Sustainable Development as a Principle of International Law: Resolving Conflicts Between Climate Measures and WTO Law* (2009).

¹³³ Agreement on the European Economic Area (Oporto), 2 May 1992, in force 1 January 1994; 1801 UNTS 3 (1992 EEA Agreement).

¹³⁴ See generally the International Law Association’s New Delhi Declaration of Principles of International Law Relating to Sustainable Development (2002).

¹³⁵ Report of the World Commission on Environment and Development, *Our Common Future* (1987), 43 (the Brundtland Report).

¹³⁶ *Pacific Fur Seal* arbitration, Chapter 9, pp. 399–400, below. Although the arbitral tribunal rejected the argument, it did adopt regulations for the conduct of sealing which incorporated some of the elements of what is now recognised as a ‘sustainable’ approach to the use of natural resources.

responsibility to ensure the sustainable use of natural resources. Its application has been recognised in relation to all parts of the world.¹³⁷

Four recurring elements appear to comprise the legal elements of the concept of ‘sustainable development’, as reflected in international agreements:

- (1) the need to preserve natural resources for the benefit of future generations (the principle of intergenerational equity);
- (2) the aim of exploiting natural resources in a manner which is ‘sustainable’, ‘prudent’, ‘rational’, ‘wise’ or ‘appropriate’ (the principle of sustainable use);
- (3) the ‘equitable’ use of natural resources, which implies that use by one state must take account of the needs of other states (the principle of equitable use, or intragenerational equity); and
- (4) the need to ensure that environmental considerations are integrated into economic and other development plans, programmes and projects, and that development needs are taken into account in applying environmental objectives (the principle of integration).

These four elements are closely related and often used in combination (and are frequently interchangeably), which suggests that they do not yet have a well-established, or agreed, legal definition or status. The 1989 Lomé Convention indicated how some of the elements of the concept of sustainable development can be brought together in a single legal text. Article 33 of the Convention provided that:

In the framework of this Convention, the protection and the enhancement of the environment and natural resources, the halting of the deterioration of land and forests, the restoration of ecological balances, the preservation of natural resources and their rational exploitation are basic objectives that the [states parties] concerned shall strive to achieve with Community support with a view to bringing an immediate improvement in the living conditions of their populations and to safeguarding those of future generations.

Without referring directly to ‘sustainable development’, the text introduced into a legal framework the elements identified by the Brundtland Report.¹³⁸

¹³⁷ See e.g. Declaration on Establishment of the Arctic Council, 35 ILM 1382 (1996); Yaoundé Declaration on the Conservation and Sustainable Management of Forests, 38 ILM 783 (1999); Agreements on Co-operation for the Sustainable Development of the Mekong River Basin, 34 ILM 864 (1995); Revised Protocol on Shared Watercourses in the Southern African Development Community, 40 ILM 321 (2001); Partnership for Prosperity and Security in the Caribbean, 36 ILM 792 (1997); OECD Guidelines for Multinational Enterprises, Part V, 40 ILM 237 (2001); South East Europe Compact for Reform, Investment, Integrity and Growth, 39 ILM 962 (2000); 2001 Southeast Atlantic Fisheries Convention; 2002 North-East Pacific Convention; 2003 Lake Tanganyika Convention; 2005 Conservation and Sustainable Management of Forest Ecosystems in Central Africa Treaty; 2006 Southern Indian Ocean Fisheries Agreement; 2006 International Tropical Timber Agreement; 2009 Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing; 2009 Agreement on the Central Asian and Caucasus Regional Fisheries and Aquaculture Commission.

¹³⁸ See also 2000 Cotonou Agreement, Art. 32 (‘1. Co-operation on environmental protection and sustainable utilisation and management of natural resources shall aim at: (a) mainstreaming environmental sustainability into all aspects of development co-operation and support programmes and projects implemented by the various actors’). In the 2010 Cotonou Agreement, Art. 32 has been replaced by an entirely new version which does not use the term ‘sustainability’, but instead focuses on climate change: see New 2010 Cotonou Agreement, available at http://ec.europa.eu/development/icenter/repository/second_revision_cotonou_agreement_20100311.pdf.

There can be little doubt that the concept of ‘sustainable development’ has entered the corpus of international customary law, requiring different streams of international law to be treated in an integrated manner.¹³⁹ In the *Gabčíkovo-Nagymaros* case, the ICJ invoked the concept in relation to the future regime to be established by the parties. The ICJ said:

Throughout the ages, mankind has, for economic and other reasons, constantly interfered with nature. In the past this was often done without consideration of the effects upon the environment. Owing to new scientific insights and to a growing awareness of the risks for mankind – for present and future generations – of pursuit of such interventions at an unconsidered and unabated pace, new norms and standards have been developed [and] set forth in a great number of instruments during the last two decades. Such new norms have to be taken into consideration, and such new standards given proper weight, not only when States contemplate new activities, but also when continuing with activities begun in the past. This need to reconcile economic development with protection of the environment is aptly expressed in the concept of sustainable development. For the purposes of the present case, this means that the Parties together should look afresh at the effects on the environment of the operation of the Gabčíkovo power plant. In particular they must find a satisfactory solution for the volume of water to be released into the old bed of the Danube and into the side-arms on both sides of the river.¹⁴⁰

By invoking the concept of sustainable development, the ICJ indicated that the term has a legal function and both a procedural/temporal aspect (obliging the parties to ‘look afresh’ at the environmental consequences of the operation of the plant) and a substantive aspect (the obligation of result to ensure that a ‘satisfactory volume of water’ be released from the by-pass canal into the main river and its original side arms). The ICJ did not provide further detail as to the practical consequences, although some assistance may be obtained from the Separate Opinion of Judge Weeramantry, who joined in the majority judgment and whose hand guided the drafting of paragraph 140 quoted above.¹⁴¹

In the *Shrimp/Turtle* case, the WTO Appellate Body noted that the Preamble to the WTO Agreement explicitly acknowledges ‘the objective of sustainable development’, and characterised it as a concept that ‘has been generally accepted as integrating economic and social development and environmental protection’.¹⁴² The concept informed the Appellate Body’s

¹³⁹ See more generally P. Sands, ‘International Courts and the Application of the Concept of “Sustainable Development”’, 3 *Yearbook of UN Law* 389 (1999).

¹⁴⁰ (1997) ICJ Reports 78, para. 140; cited with approval in *Iron Rhine* case, para. 59; see also the *Pulp Mills* case, paras. 75, 76, 177 and 185. The concept was invoked by both parties. Slovakia stated that: ‘It is clear from both the letter and the spirit of these principles that the overarching policy of the international community is that environmental concerns are not directed to frustrate efforts to achieve social and economic development, but that development should proceed in a way that is environmentally sustainable. Slovakia submits that these have been, and are today, the very policies on which the Gabčíkovo-Nagymaros Project is based’ (Counter-Memorial, para. 9.56). In reply, Hungary took an opposite view to support its argument that the Project is unlawful: ‘Well-established . . . operational concepts like “sustainable development” . . . help define, in particular cases, the basis upon which to assess the legality of actions such as the unilateral diversion of the Danube by Czechoslovakia and its continuation by Slovakia’ (Hungarian Reply, para. 3.51).

¹⁴¹ (1997) ICJ Reports 92 (‘It is thus the correct formulation of the right to development that that right does not exist in the absolute sense, but is relative always to its tolerance by the environment. The right to development as thus refined is clearly part of modern international law. It is compendiously referred to as sustainable development.’).

¹⁴² 38 ILM 121 (1999), para. 129. The view is supported by reference to numerous international conventions: para. 130, citing Art. 56(1)(a) of the 1982 UNCLOS. See also the Opinion of Advocate General Léger in Case C-371/98, *R. v. Secretary of State for the Environment, Transport and the Regions, ex parte First Corporate Shipping Ltd* [2000]

conclusion that sea turtles are an ‘exhaustible natural resource’ (within the meaning of Article XX(g) of the GATT) and that they had a sufficient nexus with the United States to justify the latter state’s conservation measures, at least in principle. The Appellate Body also invoked ‘sustainable development’ in assessing whether the US measures had been applied in a discriminatory fashion. In this regard it referred to ‘sustainable development’ in the Preamble to the WTO Agreement as adding:

color, texture and shading to our interpretation of the agreements annexed to the WTO Agreement, in this case the GATT 1994. We have already observed that Article XX(g) of the GATT 1994 is appropriately read with the perspective embodied in the above preamble.¹⁴³

Future generations¹⁴⁴

The idea that, as ‘members of the present generation, we hold the earth in trust for future generations’¹⁴⁵ is well known to international law, having been relied upon as early as 1893 by the United States in the *Pacific Fur Seal* arbitration. It is also expressly or implicitly referred to in many of the early environmental treaties, including the 1946 International Whaling Convention,¹⁴⁶ the 1968 African Nature Convention¹⁴⁷ and the 1972 World Heritage Convention.¹⁴⁸ Other, more recent, treaties have sought to preserve particular natural resources and other environmental assets for the benefit of present and future generations. These include wild flora and fauna;¹⁴⁹ the marine environment;¹⁵⁰ essential renewable natural resources;¹⁵¹ the

ECR I-9235, who notes that sustainable development ‘emphasises the necessary balance between various interests which sometimes clash, but which must be reconciled’ (relying upon the Preamble to the 1992 Habitats Directive, which refers to sustainable development (discussed in D. McGillivray and J. Holder, ‘Locating EC Environmental Law’, 20 *Yearbook of European Law* 139 at 151 (2001))).

¹⁴³ 38 ILM 121 (1999), para. 153.

¹⁴⁴ E. Brown Weiss, *In Fairness to Future Generations: International Law, Common Patrimony and Intergenerational Equity* (1989); A. D’Amato, ‘Do We Owe a Duty to Future Generations to Preserve the Global Environment?’, 84 *American Journal of International Law* 190 (1990); L. Gundling, ‘Our Responsibility to Future Generations’, 84 *American Journal of International Law* 207 (1990); E. Agius and S. Busuttil, *Future Generations and International Law* (1998); E. Louka, *International Environmental Law: Fairness, Effectiveness and World Order* (2006); E. Brown Weiss, ‘Climate Change, Intergenerational Equity, and International Law’, 9 *Vermont Journal of Environmental Law* 615 (2008); E. Brown Weiss, ‘Implementing Intergenerational Equity’, in M. Fitzmaurice, D. Ong and P. Merkouris (eds.), *Research Handbook on International Environmental Law* (2010), 100.

¹⁴⁵ E. Brown Weiss, ‘Our Rights and Obligations to Future Generations for the Environment’, 84 *American Journal of International Law* 198 at 199 (1990).

¹⁴⁶ The Preamble recognises the ‘interest of the nations of the world in safeguarding for future generations the great nature resources represented by the whale stocks’.

¹⁴⁷ The Preamble provides that natural resources should be conserved, utilised and developed ‘by establishing and maintaining their rational utilisation for the present and future welfare of mankind’.

¹⁴⁸ Under Art. 4, the parties agree to protect, conserve, present and transmit cultural and natural heritage to ‘future generations’.

¹⁴⁹ 1973 CITES, Preamble.

¹⁵⁰ 1978 Kuwait Convention, Preamble; 1983 Cartagena de Indias Protocol, Preamble; 1982 Jeddah Convention, Art. 1(1).

¹⁵¹ 1976 South Pacific Nature Convention, Preamble.

environment generally;¹⁵² the resources of the Earth;¹⁵³ natural heritage;¹⁵⁴ natural resources;¹⁵⁵ water resources;¹⁵⁶ biological diversity;¹⁵⁷ and the climate system.¹⁵⁸

International declarations often make reference to intergenerational equity as an important aspect of the concept of sustainable development. According to Principle 1 of the 1972 Stockholm Declaration, man bears 'a solemn responsibility to protect and improve the environment for present and future generations', and UN General Assembly Resolution 35/8, adopted in 1980, affirmed that the responsibility to present and future generations is a historic one for the 'preservation of nature'. The Rio Declaration associates intergenerational equity with the right to development, providing in Principle 4 that the 'right to development must be fulfilled so as to equitably meet developmental and environmental needs of present and future generations'.

In its Advisory Opinion on *The Legality of the Threat or Use of Nuclear Weapons*, the ICJ recognised that 'the environment is not an abstraction but represents the living space, the quality of life and the very health of human beings, including generations unborn'.¹⁵⁹ The purpose of the ICJ's reliance on the intergenerational equity concept is not immediately apparent, and it is sometimes said that the undertakings in favour of future generations have limited practical legal consequences. They are considered by some to be closely associated with the civil and political aspects of the relationship between environmental protection and human rights protection.¹⁶⁰ According to this view, the rights of future generations might be used to enhance the legal standing of members of the present generation to bring claims, in cases relying upon substantive rules of environmental treaties where doubt exists as to whether a particular treaty creates rights and obligations enforceable by individuals.¹⁶¹

Sustainable use of natural resources

A second approach, reflected in treaties adopting a 'sustainable' approach, is to focus on the adoption of standards governing the rate of use or exploitation of specific natural resources rather than on their preservation for future generations. Particularly for marine living resources, a standard approach has emerged requiring exploitation to be conducted at levels that are 'sustainable' or 'optimal'.¹⁶² The failure of the 1946 International Whaling Convention to prevent the depletion of many whale species can be measured by reference to its stated objective of achieving 'the optimum level of whale stocks' and confining whaling operations 'to those species best able to sustain exploitation in order to give an interval for recovery to certain species of whales now depleted in numbers'.¹⁶³ Similar commitments to limit catches or productivity to 'maximum sustained' levels have been agreed for other marine species, such as tuna,¹⁶⁴ North Pacific fish,¹⁶⁵ Pacific fur seals,¹⁶⁶ and living resources in the

¹⁵² 1977 ENMOD Convention, Preamble. ¹⁵³ 1979 Bonn Convention, Preamble.

¹⁵⁴ 1985 Nairobi Convention, Preamble. ¹⁵⁵ 1985 ASEAN Convention, Preamble.

¹⁵⁶ 1992 Transboundary Waters Convention, Art. 2(5)(c). ¹⁵⁷ 1992 Biodiversity Convention, Preamble.

¹⁵⁸ 1992 Climate Change Convention, Art. 3(1).

¹⁵⁹ (1996) ICJ Reports 226. See also *Gabčíkovo-Nagymaros* case (1997) ICJ Reports 7, para. 53; see also *Iron Rhine* case, para. 58.

¹⁶⁰ See generally Chapter 18, pp. 777–80, below. ¹⁶¹ See Chapter 5, pp. 155–8, above, on the standing issue.

¹⁶² See e.g. 1995 Fish Stocks Agreement, Art. 2. ¹⁶³ Preamble; see also Art. V(2).

¹⁶⁴ 1949 Tuna Convention, Preamble; 1966 Atlantic Tuna Convention, Art. IV(2)(b).

¹⁶⁵ 1952 North Pacific Fisheries Convention, Preamble and Art. IV(1)(b)(ii).

¹⁶⁶ 1976 Pacific Fur Seals Convention, Preamble and Arts. II(1)(a), V(2)(d) and XI.

EEZ.¹⁶⁷ Other treaties limit catches to ‘optimum sustainable yields’, or subject them to a required standard of ‘optimum utilisation’; this applies, for example, in relation to Antarctic seals,¹⁶⁸ high seas fisheries¹⁶⁹ and some highly migratory species.¹⁷⁰

Sustainable use is a concept also applicable to non-marine resources. The 1968 African Nature Convention provides that the utilisation of all natural resources ‘must aim at satisfying the needs of man according to the carrying capacity of the environment’,¹⁷¹ and the 1983 International Tropical Timber Agreement encouraged ‘sustainable utilisation and conservation of tropical forests and their genetic resources’,¹⁷² a notion that remains at the heart of the 2006 version of the Agreement.¹⁷³ The 1985 ASEAN Agreement was one of the first treaties to require parties to adopt a standard of ‘sustainable utilisation of harvested natural resources . . . with a view to attaining the goal of sustainable development’.¹⁷⁴ Further support for sustainable use or management as a legal term may be found in the 1987 Zambezi Action Plan Agreement,¹⁷⁵ the 1992 Climate Change Convention,¹⁷⁶ the 1992 Biodiversity Convention¹⁷⁷ and its 2000 Biosafety¹⁷⁸ and 2010 Nagoya Protocols,¹⁷⁹ and the 1992 OSPAR Convention.¹⁸⁰ The fact that so many species and natural resources are in fact not sustainably managed illustrates the difficulty in translating the concept of sustainable development into a practical conservation tool.

The term sustainable development also appears frequently in instruments relating to international economic law and policy. Under its Articles of Agreement, the European Bank for Reconstruction and Development must ‘promote in the full range of its activities environmentally sound and sustainable development’.¹⁸¹ The Preamble to the 1994 WTO Agreement commits parties to ‘the optimal use of the world’s resources in accordance with the objective of sustainable development’.¹⁸²

Other acts of the international community have also relied upon the concept of ‘sustainable development’, or the spirit that underlies it, without specifying what, precisely, it means. Although the 1972 Stockholm Declaration did not endorse ‘sustainable development’, it did call for the non-exhaustion of renewable natural resources and the maintenance and improvement of ‘the capacity of the earth to produce vital renewable resources’.¹⁸³ The 1982 World Charter for Nature stated that resources which are utilised are to be managed so as to ‘achieve

¹⁶⁷ 1982 UNCLOS, Art. 61(3). See also 1995 Fish Stocks Agreement.

¹⁶⁸ 1972 Antarctic Seals Convention, Preamble.

¹⁶⁹ 1958 High Seas Fishing and Conservation Convention, which defines conservation as ‘the aggregate of the measures rendering possible the optimum sustainable yield from those resources so as to secure a maximum supply of food and other marine products’ (Art. 2).

¹⁷⁰ 1982 UNCLOS, Art. 64(1). ¹⁷¹ Preamble. ¹⁷² Art. 1(h).

¹⁷³ 2006 International Tropical Timber Agreement, Art. 1(m).

¹⁷⁴ Art. 1(1); see also Art. 9 on the protection of air quality, and Art. 12(1) in respect of land use, which is to be based ‘as far as possible on the ecological capacity of the land’.

¹⁷⁵ Preamble. ¹⁷⁶ Art. 3(4).

¹⁷⁷ Preamble and Arts. 1, 8, 11, 12, 16, 17 and 18. The Convention defines ‘sustainable use’ as ‘the use of components of biological diversity in a way and at a rate that does not lead to the long-term decline of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations’: Art. 2.

¹⁷⁸ Art. 1.

¹⁷⁹ 2010 Nagoya Protocol, Preamble, Arts. 8(a), 9, 10 and 22(5)(h), and Annex, paras. 1(f), 2(f) and (k).

¹⁸⁰ Preamble. The Convention defines ‘sustainable management’ as the ‘management of human activities in such a manner that the marine ecosystem will continue to sustain the legitimate uses of the sea and will continue to meet the needs of present and future generations’: Art. 1.

¹⁸¹ Art. 2(1)(vii). ¹⁸² On the *Shrimp/Turtle* case, see pp. 208–9, above. ¹⁸³ Principles 3 and 5.

and maintain optimum sustainable productivity', and provided that living resources must not be utilised 'in excess of their natural capacity for regeneration'.¹⁸⁴ The 1992 Rio Declaration goes further than most instruments by expressly defining the content of the concept of sustainable development, and actively calls for the 'further development of international law in the field of sustainable development', which suggests that international law in this field already existed.¹⁸⁵ Apart from the environmental component of 'sustainable development', the Rio Declaration links environmental issues to matters which were previously considered as belonging to the realm of economic and development law. These issues, increasingly considered for their environmental implications, include the eradication of poverty, the special responsibility of developed countries, the reduction and elimination of unsustainable patterns of production and consumption, the promotion of appropriate population policies, and a supportive and open international economic system.¹⁸⁶ This linkage of environmental and development issues was made explicit in the UN Millennium Declaration, which declared as one of the Millennium Development Goals to be achieved by 2015, integration of the principles of sustainable development into country policies and programmes and reversal of the loss of environmental resources.¹⁸⁷ Treaties and other international acts have also supported the development of the concept of 'sustainable use' through the use of terms which are closely related; international legal instruments have aimed for conservation measures and programmes which are 'rational', or 'wise', or 'sound', or 'appropriate', or a combination of the above. In some instruments, the preferred objective is the 'conservation' of natural resources, which has been subsequently defined by reference to one or more of the terms identified above. Moreover, the term 'conservation' itself includes elements similar to 'sustainable development'. The Legal Experts Group of the World Commission on Environment and Development defined 'conservation' in terms that recall the principle of sustainable development as:

[the] management of human use of a natural resource or the environment in such a manner that it may yield the greatest sustainable benefit to present generations while maintaining its potential to meet the needs and aspirations of future generations. It embraces preservation, maintenance, sustainable utilisation, restoration and enhancement of a natural resource or the environment.¹⁸⁸

'Rational', 'wise', 'sound' and 'appropriate' use are usually used without definition and often interchangeably, and accordingly the meaning of each term will depend upon its application in each instrument. Although attempts at definition have been made, no generally accepted definitions exist, and it is unlikely that distinguishable legal definitions could be agreed. The use of various terms in a single instrument is illustrated by the 1982 UNCLOS: it requires conservation at 'maximum sustainable yield' for the living resources of the territorial and high seas, the 'optimum utilisation' of the living resources found in the EEZ, and the 'rational management' of the resources in the 'Area' in accordance with 'sound principles of conservation'.¹⁸⁹

¹⁸⁴ Paras. 4 and 10(a). ¹⁸⁵ Principle 27. ¹⁸⁶ Principles 5, 7, 8 and 12.

¹⁸⁷ United Nations Millennium Declaration, 18 September 2000, UNGA Res. 55/2, UN GAOR, 55th Sess., UN Doc. A/Res/55/2.

¹⁸⁸ 1986 WCED Legal Principles, para. (i). ¹⁸⁹ Preamble and Arts. 61(3), 62(1), 119(1)(a) and 150(b).

'Rational' utilisation and management are the governing standard for migratory birds,¹⁹⁰ fisheries,¹⁹¹ salmon,¹⁹² all natural resources,¹⁹³ seals¹⁹⁴ and hydro resources.¹⁹⁵ They are the required standard called for by Principles 13 and 14 of the Stockholm Declaration, and the 1980 CCAMLR defines 'conservation' objectives as including 'rational use',¹⁹⁶ as does the 1982 Jeddah Regional Seas Convention.¹⁹⁷ 'Proper' utilisation and management has been adopted as a governing standard for fisheries¹⁹⁸ and forests.¹⁹⁹ 'Wise use' has been endorsed for flora and fauna,²⁰⁰ wetlands²⁰¹ and natural resources generally.²⁰² Other standards introduced by international agreements include 'judicious exploitation',²⁰³ 'sound environmental management',²⁰⁴ 'appropriate environmental management'²⁰⁵ and 'ecologically sound and rational' use of natural resources.²⁰⁶

The significance of these terms is that each recognises limits placed by international law on the rate of use or manner of exploitation of natural resources, including those that are shared or are in areas beyond national jurisdiction. These standards cannot have an absolute meaning. Rather, their interpretation is, or should be, implemented by states acting co-operatively, or by decisions of international organisations, or, ultimately, by international judicial bodies in the event that a dispute arises.

Equitable use of natural resources²⁰⁷

Equity and equitable principles are terms frequently relied upon in international environmental texts. In the absence of detailed rules, equity can provide a conveniently flexible means of

¹⁹⁰ 1940 Western Hemisphere Convention, Art. VII.

¹⁹¹ 1958 Danube Fishing Convention, Preamble and Art. VIII; 1959 North-East Atlantic Fisheries Convention, Preamble and Art. V(1)(b); 1959 Black Sea Fishing Convention, Preamble and Arts. 1 and 7; 1969 Southeast Atlantic Fisheries Convention, Preamble; 1973 Baltic Fishing Convention, Arts. I and X(h); 1978 Northwest Atlantic Fisheries Convention, Art. II(1).

¹⁹² 1982 North Atlantic Salmon Convention, Preamble.

¹⁹³ 1968 African Nature Convention, Art. II; 1978 Amazonian Treaty, Arts. I and VII.

¹⁹⁴ 1972 Antarctic Seals Convention, Art. 3(1); 1976 North Pacific Fur Seals Convention, Art. II(2)(g).

¹⁹⁵ 1978 Amazonian Treaty, Art. V.

¹⁹⁶ Art. II(1) and (2). 'Principles of conservation' are defined as (a) the 'prevention of decrease in the size of any harvested population to levels below those which ensure its stable recruitment', and (b) the 'maintenance of ecological relationships between harvested, dependent and related populations of Antarctic marine living resources and the restoration of depleted populations to levels' above (a), and the 'prevention of changes or minimisation of the risk of changes in the marine ecosystem which are not potentially reversible over two or three decades . . . with the aim of making possible the sustained conservation of Antarctic marine living resources': Art. II(3).

¹⁹⁷ Art. 1(1), including reference to present and future generations, optimum benefit, and conservation, protection, maintenance, sustainable and renewable utilisation, and enhancement of the environment.

¹⁹⁸ 1949 Agreement for the General Fisheries Council for Mediterranean, Preamble and Art. IV(a).

¹⁹⁹ 1959 Agreement for the Latin American Forest Institute, Art. III(1)(a).

²⁰⁰ 1968 African Nature Convention, Art. VII(1); 1972 Stockholm Declaration, Principle 4; 1976 South Pacific Nature Convention, Art. V(1).

²⁰¹ 1971 Ramsar Wetlands Convention, Arts. 2(6) and 6(2)(d).

²⁰² 1979 Bonn Convention, Preamble. ²⁰³ 1963 Niger Basin Act, Preamble.

²⁰⁴ 1981 Abidjan Convention, Arts. 4(1) and 14(3); 1983 Cartagena de Indias Convention, Art. 4(1); 1985 Nairobi Convention, Art. 4(1); 1989 Basel Convention, Preamble and Arts. 2(8), 4(2)(b) and (8), 6(3)(b), 10 and 11; 1989 Waigani Convention, Arts. 1, 4(4)(c), 6(3)(d), 8(2), 10 and 11(1).

²⁰⁵ 1981 Lima Convention, Art. 3(1). ²⁰⁶ 1992 UNECE Transboundary Waters Convention, Art. 2(2)(b).

²⁰⁷ G. Handl, 'The Principle of Equitable Use as Applied to Internationally Shared Natural Resources: Its Role in Resolving Potential International Disputes Over Transfrontier Pollution', 14 *RBDI* 40 (1977-8); L. F. E. Goldie, 'Equity and the International Management of Transboundary Resources', 25 *Natural Resources Journal* 665 (1985); J. Lammers, "Balancing the Equities" in *International Environmental Law*, in R. J. Dupuy (ed.), *L'Avenir du Droit*

leaving the extent of rights and obligations to be decided at a subsequent date, which may explain its frequent usage at UNCED. In many respects, UNCED was about equity: how to allocate future responsibilities for environmental protection between states which are at different levels of economic development, which have contributed in different degrees to particular problems, and which have different environmental and developmental needs and priorities. This is reflected in each UNCED instrument, which seeks to apply equity to particular issues. Principle 3 of the Rio Declaration invokes the 'right of development' as a means of 'equitably' meeting the developmental and environmental needs of future generations. Under the Climate Change Convention, all the parties undertake to be guided on 'the basis of equity' in their actions to achieve the objective of the Convention, and Annex I parties agree to take into account the need for 'equitable and appropriate contributions' by each of them to the global effort regarding the achievement of the objective of the Convention.²⁰⁸ The objectives of the 1992 Biodiversity Convention include the 'fair and equitable' sharing of the benefits arising out of the use of genetic resources.²⁰⁹

The application of equity in international environmental affairs pre-dates UNCED, having been associated with the protection of the environment for the benefit of future generations (intergenerational equity);²¹⁰ the principle of common but differentiated responsibility which takes into account the needs and capabilities of different countries and their historic contribution to particular problems;²¹¹ and the allocation of shared natural resources,²¹² shared fisheries stocks²¹³ or shared freshwater resources.²¹⁴ Equity has also been relied upon in relation to the participation of states in environmental organisations,²¹⁵ financial and other contributions to activities,²¹⁶ and the equitable distribution of the benefits of development.²¹⁷

It is, however, in relation to the allocation of shared natural resources that equity is likely to play an important role in coming years, as underscored by the ICJ's ruling in the *Gabčíkovo-Nagymaros* case that Czechoslovakia had violated international law by unilaterally assuming control of a shared resource and depriving Hungary of its right to an equitable and reasonable share of the natural resources of the Danube.²¹⁸ In the *Pulp Mills* case, the ICJ confirmed that utilisation of a river would not be equitable and reasonable 'if the interests of the other riparian State in the shared resource and the environmental protection of the latter were not taken into account'.²¹⁹

In respect of state practice reflected in treaty provisions, the Preamble to the 1987 Montreal Protocol reflects the aim of controlling 'equitably total global emissions of substances that deplete the ozone layer', an aim translated into specific obligations through the process of intergovernmental negotiations (as reflected in the various Adjustments and Amendments to

International de l'Environnement (1985), 153; P. B. Cheng-Kang, 'Equity, Special Considerations and the Third World', 1 *Colorado Journal of International Environmental Law and Policy* 57 (1990); L. Rajamani, *Differential Treatment in International Environmental Law* (2006).

²⁰⁸ Arts. 3(1) and 4(2)(a). ²⁰⁹ Arts. 1 and 15(7). See Chapter 16, pp. 683–4, below.

²¹⁰ See pp. 209–10, above. ²¹¹ See pp. 233–6, below.

²¹² See the 1978 UNEP Draft Principles, Principle 1. ²¹³ *Fisheries Jurisdiction* case, Chapter 9, p. 402, below.

²¹⁴ Chapter 8, pp. 303–41, below.

²¹⁵ Examples include: 1992 Oil Pollution Fund Convention, Art. 22(2)(a) (equitable geographic distribution of membership on Executive Committee); 1972 World Heritage Convention, Art. 8(2) ('equitable representation of the different regions and cultures of the world' on the World Heritage Committee); 1982 UNCLOS, Art. 161(1)(e) (equitable geographic distribution of membership of the Council of the International Seabed Authority).

²¹⁶ See e.g. 1973 Baltic Sea Fishing Convention, Art. I. ²¹⁷ 1978 Amazonian Treaty, Preamble.

²¹⁸ (1997) ICJ Reports 7 at 56; Chapter 8, pp. 313–19, below. ²¹⁹ *Pulp Mills* case, para. 177.

the 1987 Montreal Protocol).²²⁰ The 1992 Climate Change Convention requires the equitable allocation of emission rights, although many would question whether this was in fact achieved by the targets for emission reduction eventually agreed in the 1997 Kyoto Protocol.²²¹ The 1992 Biodiversity Convention requires the determination of what constitutes an equitable sharing of the benefits arising out of the use of genetic resources. The 2010 Nagoya Protocol to the Biodiversity Convention establishes a regime for this purpose, but without clarifying what ‘fair and equitable sharing’ entails, other than that such sharing shall be ‘upon mutually agreed terms’.²²² Consequently, in each of these cases, the factors to be taken into account in establishing specific rights and obligations must be determined in the circumstances of each instrument, including its provisions, the context of its negotiation and adoption, and subsequent practice by the organs it establishes and by parties.

Integration of environment and development

A fourth element of ‘sustainable development’ is the commitment to integrate environmental considerations into economic and other development, and to take into account the needs of economic and other social development in crafting, applying and interpreting environmental obligations. The arbitral tribunal in the *Iron Rhine* case confirmed that the integration of appropriate environmental measures in the design and implementation of economic development activities is a requirement of international law.²²³ In many ways, this element of sustainable development is the most important and the most legalistic: its formal application requires the collection and dissemination of environmental information, and the conduct of environmental impact assessments.²²⁴ The integration approach may also serve as the basis for allowing, or requiring, ‘green conditionality’ in bilateral and multilateral development assistance,²²⁵ and the adoption of differentiated legal commitments on the basis of the historic responsibility of states (including the resulting economic benefits) and their capacity to respond to environmental requirements.²²⁶

The integration of environment and development began prior to the 1972 Stockholm Conference. Linkage between conservation and development was made at the United Nations Conference on the Conservation and Utilisation of Resources (UNCCUR) in 1949.²²⁷ In 1971, the General Assembly expressed its conviction that ‘development plans should be compatible with a sound ecology and that adequate environmental conditions can best be ensured by the promotion of development, both at the national and international levels’.²²⁸ Principle 13 of the Stockholm Declaration called on states to adopt ‘an integrated and co-ordinated approach to their development planning so as to ensure that their development is compatible with the need to protect and improve the human environment’. The 1982 World Charter for Nature provided that the conservation of nature was to be taken into account in the planning and

²²⁰ See Chapter 7, pp. 265–74, below.

²²¹ Annex B. Questions over each country’s ‘equitable share’ of the global burden of reducing greenhouse emissions remain a point of great contention in the current international climate change negotiations.

²²² Art. 5(1). ²²³ *Iron Rhine* case, para. 59 and 243.

²²⁴ See e.g. its application by the ICJ in the *Gabčíkovo-Nagymaros* case, p. 214, above. See generally Chapters 14 and 15 below.

²²⁵ Chapter 16, pp. 667–8, below. ²²⁶ See pp. 233–6, below.

²²⁷ Chapter 2, pp. 27–40, above. ²²⁸ UNGA Res. 2849 (XXVI) (1971).

implementation of economic and social development activities and that due account was to be taken of the long-term capacity of natural systems in formulating plans for economic development.²²⁹ Numerous regional treaties were also adopted that support an approach that integrates environment and development. Examples include: the 1974 Paris Convention, which called for an 'integrated planning policy consistent with the requirement of environmental protection';²³⁰ the 1978 Kuwait Convention, which supports an 'integrated management approach . . . which will allow the achievement of environmental and development goals in a harmonious manner';²³¹ the 1978 Amazonian Treaty, which affirms the need to 'maintain a balance between economic growth and conservation of the environment';²³² and the 1985 ASEAN Convention, which seeks to ensure that 'conservation and management of natural resources are treated as an integral part of development planning at all stages and at all levels'.²³³

For many years, however, the international regulation of environmental issues took place exclusively in international fora, such as UNEP and the Conferences of the Parties to environmental treaties, which were not directly connected to international economic organisations, particularly the World Bank and the GATT/WTO. One consequence was a divergence in approaches. This is a constitutional problem, which appears also in the organisation of national governments. The constituent instruments which originally created the UN and its specialised agencies, and in particular the GATT/WTO, the World Bank, the multilateral development banks and regional economic integration organisations, did not address environmental protection requirements or the need to ensure that development was environmentally sustainable. Environmental concerns were historically addressed on the margins of international economic concerns, and it is only since UNCED that the relationship between environmental protection and economic development has been more fully recognised by the international community. The UNCED process and the instruments reflect the need to integrate environment and development, and it is unlikely that the two objectives could now be easily separated.

Principle 4 of the Rio Declaration provides that: 'In order to achieve sustainable development, environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it.'²³⁴ An integrated approach to environment and development has significant practical consequences, most notably, that environmental considerations will increasingly be a feature of international economic policy and law (and that lawyers working in the area of environmental protection will need to familiarise themselves with economic law and concepts). This is borne out by the changes that have taken place since the late 1980s. Examples include: the establishment of an Environment Department at the World Bank and the adoption of environmental assessment and related requirements; the convergence of trade with environment at the GATT and then the WTO; the elaboration of language on sustainable development in the Articles of Agreement of the EBRD and the WTO; and the development of environmental jurisprudence in competition, subsidy, foreign investment and intellectual property law.²³⁵

The integration of environment and development, advocated by the global instruments adopted at UNCED, and treaties adopted subsequently,²³⁶ re-opened debate over the 'right to

²²⁹ Paras. 7 and 8. ²³⁰ Art. 6(2)(d). ²³¹ Preamble.

²³² Preamble. ²³³ Art. 2(1). ²³⁴ Invoked in the *Iron Rhine* case, para. 59.

²³⁵ See further Chapter 16, pp. 666–78, below; Chapter 19, pp. 806–46, below; and Chapter 20.

²³⁶ 1992 Biodiversity Convention, Art. 6(b); 1992 Climate Change Convention, Preamble; 2000 Cotonou Agreement, Art. 32 (requiring the 'mainstreaming' of environmental sustainability throughout development co-operation).

development', after efforts to establish a New International Economic Order in the mid-1970s met with opposition from some of the larger industrialised countries. Principle 3 of the Rio Declaration implicitly accepts the 'right to development', although the United States declared that it did not, by joining consensus on the Rio Declaration, change its long-standing opposition to the 'so-called "right to development"'. For the United States, development 'is not a right . . . [it] is a goal we all hold', and the US disassociated itself from any interpretation of Principle 3 that accepted a 'right to development'.²³⁷ Developing countries have, in this context, been careful to introduce language into treaties to safeguard their future development and limit the extent to which international environmental regulation might limit such development. Both UNCED treaties include language to the effect that the overriding priority needs of developing countries are the achievement of economic growth and the eradication of poverty,²³⁸ an objective given more concrete expression by making the effective implementation by developing countries of their commitments dependent upon the effective implementation by developed countries of their financial obligations.²³⁹ Despite the US language, Principle 3 of the Rio Declaration, with which Principle 4 must be read to be fully understood, is part of the bargain struck between developed and developing countries, which is also evident in the convoluted language of Article 3(4) of the Climate Change Convention. This provides that the parties 'have a right to and should, promote sustainable development', which reflects a compromise text between those states which sought an express recognition of a 'right to development' and those states which sought to dilute such a right by recognising only a 'right to promote sustainable development'.

Conclusion

International law recognises a principle (or concept) of 'sustainable development'. The term needs to be taken, in the context of its historic evolution, as reflecting a range of procedural and substantive commitments and obligations. These are primarily, but not exclusively, recognition of:

- the need to take into consideration the needs of present and future generations;
- the acceptance, on environmental protection grounds, of limits placed upon the use and exploitation of natural resources;
- the role of equitable principles in the allocation of rights and obligations;
- the need to integrate all aspects of environment and development; and
- the need to interpret and apply rules of international law in an integrated and systemic manner.

PRECAUTIONARY PRINCIPLE²⁴⁰

Whereas the preventive principle and elements of the sustainable development concept can be traced back to international environmental treaties and other international acts since at least the 1930s, the precautionary principle only began to appear in international legal

²³⁷ UNCED Report, vol. II, 17; UN Doc. A/CONF.151/26/Rev.1 (vol. II) (1993).

²³⁸ 1992 Climate Change Convention, Preamble; 1992 Biodiversity Convention, Preamble.

²³⁹ 1992 Climate Change Convention, Art. 4(7); 1992 Biodiversity Convention, Art. 20(4); see further Chapter 16, below.

²⁴⁰ D. Bodansky, 'Scientific Uncertainty and the Precautionary Principle', 33 *Environment* 4 (1991); J. Cameron and J. Abouchar, 'The Precautionary Principle: A Fundamental Principle of Law and Policy for the Protection of the Global Environment', 14 *Boston College International and Comparative Law Review* 1 (1991); C. Boyden Gray and D. Rivkin, 'A "No Regrets" Environmental Policy', 83 *Foreign Policy* 47 (1991); R. Rehbinder, *Das Vorsorgeprinzip in*

instruments in the mid-1980s, although prior to then it had featured as a principle in domestic legal systems, most notably that of West Germany.²⁴¹ The precautionary principle aims to provide guidance in the development and application of international environmental law where there is scientific uncertainty. It continues to generate disagreement as to its meaning and effect, as reflected in particular in the views of states and international judicial practice. On the one hand, some consider that it provides the basis for early international legal action to address highly threatening environmental issues such as chemical pollution and climate change.²⁴² On the other hand, its opponents have decried the potential that the principle has for over-regulation and limiting human activity. The core of the principle, which is still evolving, is reflected in Principle 15 of the Rio Declaration, which provides that:

Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.²⁴³

Principle 15 also provides that ‘the precautionary approach shall be widely applied by states according to their capabilities’.

The precautionary principle (or precautionary approach, as the US and some others prefer to call it) has been adopted in many international environmental treaties since 1989. Although its precise formulation is not identical in each instrument, the language of Principle 15 of the Rio Declaration attracts broad support. The principle finds its roots in the more traditional environmental agreements that call on parties to such agreements, and the institutions they create, to act and to adopt decisions that are based upon ‘scientific findings’ or methods,²⁴⁴ or ‘in the light of knowledge available at the time’.²⁴⁵ These standards suggest that action shall only be taken

Internationalen Rechtsvergleich (1991); H. Hohmann, *Precautionary Legal Duties and Principles of Modern International Environmental Law* (1994); T. O’Riordan and J. Cameron (eds.), *Interpreting the Precautionary Principle* (1994); D. Freestone and E. Hey, *The Precautionary Principle and International Law* (1995); A. Fabra, ‘The LOSC and the Implementation of the Precautionary Principle’, 10 *Yearbook of International Environmental Law* 15 (1999); D. Freestone, ‘Caution or Precaution: “A Rose by Any Other Name . . .”’, 10 *Yearbook of International Environmental Law* 25 (1999); A. Trouwborst, *Evolution and Status of the Precautionary Principle in International Law* (2002); N. de Sadeleer, *Environmental Principles in an Age of Risk* (2003); S. Marr, *The Precautionary Principle in the Law of the Sea – Modern Decision-Making in International Law* (2003); S. Shaw and R. Schwartz, *UNU-IAS Report: Trading Precaution – The Precautionary Principle and the WTO* (2005); C. Sunstein, *Laws of Fear: Beyond the Precautionary Principle* (2005); E. Fisher, J. Jones and R. von Schomberg (eds.), *Implementing the Precautionary Principle: Perspectives and Prospects* (2006); J. Peel, *Science and Risk Regulation in International Law* (2010).

²⁴¹ K. von Moltke, ‘The Vorsorgeprinzip in West German Environmental Policy’, in Twelfth Report (Royal Commission on Environmental Pollution, UK, HMSO, Cm 310, 1988), 57.

²⁴² See e.g. the support for the precautionary principle by low-lying AOSIS countries in the climate change negotiations, put as follows: ‘For us the precautionary principle is much more than a semantic or theoretical exercise. It is an ecological and moral imperative. We trust the world understands our concerns by now. We do not have the luxury of waiting for conclusive proof, as some have suggested in the past. The proof, we fear, will kill us.’ Ambassador Robert van Lierop, Permanent Representative of Vanuatu to the UN and Co-Chairman of Working Group 1 of the INC/FCCC, Statement to the Plenary Session of the INC/FCCC, 5 February 1991, at 3.

²⁴³ See also WSSD Plan of Implementation, paras. 22 and 103.

²⁴⁴ 1946 International Whaling Convention, Art. V(2); 1972 Antarctic Seals Convention, Annex, para. 7(b); 1972 World Heritage Convention, Preamble; 1972 London Convention, Art. XV(2); 1979 Bonn Convention, Arts. III(2) and XI(3) (action on the basis of ‘reliable evidence, including the best scientific evidence available’).

²⁴⁵ 1960 Radiation Convention, Art. 3(1).

where there is scientific evidence that significant environmental damage is occurring, and that in the absence of such evidence no action would be required. Examples of a traditional approach include the 1974 Paris Convention, which allowed parties to take additional measures ‘if scientific evidence has established that a serious hazard may be created in the maritime area by that substance and if urgent action is necessary’:²⁴⁶ this required the party wishing to adopt measures to ‘prove’ a case for action based upon the existence of sufficient scientific evidence, which was often difficult to obtain.

The 1969 Intervention Convention was one of the earliest treaties to recognise the limitations of the traditional approach, concerning the environmental consequences of a failure to act. It allows proportionate measures to be taken to prevent, mitigate or eliminate grave and imminent danger to coastlines from the threat of oil pollution, taking account of ‘the extent and probability of imminent damage if those measures are not taken’.²⁴⁷ Developments in the mid-1980s to address ozone depletion reflected growing support for precautionary action. The first treaty to refer to the term was the 1985 Vienna Convention, which reflected the parties’ recognition of the ‘precautionary measures’ taken at the national and international levels.²⁴⁸ By 1987, the parties to the Montreal Protocol noted the ‘precautionary measures’ to control emissions from certain CFCs which had already been taken at the national and regional levels and stated the determination to ‘protect the ozone layer by taking precautionary measures to control equitably total global emissions of substances that deplete it’.²⁴⁹

The precautionary approach has been relied upon in relation to measures to protect a range of other environmental media, especially the marine environment. The Preamble to the 1984 Ministerial Declaration of the International Conference on the Protection of the North Sea reflected a consciousness that states ‘must not wait for proof of harmful effects before taking action’, since damage to the marine environment can be irreversible or remediable only at considerable expense and over a long period.²⁵⁰ This introduced the idea that precautionary action may be justified on economic grounds. The Ministerial Declaration of the Second North Sea Conference (1987) accepted that, ‘in order to protect the North Sea from possibly damaging effects of the most dangerous substances, a precautionary approach is necessary’.²⁵¹ At the Third North Sea Conference (1990), Ministers pledged to continue to apply the precautionary principle.²⁵² The 1990 Bergen Ministerial Declaration on Sustainable Development in the United Nations Economic Commission for Europe (UNECE) Region was the first international instrument to treat the principle as one of general application and linked to sustainable development. The Declaration provided that:

In order to achieve sustainable development, policies must be based on the precautionary principle. Environmental measures must anticipate, prevent and attack the causes of environmental degradation. Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.²⁵³

²⁴⁶ Art. 4(4). ²⁴⁷ Arts. I and V(3)(a). ²⁴⁸ Preamble.

²⁴⁹ Preamble. ²⁵⁰ Bremen, 1 November 1984.

²⁵¹ London, 25 November 1987; also PARCOM Recommendation 89/1 (1989) (supporting the ‘principle of precautionary action’).

²⁵² The Hague, 8 March 1990. ²⁵³ Bergen, 16 May 1990, para. 7; IPE (I/B/16_05_90).

Central to this text is the element of anticipation, reflecting a need for effective environmental measures to be based upon actions which take a longer-term approach and which might predict changes in the basis of our scientific knowledge. Moreover, for the precautionary principle to apply, the threat of environmental damage must be 'serious' or 'irreversible', although the Bergen Declaration did not suggest any limitation on grounds of cost-effectiveness as to the measures which should not be postponed. While the amendments to the Montreal Protocol were being prepared, the UNEP Governing Council recognised that 'waiting for scientific proof regarding the impact of pollutants discharged into the marine environment could result in irreversible damage to the marine environment and in human suffering', and recommended that all governments adopt the 'principle of precautionary action' as the basis of their policy with regard to the prevention and elimination of marine pollution.²⁵⁴

Since that time, numerous environmental treaties, including some which are of global application on environmental matters of broad concern and applicable to almost all human activities, have adopted the precautionary principle or its underlying rationale. Among the earliest was the 1991 Bamako Convention, which requires parties to strive to adopt and implement

the preventive, precautionary approach to pollution which entails, *inter alia*, preventing the release into the environment of substances which may cause harm to humans or the environment without waiting for scientific proof regarding such harm. The parties shall co-operate with each other in taking the appropriate measures to implement the precautionary principle to pollution prevention through the application of clean production methods.²⁵⁵

This formulation is one of the most far-reaching. It links the preventive and precautionary approaches, does not require damage to be 'serious' or 'irreversible', and lowers the threshold at which scientific evidence might require action. The parties to the 1992 Watercourses Convention also agreed to be guided by the precautionary principle

by virtue of which action to avoid the potential transboundary impact of the release of hazardous substances shall not be postponed on the ground that scientific research has not fully proved a causal link between those substances, on the one hand, and the potential transboundary impact, on the other hand.²⁵⁶

This formulation limits the application of the principle to transboundary effects alone, although the level of environmental damage is raised above that required by the Bamako Convention to 'significant adverse effect'. The 1992 Biodiversity Convention does not specifically refer to the precautionary principle, although the Preamble notes that, 'where there is a threat of significant reduction or loss of biological diversity, lack of full scientific certainty should not be used as a reason for postponing measures to avoid or minimise such a threat'.²⁵⁷ The level of

²⁵⁴ Governing Council Decision 15/27 (1989). ²⁵⁵ Art. 4(3)(f).

²⁵⁶ Art. 2(5)(a). See also the 1994 Danube Convention, Art. 2(4). ²⁵⁷ Preamble.

environmental damage required here is well below the ‘serious’ or ‘irreversible’ level required by the 1990 Bergen Declaration. The 2000 Biosafety Protocol relies extensively on the precautionary approach. The objective of the Protocol is stated to be ‘in accordance’ with Principle 15 of the Rio Declaration, and, to that end, the Protocol affirms that ‘lack of scientific certainty due to insufficient relevant scientific information and knowledge regarding the extent of the potential adverse effects of a living modified organism on the conservation and sustainable use of biological diversity’ shall not prevent a party from prohibiting imports.²⁵⁸ The reference to precaution in the 1992 Climate Change Convention was a controversial matter, and the text as finally adopted established limits on the application of the precautionary principle by requiring a threat of ‘serious or irreversible damage’ and by linking the commitment to an encouragement to take measures that are ‘cost effective’.²⁵⁹ Similar considerations and objections (voiced particularly by the US) constrained the adoption of the precautionary principle in the 2001 POPs Convention. Even so, the POPs Convention establishes an objective of protecting health and the environment from POPs, ‘[m]indful of the precautionary approach as set forth in Principle 15 of the Rio Declaration’.²⁶⁰ In addition, when considering whether to list additional chemicals as POPs under the Convention, the Conference of the Parties is directed to decide ‘in a precautionary manner’.²⁶¹ Beyond these conventions, many others commit their parties to apply the precautionary principle or approach. The 1992 OSPAR Convention links prevention and precaution: preventive measures are to be taken when there are ‘reasonable grounds for concern . . . even when there is no conclusive evidence of a causal relationship between the inputs and the effects’.²⁶² The threshold here is quite low. The standard applied by the 1992 Baltic Sea Convention introduces yet another variation: preventive measures are to be taken ‘when there is reason to assume’ that harm might be caused ‘even when there is no conclusive evidence of a causal relationship between inputs and their alleged effects’.²⁶³ The 1995 Fish Stocks Agreement commits coastal states and states fishing on the high seas to apply the precautionary approach widely, and sets out in detail the modalities for its application.²⁶⁴ A growing number of other environmental conventions – both regional and global – also give effect to a precautionary approach in relation to many different subject matters.²⁶⁵ In addition, the precautionary principle has been recognised to play a role in international law outside of the environmental field. In the case of *Beef Hormones*, the WTO Appellate Body ruled that ‘the precautionary principle has been incorporated and given a specific meaning in Article 5.7 of the [WTO] SPS Agreement’.²⁶⁶ Since 1992, the precautionary

²⁵⁸ Art. 10(6). See also Art. 11(8) and, in relation to risk assessment, Art. 15 and Annex 3. ²⁵⁹ Art. 3(3).

²⁶⁰ Art. 1. ²⁶¹ Art. 8(9). ²⁶² Art. 2(2)(a). ²⁶³ Art. 3(2).

²⁶⁴ Arts. 5(c) and 6 and Annex II (Guidelines for the Application of Precautionary Reference Points in Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks).

²⁶⁵ E.g. 1973 CITES, Res. Conf. 9.24 (1994), Chapter 10, p. 475, below; 1980 CCAMLR Convention, Art. 2(3); 1989 Waigani Convention, Arts. 1 and 13(3); 1994 Energy Charter Treaty, Art. 18; 1996 Protocol to the 1972 London Convention, Art. 3; 2000 Biosafety Protocol, Art. 1; 2002 North-East Pacific Convention, Art. 5(6)(a); 2003 Protocol on Pollutant Release and Transfer Registers, Art. 3(4); 2003 Carpathians Convention, Art. 2(2); 1994 Rivers Meuse and Scheldt Agreements, Art. 3(2); 1994 Danube Convention, Art. 2(4) and (5); 1994 Mediterranean Offshore Protocol, Preamble; 1996 ACCOBAMS, Art. II(4); 1999 Rhine Convention, Art. 4.

²⁶⁶ Para. 120.

principle has also been an established feature of the EU Treaty,²⁶⁷ with interpretations of its meaning developed by the European Commission,²⁶⁸ and in the case law of the ECJ.²⁶⁹

The precautionary principle or approach has now received widespread support by the international community in relation to a broad range of subject areas. What does the principle mean, and what status does it have in international law? There is no clear and uniform understanding of the meaning of the precautionary principle among states and other members of the international community. At the most general level, it means that states agree to act carefully and with foresight when taking decisions that concern activities that may have an adverse impact on the environment. A more focused interpretation provides that the principle requires activities and substances, which may be harmful to the environment, to be regulated, and possibly prohibited, even if no conclusive or overwhelming evidence is available as to the harm or likely harm they may cause to the environment. As the Bergen Ministerial Declaration put it, 'lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation'. Under the Rio Declaration, the requirement is stated to be mandatory: lack of full scientific certainty 'shall not be used' to prevent action. What remains open is the level of scientific uncertainty sufficient to override arguments for postponing measures, or at which measures might even be required as a matter of international law.

A more fundamental change would be adopted by an interpretation of the precautionary principle, which would shift the burden of proof. According to traditional approaches, the burden of proof currently lies with the person opposing an activity to prove that it does or is likely to cause environmental damage. An alternative approach, supported by the precautionary principle, would tend to shift the burden of proof and require the person who wishes to carry out an activity to prove that it will not cause harm to the environment. This interpretation would require polluters, and polluting states, to establish that their activities and the discharge of certain substances would not adversely or significantly affect the environment before they were granted the right to release the potentially polluting substances or carry out the proposed activity. This interpretation may also require national or international regulatory action where the scientific evidence suggests that lack of action may result in serious or irreversible harm to the environment, or where there are divergent views on the risks of action.

²⁶⁷ The 1992 Maastricht Treaty amended Art. 130r(2) of the former EC Treaty so that EU action on the environment 'shall be based on the precautionary principle', and the 1997 Amsterdam Treaty further amended the EC Treaty to apply the principle to Community policy on the environment (Art. 174(2)). For the relevant provisions in the EU Treaty, see Art. 191.

²⁶⁸ European Commission, Communication on the Precautionary Principle, COM 2000 (1), 2 February 2000.

²⁶⁹ See e.g. Case C-180/96, *United Kingdom v. Commission* [1998] ECR I-2265 ('the institutions may take protective measures without having to wait until the reality and seriousness of those risks become fully apparent', at paras. 99 and 100); see also Case T-70/99, *Alpharma Inc. v. Council of the European Union*, Order of 30 June 1999 (Interim Measures) [1999] ECR II-2027 (where the President of the Court of First Instance referred to the principle and affirmed that 'requirements linked to the protection of public health should undoubtedly be given greater weight than economic considerations'). See also Case C-6/99, *Association Greenpeace France and Others v. Ministere de l'Agriculture et de la Peche and Others* [2000] ECR I-1651 (French edition) (in relation to Directive 90/220, observance of the precautionary principle is reflected in the notifier's obligation immediately to notify the competent authority of new information regarding the risks of the product to human health or the environment and the competent authority's obligation immediately to inform the Commission and the other member states about this information and, second, in the right of any member state, provisionally to restrict or prohibit the use and/or sale on its territory of a product which has received consent where it has justifiable reasons to consider that it constitutes a risk to human health or the environment: para. 44).

There is some evidence to suggest that this interpretation is beginning to be supported by state practice, even if it still falls short of having sufficient support to allow it to be considered a rule of general application.²⁷⁰ Under the 1992 OSPAR Convention, parties (France and the United Kingdom) which originally wanted to retain the option of dumping low- and intermediate-level radioactive wastes at sea were required to report to the OSPAR Commission on ‘the results of scientific studies which show that any potential dumping operations would not result in hazards to human health, harm to living resources or marine ecosystems, damage to amenities or interference with other legitimate uses of the sea’.²⁷¹

The practice of international courts and tribunals, and of states appearing before them, also sheds some light on the meaning and effect of the precautionary principle. Before the ICJ the principle appears to have first been raised in New Zealand’s 1995 request concerning French nuclear testing.²⁷² New Zealand relied extensively on the principle, which it described as ‘a very widely accepted and operative principle of international law’ and which shifted the burden onto France to prove that the proposed tests would not give rise to environmental damage.²⁷³ Five ‘intervening’ states (Australia, Micronesia, the Marshall Islands, Samoa and the Solomon Islands) also invoked the principle. France responded that the status of the principle in international law was ‘tout à fait incertain’, but that in any event it had been complied with, and that evidentiary burdens were no different in the environmental field than any other area of international law.²⁷⁴ The ICJ’s order did not refer to these arguments, although Judge Weeramantry’s dissent noted that the principle had ‘evolved to meet [the] evidentiary difficulty caused by the fact [that] information required to prove a proposition’ may be ‘in the hands of the party causing or threatening the damage’, and that it was ‘gaining increasing support as part of the international law of the environment’.²⁷⁵ In the *Gabčíkovo-Nagymaros* case, Hungary and Slovakia also invoked the precautionary principle.²⁷⁶ Again, the ICJ did not feel the need to address the principle, limiting itself to a passing reference to Hungary’s claim that the principle justified the termination of the 1977 treaty and its recognition of the parties’ agreement on the need to take environmental concerns seriously and to take the required precautionary measures.²⁷⁷ Of particular note was the failure of the ICJ to refer to or apply the principle in its consideration of the conditions under which Hungary could invoke the concept of ecological necessity to preclude the wrongfulness of its suspension of works on the two barrages in 1989.²⁷⁸ Having acknowledged without difficulty ‘that the concerns expressed by

²⁷⁰ The ICJ’s ruling in *Pulp Mills*, p. 224, below, suggests the ‘reversal of the burden of proof’ interpretation of the precautionary principle is not generally accepted in international law.

²⁷¹ Annex II, Art. 3(3)(c). ²⁷² Chapter 7, pp. 240–2, below.

²⁷³ New Zealand Request, para. 105; see also ICJ CR/95/20, at 20–1 and 36–8. ²⁷⁴ ICJ CR/95/20, at 71–2 and 75.

²⁷⁵ (1995) ICJ Reports 342; see also Ad Hoc Judge Palmer (‘the norm involved in the precautionary principle ha[d] developed rapidly and might now be a principle of customary international law relating to the environment’: *ibid.*, 412). See also Judge Weeramantry’s Dissenting Opinion in *The Legality of the Threat or Use of Nuclear Weapons* (1996) ICJ Reports 502.

²⁷⁶ Chapter 8, pp. 313–19, below.

²⁷⁷ (1997) ICJ Reports 62, para. 97, and 68, para. 113. See also Chapter 8, pp. 313–19, below. But see the Separate Opinion of Judge Koroma, that the precautionary principle was incorporated in the 1977 treaty but ‘had not been proved to have been violated to an extent sufficient to have warranted the unilateral termination of the Treaty’: *ibid.*, 152.

²⁷⁸ The ICJ found that a state of necessity was, on an exceptional basis, a ground recognised by customary international law for precluding the wrongfulness of an act not in conformity with an international obligation, and relied on the formulation of draft Art. 33 of the ILC’s Draft Articles on State Responsibility: (1997) ICJ Reports 7, paras. 50–2.

Hungary for its natural environment in the region affected by the Gabčíkovo-Nagymaros Project related to an “essential interest” of that State’, the ICJ nevertheless found that Hungary had not proved that ‘a real, “grave” and “imminent” “peril” existed in 1989 and that the measures taken by Hungary were the only possible response to it’.²⁷⁹ The ICJ found that there were serious uncertainties concerning future harm to freshwater supplies and biodiversity, but that these

could not, alone, establish the objective existence of a ‘peril’ in the sense of a component element of a state of necessity. The word ‘peril’ certainly evokes the idea of ‘risk’; that is precisely what distinguishes ‘peril’ from material damage. But a state of necessity could not exist without a ‘peril’ duly established at the relevant point in time; the mere apprehension of a possible ‘peril’ could not suffice in that respect. It could moreover hardly be otherwise, when the ‘peril’ constituting the state of necessity has at the same time to be ‘grave’ and ‘imminent’. ‘Imminence’ is synonymous with ‘immediacy’ or ‘proximity’ and goes far beyond the concept of ‘possibility’. That does not exclude, in the view of the Court, that a ‘peril’ appearing in the long term might be held to be ‘imminent’ as soon as it is established, at the relevant point in time, that the realization of that peril, however far off it might be, is not thereby any less certain and inevitable.²⁸⁰

This is not precautionary language, premised as it is on the need to establish the certainty and inevitability of serious harm. However, it must be recognised that the ICJ was concerned here with the application of the law as it stood in 1989, when Hungary had wrongfully (in the view of the ICJ) suspended work on the project. At that time, the precautionary principle had not yet emerged and could not realistically be applied as general international law. It may be that the ICJ also had this in mind when it indicated later in the judgment that ‘[w]hat might have been a correct application of the law in 1989 or 1992, if the case had been before the Court then, could be a miscarriage of justice if prescribed in 1997’.²⁸¹ By the time of the *Pulp Mills* case, decided in 2010, the ICJ’s position had evolved. In response to arguments put by Argentina, the ICJ noted that, ‘while a precautionary approach may be relevant in the interpretation and application of the provisions of the [1975 Uruguay River] Statute, it does not follow that it operates as a reversal of the burden of proof’.²⁸² Whilst this falls well short of any confirmation as to a requirement of precaution in customary law, the Court appears to have recognised that the principle is not without effect, even if in a limited way. ITLOS has also been presented with arguments invoking precaution, and has shown itself to be notably more open to the application of the principle, albeit without express reliance. In 1999, in the *Southern Bluefin Tuna* cases, Australia and New Zealand requested the tribunal to order ‘that the parties act consistently with the precautionary principle in fishing for southern bluefin tuna pending a final settlement of the dispute’.²⁸³ Japan, the respondent state, did not address the question of the status or effect of the principle. In its Order, the tribunal expressed the view that the parties should ‘act with prudence and caution to ensure that effective conservation measures are taken to prevent serious harm to the stock of southern bluefin tuna’,²⁸⁴ that there was ‘scientific uncertainty regarding measures to be taken to conserve the stock of southern bluefin tuna’,²⁸⁵

²⁷⁹ *Ibid.*, para. 54.

²⁸⁰ *Ibid.*

²⁸¹ *Ibid.*, para. 134.

²⁸² *Pulp Mills* case, para. 164.

²⁸³ Chapter 9, pp. 420–1, below.

²⁸⁴ *Southern Bluefin Tuna* case, Order, para. 77.

²⁸⁵ *Ibid.*, para. 79.

and that, although it could not conclusively assess the scientific evidence presented by the parties, measures should be taken as a matter of urgency to preserve the rights of the parties and to avert further deterioration of the southern bluefin tuna stock.²⁸⁶ In ordering the parties to refrain from conducting experimental fishing programmes, the tribunal was plainly taking a precautionary approach, as Judge Treves recognised in his Separate Opinion.²⁸⁷

In 2001, in the *MOX* case, Ireland claimed that the United Kingdom had failed to apply a precautionary approach to the protection of the Irish Sea in the exercise of its decision-making authority in relation to the direct and indirect consequences of the operation of the MOX plant and international movements of radioactive materials associated with the operation of the MOX plant.²⁸⁸ The principle was invoked by Ireland at the provisional measures phase to support its claim that the United Kingdom had the burden of demonstrating that no harm would arise from discharges and other consequences of the operation of the MOX plant, and to inform the assessment by the Tribunal of the urgency of the measures it was required to take in respect of the operation of the MOX plant.²⁸⁹ For its part, and while accepting that in assessing the level of risk in any given case considerations of prudence and caution may be relevant, the United Kingdom argued that, in the absence of evidence showing a real risk of harm, precaution could not warrant a restraint of the rights of the United Kingdom to operate the plant.²⁹⁰ The Tribunal did not order the suspension of the operation of the plant, as Ireland had requested, but instead ordered the parties to co-operate and enter into consultations to exchange further information on possible consequences for the Irish Sea arising out of the commissioning of the MOX plant and to devise, as appropriate, measures to prevent pollution of the marine environment which might result from the operation of the MOX plant.²⁹¹ That Order, which has a certain precautionary character, was premised on considerations of ‘prudence and caution’,²⁹² an approach also taken up in the Provisional Measures Order in the *Land Reclamation* case.²⁹³

In its *Advisory Opinion on Responsibilities and Obligations in the Area*, the ITLOS Seabed Disputes Chamber noted that, under the 1982 UNCLOS and related instruments, States sponsoring activities for prospecting and exploration for polymetallic nodules and polymetallic

²⁸⁶ *Ibid.*, para. 80.

²⁸⁷ ‘In the present case, it would seem to me that the requirement of urgency is satisfied only in the light of such precautionary approach. I regret that this is not stated explicitly in the Order’: Separate Opinion of Judge Treves, para. 8. See also Separate Opinion of Judge Lang (‘Nevertheless, it is not possible, on the basis of the materials available and arguments presented on this application for provisional measures, to determine whether, as the Applicants contend, customary international law recognizes a precautionary principle’: at para. 15), and Ad Hoc Judge Shearer (‘The Tribunal has not found it necessary to enter into a discussion of the precautionary principle/approach. However, I believe that the measures ordered by the Tribunal are rightly based upon considerations deriving from a precautionary approach.’).

²⁸⁸ Chapter 9, p. 316, below; see Ireland’s Statement of Claim, 25 October 2001, para. 34 (‘the precautionary principle is a rule of customary international law which is binding upon the United Kingdom and relevant to the assessment of the United Kingdom’s actions by reference to [UNCLOS]’).

²⁸⁹ Order of 3 December 2001, para. 71. ²⁹⁰ UK Response, 15 November 2001, para. 150.

²⁹¹ Order of 3 December 2001, para. 89(1).

²⁹² *Ibid.*, para. 84. Cf. the Separate Opinion of Ad Hoc Judge Szekely (the Tribunal ‘should have been responsive, in the face of such uncertainty, to the Irish demands regarding the application of the precautionary principle (see paragraphs 96 to 101 of the Request, pp. 43–6). It is regrettable that it did not do so, since acting otherwise would have led to granting the provisional measure requested by Ireland regarding the suspension of the commissioning of the plant.’).

²⁹³ *Land Reclamation* case, Provisional Measures Order, 8 October 2003, para. 99.

sulphides in the Area had ‘the obligation to apply a precautionary approach’.²⁹⁴ The Chamber then went a step further, pointing out that ‘the precautionary approach is also an integral part of the general obligation of due diligence of sponsoring States, which is applicable even outside the scope of the Regulations’, and that ignoring ‘plausible indications of potential risk . . . would amount to a failure to comply with the precautionary approach’.²⁹⁵ Invoking the passage in the *Pulp Mills* judgment, the Chamber noted that the precautionary approach has been incorporated into numerous international treaties and other instruments that reflect Principle 15 of the Rio Declaration, and that this has ‘initiated a trend towards making this approach part of customary international law’.²⁹⁶

The principle has been addressed by the panels and the Appellate Body in the WTO dispute settlement system.²⁹⁷ In 1998, in the *Beef Hormones* case, the then European Community invoked the principle to justify its claim that it was entitled to prohibit imports of beef produced in the United States and Canada with artificial hormones, where the impacts on human health were uncertain. The Community argued that the principle was already ‘a general customary rule of international law or at least a general principle of law’, that it applied to both the assessment and the management of a risk, and that it informed the meaning and effect of Articles 5.1 and 5.2 of the WTO’s SPS Agreement.²⁹⁸ The United States denied that the principle represented a principle of customary international law, and preferred to characterise it as an ‘approach’ the content of which may vary from context to context.²⁹⁹ Canada referred to a precautionary approach as ‘an emerging principle of international law, which may in the future crystallize into one of the “general principles of law recognized by civilized nations”, within the meaning of Article 38(1)(c) of the ICJ Statute’.³⁰⁰ The WTO Appellate Body agreed with the United States and Canada that the precautionary principle did not override Articles 5.1 and 5.2 of the SPS Agreement, although it considered that it was reflected in the Preamble to, and Articles 3.3 and 5.7 of, the SPS Agreement, which did not exhaust the relevance of the principle.³⁰¹ Recognising that the status of the principle in international law was the subject of continued debate, and that

²⁹⁴ *Responsibilities and Obligations in the Area*, paras. 121–2 and 125–7 (the Chamber noted that Regulation 31(2) of the Nodules Regulations and Regulation 33(2) of the Sulphides Regulations provided that sponsoring states (as well as the Authority) ‘shall apply a precautionary approach, as reflected in Principle 15 of the Rio Declaration’ in order ‘to ensure effective protection for the marine environment from harmful effects which may arise from activities in the Area’, transforming ‘this non-binding statement of the precautionary approach in the Rio Declaration into a binding obligation’: at para. 127).

²⁹⁵ *Ibid.*, para. 131. ²⁹⁶ *Ibid.*, para. 135.

²⁹⁷ See generally T. Christoforou, ‘Science, Law and Precaution in Dispute Resolution on Health and Environmental Protection: What Role for Scientific Experts?’, in J. Bourrinet and S. Maljean-Dubois (eds.), *Le Commerce International des Organismes Génétiquement Modifiés* (2002).

²⁹⁸ Chapter 19, pp. 832–8, below; see Report of the Appellate Body, 16 January 1998, WT/DS48/AB/R, para. 16.

²⁹⁹ *Ibid.*, para. 43. The United States stated that the SPS Agreement recognised a precautionary approach (in its Art. 5.7) so there was no need to invoke a ‘precautionary principle’ to be risk-averse.

³⁰⁰ *Ibid.*, para. 60.

³⁰¹ *Ibid.*, para. 124 (‘a panel charged with determining . . . whether “sufficient scientific evidence” exists to warrant the maintenance by a Member of a particular SPS measure may, of course, and should, bear in mind that responsible, representative governments commonly act from perspectives of prudence and precaution where risks of irreversible, e.g. life-terminating, damage to human health are concerned’). The Appellate Body went on to state that ‘responsible and representative governments may act in good faith on the basis of what, at a given time, may be a divergent opinion coming from qualified and respected sources’ (para. 194), a view endorsed in *EC – Asbestos* (Appellate Body Report, 12 March 2001, para. 178), and adding ‘[i]n justifying a measure under Article XX(b) of the GATT 1994, a Member may also rely, in good faith, on scientific sources which, at that time, may represent a divergent, but qualified and respected, opinion. A Member is not obliged, in setting health policy, automatically to follow what, at a given time, may constitute a majority scientific opinion.’

it was regarded by some as having crystallised into a general principle of customary international environmental law, the Appellate Body said:

Whether it has been widely accepted by Members as a principle of general or customary international law appears less than clear. We consider, however, that it is unnecessary, and probably imprudent, for the Appellate Body in this appeal to take a position on this important, but abstract, question. We note that the Panel itself did not make any definitive finding with regard to the status of the precautionary principle in international law and that the precautionary principle, at least outside the field of international environmental law, still awaits authoritative formulation.³⁰²

Nearly ten years later, in the *EC – Biotech* case, the WTO panel stated that the legal status of the precautionary principle was ‘unsettled’, and since it did not need to take a position on whether or not the principle was a recognised principle of general or customary international law it would ‘refrain from expressing a view on th[e] issue’.³⁰³

The principle has also been raised before human rights courts and commissions. In *San Mateo de Huanchor v. Peru*, the Inter-American Commission on Human Rights adopted precautionary measures requiring an environmental impact assessment for the removal of sludge.³⁰⁴ In *Balmer-Schafroth v. Switzerland*, the applicants claimed that the failure of Switzerland to provide for administrative review of a decision extending the operation of a nuclear facility violated Article 6 of the European Convention on Human Rights.³⁰⁵ The claim was rejected by the majority, because the connection between the government’s decision and the applicants’ right was too remote and tenuous. The Court ruled that the applicants had failed to

establish a direct link between the operating conditions of the power station . . . and their right to protection of their physical integrity, as they failed to show that the operation of Mühleberg power station exposed them personally to a danger that was not only serious but also specific and, above all, imminent. In the absence of such a finding, the effects on the population of the measures which the Federal Council could have ordered to be taken in the instant case therefore remained hypothetical. Consequently, neither the dangers nor the remedies were established with a degree of probability that made the outcome of the proceedings directly decisive.³⁰⁶

A dissenting opinion by seven judges, however, criticised this finding, on the ground that it ‘ignored the whole trend of international institutions and public international law towards protecting persons and heritage, as evident [*inter alia*] in . . . the development of the

³⁰² *Ibid.*, para. 123. The Appellate Body noted that, in the *Gabčíkovo-Nagymaros* case, the ICJ had not identified the precautionary principle as a recently developed norm in the field of environmental protection, and had declined to declare that such principle could override the obligations of the 1977 treaty: *ibid.*, note 93.

³⁰³ WT/DS291/R, 29 September 2006, para. 7.89.

³⁰⁴ Case 12.471, Admissibility Decision of 15 October 2004, para. 12; see further below for the requirement relating to environmental impact assessments and other procedural obligations.

³⁰⁵ Judgment of 26 July 1987, *European Court of Human Rights Reports-IV*. Art. 6 of the Convention provides that: ‘In the determination of his civil rights and obligations . . . everyone is entitled to a fair . . . hearing . . . by [a] . . . tribunal.’

³⁰⁶ *Ibid.*, para. 40.

precautionary principle'.³⁰⁷ In *Tâtar v. Romania*, the Court went a step further, recalling 'the importance of the precautionary principle' and invoking it in support of its finding that Article 8 of the ECHR had been violated.³⁰⁸

At the national level, there have also been several decisions addressing the status of the precautionary principle in international law. In *Vellore*, for example, the Indian Supreme Court ruled that the precautionary principle was an essential feature of 'sustainable development' and as such part of customary international law.³⁰⁹ By contrast, a US federal court was more restrained in its approach, holding that the principle was not yet established in customary international law so as to give rise to a cause of action under the Alien Tort Claims Statute.³¹⁰

The legal status of the precautionary principle thus continues to evolve. There is certainly sufficient evidence of state practice to support the conclusion that the principle, as elaborated in Principle 15 of the Rio Declaration and various international conventions, has now received sufficiently broad support to allow a strong argument to be made that it reflects a principle of customary law, and that within the context of the European Union it has now achieved customary status, without prejudice to the precise consequences of its application in any given case. Although the ICJ and a WTO panel have declined to state that the principle has a customary international law status, the ITLOS Seabed Disputes Chamber has, in effect, reached that conclusion. The reluctance to embrace a clear view is no doubt informed by doubts and differences as to what the practical consequences of the precautionary principle or approach will be in a particular field or in a specific case.³¹¹ At the very least, precaution contributes to the interpretation of international instruments in a manner that will contribute to the protection of the environment in cases of scientific uncertainty as to the impact of a particular activity.

POLLUTER PAYS PRINCIPLE³¹²

The polluter pays principle indicates that the costs of pollution should be borne by the person responsible for causing the pollution. The meaning of the principle, and its application to particular cases and situations, remains open to interpretation, particularly in relation to the nature and extent of the costs included and the circumstances in which the principle will, perhaps exceptionally, not apply. The principle has attracted broad support, and is closely

³⁰⁷ Dissenting Opinion of Judge Pettiti, joined by Judges Golcukul, Walsh, Russo, Valticos, Lopes Rocha and Jambrek.
³⁰⁸ Judgment of 27 January 2009, para. 120.

³⁰⁹ *Vellore Citizens' Welfare Forum v. Union of India and Others*, Writ Petition (C) No. 914 of 1991 (Kuldip Singh and Faizanuddin JJ), Judgment of 28 August 1996, paras. 10, 11 and 15. Cf. *Narmada Bachao Andolan v. Union of India and Others*, Supreme Court of India, Judgment of 18 October 2000 (www.narmada.org/sardar-sarovar/sc.ruling/majority.judgment.doc).

³¹⁰ *Beanal v. Freeport-McMoran*, 969 F Supp 362 at 384 (US District Court for Eastern District of Louisiana, 9 April 1997) ('the principle does not constitute [an] international tort for which there is universal consensus in the international community as to [its] binding status and [its] content'); affirmed 197 F 3d 161 (US Court of Appeals for the Fifth Circuit, 29 November 1999).

³¹¹ In this sense, see Separate Opinion of Judge Treves, note 287 above, para. 9.

³¹² OECD, *The Polluter-Pays Principle* (1975); H. Smets, 'A Propos d'un Ventuel Principe Pollueur-Payeur en Matière de Pollution Transfrontière', 8 *Environmental Policy and Law* 40 (1982); S. E. Gaines, 'The Polluter-Pays Principle: From Economic Equity to Environmental Ethos', 26 *Texas International Law Journal* 463 (1991); H. J. Kim, 'Subsidy, Polluter-Pays Principle and Financial Assistance Among Countries', 34 *JWTL* 115 (2000); N. de Sadeleer, *Environmental Principles: From Political Slogans to Legal Rules* (2005); S. A. Atapattu, *Emerging Principles of International Environmental Law* (2006).

related to the rules governing civil and state liability for environmental damage (as described in Chapter 17 below), the permissibility of certain forms of state subsidies, and the acknowledgment in various instruments by developed countries of the ‘responsibility that they bear in the international pursuit of sustainable development in view of the pressures their societies place on the global environment’, as well as the financial and other consequences that flow from this acknowledgment.³¹³ The practical implications of the polluter pays principle are in its allocation of economic obligations in relation to environmentally damaging activities, particularly in relation to liability,³¹⁴ the use of economic instruments, and the application of rules relating to competition and subsidies.³¹⁵

The polluter pays principle has not received the same degree of support accorded over the years to the principle of preventive action, or the attention more recently accorded to the precautionary principle, although its use is now being taken up in a number of regional agreements.³¹⁶ In the *Rhine Chlorides* case, the arbitral tribunal noted that the principle ‘features in several international instruments, bilateral as well as multilateral, and . . . operates at various levels of effectiveness’, but the tribunal ‘[did] not view this principle as being a part of general international law’.³¹⁷ The strong objections of some countries to the further development of the polluter pays principle, particularly for international relations, is evident from the compromise language adopted by Principle 16 of the Rio Declaration, which provides that:

National authorities should endeavour to promote the internalisation of environmental costs and the use of economic instruments, taking into account the approach that the polluter should, in principle, bear the costs of pollution, with due regard to the public interests and, without distorting international trade and investment.

This text, which falls short of the more specific language of EU, OECD and UNECE instruments, includes language that limits the extent of any obligation that might apply to states.³¹⁸ This derives, at least in part, from the view held by a number of states, both developed and developing, that the polluter pays principle is applicable at the domestic level but does not govern relations or responsibilities between states at the international level.

The polluter pays principle in treaty law can be traced back to some of the first instruments establishing minimum rules on civil liability for damage resulting from hazardous activities. The conventions on civil liability for nuclear damage, the 1960 Paris Convention and the 1963 Vienna Convention,³¹⁹ were influenced by the desire to channel compensation from those responsible for the activity causing damage to the victims. Under the 1969 CLC, however, the shipowner was precluded from relying on the limitation of liability if the incident occurred as a result of his actual fault or privity.³²⁰

³¹³ 1992 Rio Declaration, Principle 7.

³¹⁴ See Institut de Droit International, Resolution on Responsibility and Liability under International Law for Environmental Damage, Art. 13, 37 ILM 1473 (1998).

³¹⁵ See respectively Chapter 17, pp. 714–25, below; Chapter 4, pp. 124–31, above; and Chapter 19, pp. 861–6, below.

³¹⁶ See e.g. 2002 North-East Pacific Convention, Art. 5(6)(b). ³¹⁷ *Rhine Chlorides* case (2004), para. 103.

³¹⁸ See WSSD Plan of Implementation, para. 14(b). ³¹⁹ Chapter 17, pp. 742–5, below.

³²⁰ Art. V(2), Chapter 17, pp. 746–8, below; see also 1977 Civil Liability for Oil Pollution Convention, Art. 6(4).

OECD

The first international instrument to refer expressly to the polluter pays principle was the 1972 OECD Council Recommendation on Guiding Principles Concerning the International Economic Aspects of Environmental Policies, which endorsed the polluter pays principle to allocate the costs of pollution prevention and control measures to encourage rational use of environmental resources and avoid distortions in international trade and investment.³²¹ The Recommendation defined the principle in a limited sense to mean that the polluter should bear the expenses of carrying out the measures deemed necessary by public authorities to protect the environment:

In other words, the cost of these measures should be reflected in the cost of goods and services which cause pollution in production and/or consumption. Such measures should not be accompanied by subsidies that would create significant distortions in international trade and investment.³²²

The 1972 Recommendation does not, on the face of it, apply to the costs of environmental damage. In 1974, the OECD Council adopted a further Recommendation on the Implementation of the Polluter-Pays Principle, which reaffirmed that the principle constituted a 'fundamental principle' for member countries, that aid given for new pollution control technologies and the development of new pollution abatement equipment was not necessarily incompatible with the principle, and that member countries should strive for uniform observance of the principle.³²³ The 1989 OECD Council Recommendation on the Application of the Polluter-Pays Principle to Accidental Pollution extended the principle to imply that the operator of a hazardous installation should bear the cost of reasonable measures to prevent and control accidental pollution from that installation, which are introduced by public authorities in conformity with domestic law prior to the occurrence of an accident.³²⁴ According to the Recommendation, however, this does not necessarily require that 'the costs of reasonable measures to control accidental pollution after an accident should be collected as expeditiously as possible from the legal or natural person who is at the origin of the accident'. Such a domestic legal requirement is merely 'consistent with', rather than implied by, the principle.³²⁵ Examples of specific applications of the polluter pays principle cited by the 1989 Recommendation include adjusting fees or taxes payable by hazardous installations to cover more fully the cost of certain exceptional measures taken by public authorities to prevent and control accidental pollution, and charging to the polluter the cost of reasonable pollution control measures decided on by public authorities following an accident to avoid the spread of environmental damage and limit the release of

³²¹ OECD Council Recommendation C(72)128 (1972), 14 ILM 236 (1975).

³²² *Ibid.*, Annex, para. A.4. The Council further recommended that 'as a general rule, Member countries should not assist the polluters in bearing the costs of pollution control whether by means of subsidies, tax advantages or other measures'.

³²³ C(74)223 (1974), paras. I(1), II(3) and III(1), 14 ILM 234 (1975).

³²⁴ C(89)88 (Final), 28 ILM 1320 (1989); Appendix Guiding Principles Relating to Accidental Pollution, para. 4; these are measures taken to prevent accidents in specific installations and to limit their consequences for human health and the environment, including safety measures, emergency plans, carrying out clean-up operations and minimising ecological effects, but not including humanitarian measures or measures to compensate victims for economic consequences: para. 8.

³²⁵ Para. 5.

hazardous substances (by ceasing emissions at the plant), the pollution as such (by cleaning or decontamination), or its ecological effects (by rehabilitating the polluted environment).³²⁶ The Recommendation also provides guidance on ‘reasonable’ measures: they depend on ‘the circumstances under which they are implemented, the nature and extent of the measures, the threats and hazard existing when the decision is taken, the laws and regulations in force, and the interests which must be protected’.³²⁷ The Recommendation cites certain exceptions to the principle, including the need for rapid implementation of stringent measures for accident prevention (provided this does not lead to significant distortions in international trade and investment), or if strict and prompt implementation of the principle would lead to severe socio-economic consequences.³²⁸ The application of the principle does not affect the possibility under domestic law of requiring the operator to pay other costs connected with the public authorities’ response to an accident, or compensation for future costs of the accident.³²⁹

European Union

The polluter pays principle is also established under EU law. The EU adopted the principle in its first programme of action on the environment in 1973.³³⁰ Two years later, the European Council adopted a Recommendation regarding cost allocation and action by public authorities on environmental matters that recommended that the EU at Union level and the member states in their national environmental legislation must apply the polluter pays principle, according to which:

natural or legal persons governed by public or private law who are responsible for pollution must pay the costs of such measures as are necessary to eliminate that pollution or to reduce it so as to comply with the standards or equivalent measures laid down by the public authorities.³³¹

This formulation is broader than early OECD recommendations in respect of the costs that might be covered by the principle. The Council Recommendation, which is not legally binding, identifies standards and charges as the major instruments of action available to public authorities for the avoidance of pollution, allows certain exceptions to the principle, and sets out which acts will not be considered to be contrary to the principle.³³² In 1986, the EEC Treaty was amended to provide that EU action relating to the environment shall be based on the principle that ‘the polluter should pay’.³³³ In 1992, the EU member states and EFTA member countries agreed that action by the parties was to be based on the principle that ‘the polluter should pay’.³³⁴ A number of acts of EU secondary legislation also refer to, or incorporate, the

³²⁶ Paras. 10 and 11; pooling by operators of certain financial risks is considered to be ‘consistent’ with the Principle: para. 13.

³²⁷ Para. 12. ³²⁸ Paras. 14 and 15. ³²⁹ Para. 16. ³³⁰ OJ C112, 20 December 1973, 1.

³³¹ Council Recommendation 75/436/EURATOM, ECSC, EEC of 3 March 1975, Annex, para. 2; OJ L169, 29 June 1987, 1.

³³² Paras. 5–7.

³³³ 1957 EEC Treaty (as amended) (formerly Art. 130r(2)); see also former Art. 130(s)(5) of the EEC Treaty as amended by the 1992 Maastricht Treaty, allowing for temporary derogations and/or financial support ‘without prejudice to the principle that the polluter should pay’. See now Art. 191 of the EU Treaty as amended by the Treaty of Lisbon.

³³⁴ 1992 EEA Agreement, Art. 73(2).

principle,³³⁵ and the ECJ has occasionally considered its practical implications.³³⁶ The principle has also been applied by the European Commission in relation to state aid.³³⁷

The polluter pays principle, or variations thereof, as stated in the OECD and EU instruments, has also been referred to or adopted in other environmental treaties, including the 1985 ASEAN Convention,³³⁸ the 1991 Alpine Convention,³³⁹ the 1992 UNECE Transboundary Waters Convention,³⁴⁰ the 1992 OSPAR Convention,³⁴¹ the 1992 Baltic Sea Convention,³⁴² the 1994 Danube Convention,³⁴³ the 1994 Energy Charter Treaty³⁴⁴ and the 2003 Carpathians Convention.³⁴⁵ The 1990 Oil Pollution Preparedness Convention and the 1992 Industrial Accidents Convention describe the polluter pays principle as 'a general principle of international environmental law'.³⁴⁶ The Preamble to the 2001 POPs Convention reaffirms the formulation of the polluter pays principle found in Principle 16 of the Rio Declaration.

The increased attention paid to the polluter pays principle results, in part, from the greater consideration given to the relationship between environmental protection and economic development, as well as recent efforts to develop the use of economic instruments in environmental protection law and policy.³⁴⁷ This is likely to lead to clarification and further definition of the polluter pays principle, particularly in relation to two issues.

The first concerns the extent of the pollution control costs that should be paid by the polluter. Although it seems clear that the principle includes the costs of measures required by public authorities to prevent and control pollution, it is less clear whether the costs of decontamination, clean-up and reinstatement would be included. State practice does not support the view that all the costs of pollution should be borne by the polluter, particularly in inter-state relations.³⁴⁸

³³⁵ See e.g. Directive 75/442, Art. 15 (waste); Directive 94/67, Preamble (incineration of hazardous waste); Directive 2000/59, Preamble (port reception facilities for ship-generated waste and cargo residues); Directive 2000/60, Art. 9 (water framework); and Decision 2850/2000, Preamble (co-operation in the field of accidental or deliberate marine pollution). The new Regulations on Structural Funds, the revised Cohesion Fund and the pre-accession instrument (ISPA) include provisions to apply the principle to the operations of the funds (see Arts. 26 and 29(1)(c) of Council Regulation (EC) No. 1260/1999 laying down general provisions on the Structural Funds; Art. 7(1) of Council Regulation (EC) No. 1264/1999 amending Regulation (EC) No. 1164/94 establishing a Cohesion Fund; Art. 6(2)(c) of Council Regulation (EC) No. 1267/1999 establishing an Instrument for Structural Policies for Pre-Accession). See generally EC Commission, Application of the Polluter Pays Principle, 6 December 1999.

³³⁶ See e.g. Case C-293/97, *R. v. Secretary of State for the Environment and Ministry of Agriculture, Fisheries and Food, ex parte H. A. Standley and Others and D. G. D. Metson and Others* [1999] ECR I-2603, paras. 51–2 (the polluter pays principle reflects a principle of proportionality, and does not mean that farmers must take on burdens for the elimination of pollution to which they have not contributed).

³³⁷ See European Commission, Community Guidelines on State Aid for Environmental Protection, 2001 OJ C37. For its application, see e.g. Commission Decision 1999/272, 1999 OJ L109 ('it is clearly not compatible with the "polluter pays" principle enshrined in Article 130r of the EC Treaty that a polluter should sell his contaminated land to one of his firms in order to avoid the clean-up costs, that the firm responsible for the contamination should file for bankruptcy and that the business activity should be carried on by the newly established firm').

³³⁸ Art. 10(d).

³³⁹ Art. 2(1) (the parties respect the polluter pays principle).

³⁴⁰ Art. 2(5)(b) (the parties shall be guided by the polluter pays principle 'by virtue of which costs of pollution prevention, control and reduction measures shall be borne by the polluter').

³⁴¹ Art. 2(2)(b) (the parties 'shall apply . . . the polluter-pays principle').

³⁴² Art. 3(4) (the parties 'shall apply the polluter-pays principle'). See also 1993 Lugano Convention, Preamble; 1994 Agreement on the Protection of the River Meuse, Art. 3(2)(d); 1996 Protocol to the 1972 London Convention, Art. 3(2).

³⁴³ Art. 2(4). ³⁴⁴ Art. 19(1). ³⁴⁵ Art. 2(2)(b). ³⁴⁶ Preamble. ³⁴⁷ Chapter 4, pp. 124–33, above.

³⁴⁸ See generally Chapter 17, below; examples include the Chernobyl accident and the 1976 Rhine Chloride Convention, which allocates the costs of pollution abatement between the polluters (66 per cent) and the victim (34 per cent): see Chapter 8, pp. 320–2, below.

The second issue concerns exceptions to the principle, particularly in relation to rules governing the granting of subsidies. In this regard, account should be taken of the potential role of the WTO in determining the impact of the polluter pays principle on its subsidies rules.³⁴⁹

PRINCIPLE OF COMMON BUT DIFFERENTIATED RESPONSIBILITY³⁵⁰

The principle of common but differentiated responsibility has developed from the application of equity in general international law, and the recognition that the special needs of developing countries must be taken into account in the development, application and interpretation of rules of international environmental law. Principle 7 of the Rio Declaration states the principle thus:

States shall co-operate in a spirit of global partnership to conserve, protect and restore the health and integrity of the Earth's ecosystem. In view of the different contributions to global environmental degradation, states have common but differentiated responsibilities. The developed countries acknowledge the responsibility that they bear in the international pursuit of sustainable development in view of the pressures their societies place on the global environment and of the technologies and financial resources they command.

Similar language exists in the 1992 Climate Change Convention, which provides that the parties should act to protect the climate system 'on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities'.³⁵¹

The principle of common but differentiated responsibility includes two elements. The first concerns the common responsibility of states for the protection of the environment, or parts of it, at the national, regional and global levels. The second concerns the need to take account of differing circumstances, particularly in relation to each state's *contribution* to the creation of a particular environmental problem and its *ability* to prevent, reduce and control the threat. In practical terms, the application of the principle of common but differentiated responsibility has at least two consequences. First, it entitles, or may require, all concerned states to participate in international response measures aimed at addressing environmental problems. Second, it leads to environmental standards that impose differing obligations on states. Despite its relatively recent emergence in the current formulation, the principle of common but differentiated responsibility finds its roots prior to UNCED and is supported by state practice at the regional and global levels.

³⁴⁹ GATT Dispute Settlement Panel, *US – Chemicals Tax* case (1987), holding that GATT rules on tax adjustment allow contracting parties to apply the polluter pays principle but do not require it: Chapter 19, p. 813, n 91, below.

³⁵⁰ D. Magraw, 'Legal Treatment of Developing Countries: Differential Contextual and Absolute Norms', 1 *Colorado Journal of International Environmental Law and Policy* 69 (1990); D. French, 'Developing States and International Environmental Law: The Importance of Differentiated Responsibilities', 49 *International and Comparative Law Quarterly* 35 (2000); C. D. Stone, 'Common But Differentiated Responsibilities in International Law', 98 *American Journal of International Law* 276 (2004); L. Rajamani, *Differential Treatment in International Environmental Law* (2006).

³⁵¹ Art. 3(1).

Common responsibility

Common responsibility describes the shared obligations of two or more states towards the protection of a particular environmental resource, taking into account its relevant characteristics and nature, physical location, and historic usage associated with it. Natural resources can be the 'property' of a single state, or a 'shared natural resource', or subject to a common legal interest, or the property of no state. Common responsibility is likely to apply where the resource is not the property of, or under the exclusive jurisdiction of, a single state.

As early as 1949, tuna and other fish were declared to be 'of common concern' to the parties to the relevant treaties by reason of their continued exploitation by those parties.³⁵² Outer space and the Moon, on the other hand, are the 'province of all mankind';³⁵³ waterfowl are 'an international resource';³⁵⁴ natural and cultural heritage is 'part of the world heritage of mankind as a whole';³⁵⁵ the conservation of wild animals is 'for the good of mankind';³⁵⁶ the resources of the seabed, ocean floor and subsoil are 'the common heritage of mankind';³⁵⁷ and plant genetic resources have been defined as 'a heritage of mankind'.³⁵⁸ State practice also supports the emergence of the concept of 'common concern', as reflected in the 1992 Climate Change Convention, which acknowledges that 'change in the Earth's climate and its adverse effects are a common concern of humankind',³⁵⁹ and in the 1992 Biodiversity Convention, which affirms that 'biological diversity is a common concern of humankind'.³⁶⁰ The 2010 Nagoya Protocol to the Biodiversity Convention does not use the language of common concern but recognises 'the interdependence of all countries with regard to genetic resources for food and agriculture'.³⁶¹

While each of these formulations differs, and must be understood and applied in the context of the circumstances in which they were adopted, these attributions of 'commonality' do share common consequences. Although state practice is inconclusive as to the precise legal nature and consequence of each formulation, certain legal responsibilities are attributable to all states in respect of these environmental media and natural resources in accordance with the attribution by treaty (or custom) of a particular legal characteristic. The legal interest includes a legal responsibility to prevent damage to it. While the extent and legal nature of that responsibility will differ for each resource and instrument, the responsibility of each state to prevent harm to them, in particular by the adoption of national environmental standards and international environmental obligations, can also differ.

Differentiated responsibility

The differentiated responsibility of states for the protection of the environment is widely accepted in treaty and other practice of states. It translates into differentiated environmental

³⁵² 1949 Inter-American Tropical Tuna Convention, Preamble.

³⁵³ 1967 Outer Space Treaty, Art. 1. ³⁵⁴ 1971 Wetlands Convention, Preamble.

³⁵⁵ 1972 World Heritage Convention, Preamble. ³⁵⁶ 1979 Bonn Convention, Preamble.

³⁵⁷ UNGA Res. 2749 (XXV) of 17 December 1970; 1982 UNCLOS, Preamble (and now the 1994 Agreement Relating to the Implementation of Part XI of UNCLOS).

³⁵⁸ 1983 FAO Plant Genetics Undertaking, Art. 1; see Chapter 10, pp. 507–8, below.

³⁵⁹ Preamble. See also UNGA Res. 43/53 (1988), 44/207 (1989) and 45/212 (1990), acknowledging that climate change is a 'common concern of mankind' and rejecting the original proposal in the draft prepared by Malta which described the global climate as the 'common heritage of mankind'.

³⁶⁰ Preamble. ³⁶¹ Preamble.

standards set on the basis of a range of factors, including special needs and circumstances, future economic development of developing countries, and historic contributions to causing an environmental problem.

The 1972 Stockholm Declaration emphasised the need to consider ‘the applicability of standards which are valid for the most advanced countries but which may be inappropriate and of unwarranted social cost for the developing countries’.³⁶² The 1974 Charter of Economic Rights and Duties of States made the same point in more precise terms: ‘The environmental policies of all states should enhance and not adversely affect the present and future development potential of developing countries.’³⁶³ In the Rio Declaration, the international community agreed that ‘[e]nvironmental standards, management objectives and priorities should reflect the environmental and developmental context to which they apply’, and that ‘the special situation of developing countries, particularly the least developed and those most environmentally vulnerable, shall be given special priority’.³⁶⁴ The distinction is often made between the capacities of developing countries and their needs.

The differentiated approach is reflected in many treaties. Under the 1996 London Protocol, the measures required are to be adopted by parties ‘according to their scientific, technical and economic capabilities’.³⁶⁵ Other treaties identify the need to take account of states’ ‘capabilities’,³⁶⁶ or their ‘economic capacity’ and the ‘need for economic development’;³⁶⁷ or the ‘means at their disposal and their capabilities’.³⁶⁸ The principle of differentiated responsibility has also been applied to treaties and other legal instruments applying to developed countries. An example is the 1991 VOC Protocol, which allows parties to specify one of three different ways to achieve reduction.³⁶⁹

The special *needs* of developing countries are expressly recognised in other instruments.³⁷⁰ Account is to be taken of their ‘circumstances and particular requirements’,³⁷¹ or of their ‘specific needs and special circumstances’,³⁷² or of their ‘special conditions’ and ‘the fact that economic and social development and eradication of poverty are the first and overriding priorities of the developing country parties’.³⁷³

In practical terms, differentiated responsibility may result in different legal obligations. The different techniques available to apply it include ‘grace’ periods delaying implementation, and less stringent commitments. Under the 1987 Montreal Protocol, the special situation of developing countries entitles them, provided that they meet certain conditions, to delay their compliance with control measures.³⁷⁴ Under the 1992 Climate Change Convention, the principle of ‘common but differentiated responsibilities’ requires specific commitments only for developed country parties and other developed parties, and allows differentials in reporting requirements.³⁷⁵ The 1997 Kyoto Protocol applies the principle of ‘differentiated responsibility’ to OECD countries, setting a range of different targets depending upon states’ historic

³⁶² Principle 23. ³⁶³ Art. 30; UNGA Res. 3201 (1974).

³⁶⁴ Principles 11 and 6; see also the 1992 Climate Change Convention, Preamble. ³⁶⁵ Art. 2.

³⁶⁶ 1981 Abidjan Convention, Art. 4(1). ³⁶⁷ 1982 UNCLOS, Art. 207. ³⁶⁸ 1985 Vienna Convention, Art. 2(2).

³⁶⁹ Chapter 7, pp. 251–3, below. ³⁷⁰ 1976 Barcelona Convention, Art. 11(3); 1982 UNCLOS, Preamble.

³⁷¹ 1985 Vienna Convention, Preamble.

³⁷² 1992 Climate Change Convention, Art. 3(2) (policies and measures ‘should be appropriate for the specific conditions of each Party and should be integrated with national development programmes’: Art. 3(4)).

³⁷³ 1992 Biodiversity Convention, Preamble and Art. 20(4); see also 1992 Climate Change Convention, Art. 4(7).

³⁷⁴ Art. 5(1); see Chapter 7, p. 272, below.

³⁷⁵ Arts. 4 and 12; see further the 1997 Kyoto Protocol, Chapter 7, pp. 278 *et seq.*, below.

contribution and capabilities.³⁷⁶ In current international climate change negotiations, there are proposals for introducing further levels of differentiation between states: not just between developed and developing parties but also between least developed countries and major developing countries, including China, India, Brazil and South Africa. The special needs of developing countries, the capacities of all countries, and the principle of 'common but differentiated' responsibilities have also resulted in the establishment of special institutional mechanisms to provide financial, technological and other technical assistance to developing countries to help them implement the obligations of particular treaties.³⁷⁷

The general applicability of a principle of differentiated responsibility is, however, not evident, as the ITLOS Seabed Disputes Chamber made clear in its *Advisory Opinion on Responsibilities and Obligations in the Area*. The Chamber was presented with arguments to the effect that developing countries should have less onerous obligations of environmental protection. Examining the question of whether developing sponsoring states enjoyed 'preferential treatment' as compared with that granted to developed sponsoring states under the 1982 UNCLOS, the Chamber found that 'the responsibilities and liability of the sponsoring State apply equally to all sponsoring States, whether developing or developed', and that equality of treatment was

consistent with the need to prevent commercial enterprises based in developed States from setting up companies in developing States, acquiring their nationality and obtaining their sponsorship in the hope of being subjected to less burdensome regulations and controls. The spread of sponsoring States 'of convenience' would jeopardize uniform application of the highest standards of protection of the marine environment, the safe development of activities in the Area and protection of the common heritage of mankind.³⁷⁸

CONCLUSIONS

This chapter illustrates the extent to which the practice of states, international organisations and other members of the international community has given rise to a body of discrete principles and rules which are of general application. While the existence and applicability of 'principles of international environmental law' is now widely acknowledged,³⁷⁹ their legal status and meaning, as well as the consequences of their application to the facts of a particular case or activity, remain open. There are several reasons for this. First, they have emerged over a relatively short period of time, some only within the past two decades. Second, each has emerged in the context of sharp and continuing differences of view as to what they mean in practice, and what they should mean, a point that is particularly evident in relation to the

³⁷⁶ Chapter 7, pp. 283 *et seq.*, below. The Protocol also provides for the establishment of different emissions baselines by some states parties that were justified on the basis of the need for a 'differentiated' approach.

³⁷⁷ Chapter 16, pp. 685–6, below.

³⁷⁸ ITLOS Seabed Disputes Chamber, *Advisory Opinion*, paras. 153–61 (by contrast, the Chamber noted that Principle 15 of the Rio Declaration provides that the precautionary approach shall be applied by states 'according to their capabilities', indicating that requirements for complying with the obligation to apply the precautionary approach may be stricter for the developed than for the developing sponsoring states: *ibid.*, para. 161).

³⁷⁹ *Iron Rhine* case, para. 223.

precautionary principle. And, third, the extent to which state practice interprets and applies these principles and rules is still evolving, and requires further consideration by reference to what states do both at the national level and in their international affairs. Nevertheless, good arguments can be made in favour of each having significant legal consequences, and, as has been seen in this chapter, states and international courts and tribunals are willing to rely upon some of these principles and rules to justify their actions and to enable them to reach conclusions in their application of substantive legal obligations to particular sets of facts. In some cases, such application has had far-reaching consequences (for example in the *Southern Bluefin Tuna* cases at the provisional measures phase), and in other cases one or more principles has been invoked as an interpretative tool or to otherwise assist decision-makers in reaching an environmentally protective conclusion.

The principles and rules of general application that have been described in this chapter provide a framework that shapes the structure and development of international environmental law. Each is important and has its own particular role. Two principles currently seem particularly relevant, and are likely to be critical in determining whether international environmental obligations play a marginal or a central role in international affairs. The first is that element of the principle of sustainable development which requires environmental protection to be treated as 'an integral part of the development process [that] cannot be considered in isolation from it'. If any single provision of the Rio Declaration can contribute to the normative development of international environmental law, this is likely to be it. On the one hand, it can be considered to require all development decisions throughout the range of human economic activity to be subjected to critical environmental scrutiny. If applied in this way, the principle of sustainable development should extend the use of the substantive international environmental norms established over the past four decades to inform decision-making by all states and international organisations, and result in a further reappraisal of the activities of organisations, such as the WTO, which increasingly, in the interpretation and application of their rules, have regard to legal developments beyond their own legal systems. The *Shrimp/Turtle* case indicated the potential for this approach. On the other hand, this aspect of the principle of sustainable development also requires economic and other development considerations to be taken into account in developing and applying those international environmental norms, providing the underlying basis for the emergence of the principle of differentiated responsibility.

The second critical principle is that of precaution, and its likely impact over time is potentially significant. It has already been relied upon, as has been seen in this chapter, to require a shift in the burden of proof in cases concerning the conduct of certain especially hazardous activities. The extent to which it is applied at the international level will serve as a barometer to measure future developments in international environmental law. Some international courts have now been willing to invoke precaution, and others have been willing to do so with stealth. It is surely only a matter of time before other courts follow suit.

7

Atmospheric protection and climate change

INTRODUCTION

The protection of the atmosphere was a relative latecomer to international environmental regulation but is now well established.¹ With limited exceptions, until 1979 no treaty sought, as its primary purpose, to place limits on the right of states to allow atmospheric emissions that caused environmental damage. Some treaties had, however, called for general preventive strategies.² Since 1979, numerous treaties and other international acts have addressed the protection of the atmosphere. Although there is no atmospheric equivalent to the 1982 UN Convention on the Law of the Sea, international legal instruments have been adopted at the regional and global level which address a range of issues, including: transboundary pollution by sulphur dioxide, nitrogen oxide, volatile organic compounds, heavy metals and persistent organic pollutants (POPs); the protection of the ozone layer; the prevention of climate change; and the protection of the environment of outer space. The precedents set by treaties relating to the protection of other environmental media, in particular the marine environment, have contributed to the development of these rules.

Landmarks in the development of international law in this area include: the 1938 and 1941 decisions in the *Trail Smelter* case; the applications brought to the ICJ by Australia and New Zealand against France with respect to French atmospheric nuclear tests in the Pacific Ocean region; growing evidence in Europe and North America in the 1970s of acid rain damage from atmospheric emissions of sulphur compounds; the 1986 Chernobyl accident; growing evidence in the 1980s of depletion of the ozone layer; greater awareness of the threats posed by forest fires with transnational effects, such as those in Indonesia in 1997 which caused widespread

¹ H. Taubenfeld, 'International Environmental Law: Air and Outer Space', 13 *Natural Resources Journal* 315 (1973); G. Wetstone and A. Rosencrantz, 'Transboundary Air Pollution: The Search for an International Response', 8 *Harvard Environmental Law Review* 89 (1984); J. Brunnée, *Acid Rain and Ozone Layer Depletion: International Law and Regulation* (1988); D. Gelsom, *Atmospheric Pollution: A Global Problem* (1992); C. P. Okowa, *State Responsibility for Transboundary Air Pollution in International Law* (2000); E. Bursleson, 'Climate Change Consensus: Emerging International Law', 34 *William and Mary Environmental Law and Policy Review* 543 (2010). See also D. Hunter, J. Salzman and D. Zaelke, *International Environmental Law and Policy* (2011, 4th edn), Chapters 10 and 11; I. Rowlands, 'Atmosphere and Outer Space', in D. Bodansky, J. Brunnée and E. Hey (eds.), *The Oxford Handbook of International Environmental Law* (2007), Chapter 14; P. Birnie, A. Boyle and C. Redgwell, *International Law and the Environment* (2009, 3rd edn), Chapter 6.

² See Chapter 6, pp. 200–3, above.

regional problems,³ and, mostly recently, consolidation of scientific evidence that increased atmospheric concentrations of carbon dioxide and other greenhouse gases are likely to cause temperatures to increase worldwide with consequential adverse effects.⁴

Despite the seriousness of many atmospheric pollution threats, international regulation in this area has frequently faced obstacles. At UNCED, protection of the atmosphere was among the most difficult subjects addressed – evidence of the potential impacts of international environmental regulation on the fundamental economic interests of many states. Chapter 9 of Agenda 21, addressing ‘Protection of the Atmosphere’, was opposed by a number of OPEC states in its entirety. The political sensitivities of the topic are also clear from the introduction to Chapter 9, which states that its recommendations ‘do not oblige any Government to take measures which exceed the provisions’ of relevant treaties.⁵ On the other hand, to achieve balance and with an eye to possible future trade disputes over unilateral national atmospheric protection and energy standards, it was also stated that ‘within the framework of this chapter, Governments are free to carry out additional measures which are consistent with those legal instruments’.⁶

The area of international regulation of climate change perhaps best illustrates these tensions. International instruments such as the 1992 Framework Convention on Climate Change and the 1997 Kyoto Protocol (discussed further below) seek to limit anthropogenic emissions of greenhouse gases to prevent dangerous levels of global warming. However, strengthening these legal arrangements has proven difficult given the substantial reorientation required in states’ economic policies concerning transportation, forestry management and energy production if deep cuts in global emissions are to be achieved. Another factor limiting progress may be the breadth of the climate change problem, which under the Framework Convention encompasses issues not just of climate change mitigation via emission reduction, but also adaptation to unavoidable climate change with its associated complex questions of equity, justice and human rights. In many ways then, regulation of climate change poses a critical test for the utility and effectiveness of international environmental regulation more generally.

MILESTONES IN THE DEVELOPMENT OF ATMOSPHERIC REGULATION

Trail Smelter case

The award of the arbitral tribunal in the *Trail Smelter* case is frequently cited to support the view that general principles of international law impose obligations on states to prevent transboundary air pollution.⁷ This dispute arose out of damage done to crops, pasture land,

³ See www.rrcap.unep.org/issues/forestfi/UNEPinitiatives.cfm; Euston Quah, ‘Transboundary Pollution in Southeast Asia: The Indonesian Fires’, 30(3) *World Development* 429 (2002); J. Mayer, ‘Transboundary Perspectives on Managing Indonesia’s Fires’, 15(2) *Journal of Environment Development* 202 (2006).

⁴ See IPCC, WG I, ‘Climate Change 2007: The Physical Scientific Basis’, in *Fourth Assessment Report: Climate Change 2007* (2007), Summary for Policymakers.

⁵ Agenda 21, para. 9.2. The treaties mentioned are the 1985 Vienna Convention, the 1987 Montreal Protocol and the 1992 Climate Change Convention.

⁶ *Ibid.*

⁷ *Trail Smelter* case, 16 April 1938, 11 March 1941, 3 RIAA 1907 (1941); R. M. Bratspies and R. A. Miller (eds.), *Transboundary Harm in International Law: Lessons from the Trail Smelter Arbitration* (2006). On damages, see Chapter 17, pp. 703–4, below.

trees and agriculture in the United States from sulphur dioxide emissions from a smelting plant at the Consolidated Mining and Smelting Company of Canada at Trail, in British Columbia. Emissions and damage had increased significantly after 1906, and again after 1925 and 1927, leading to the submission of the issue to the US–Canada International Joint Commission established, under the 1909 Boundary Waters Treaty. In February 1931, the Commission adopted a unanimous report awarding the United States US\$350,000 to compensate for damage suffered in the period up to January 1932. The Commission also made recommendations concerning damages arising after January 1932 and the use of equipment to reduce further sulphur emissions. In February 1933, the US complained that further damage was occurring, and in April 1935 the two countries signed a convention submitting the dispute to an arbitral tribunal composed of three arbitrators, assisted by two scientists designated, respectively, by the two countries.⁸ At the heart of the award is the holding of the tribunal that:

Under the principles of international law . . . no state has the right to use or permit the use of territory in such a manner as to cause injury by fumes in or to the territory of another or the properties or persons therein, when the case is of serious consequence and the injury is established by clear and convincing evidence.⁹

This much-cited passage has been relied upon to justify a range of views concerning the permissibility of certain atmospheric emissions. It is important to remember that the principle cited was applicable *a priori* by virtue of the arbitral *compromis* between the United States and Canada, and that the case is probably of greater significance for that agreement and for its findings on the assessment and measure of the quantum of recoverable damage.

Nuclear testing

Atmospheric nuclear testing was one of the first environmental issues to be addressed by the UN General Assembly in the 1950s.¹⁰ This resulted in the adoption of the 1963 Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water (1963 Test Ban Treaty), which banned nuclear weapons explosions in those places.¹¹ By 1973, the Treaty had more than 110 parties, including all the major states that possessed nuclear weapons (China, the former Soviet Union, the United Kingdom and the United States) with the exception of France. Between 1966 and 1972, France conducted atmospheric nuclear tests on Mururoa atoll, off its New Caledonian territory in the South Pacific region, and was preparing to conduct a further series of tests commencing in May 1973.¹² Australia and New Zealand commenced proceedings against France before the ICJ to stop these and other nuclear tests in the Pacific. Australia asked the ICJ to declare that the carrying out of further atmospheric nuclear weapon tests was not

⁸ Convention on the Final Settlement of the Difficulties Arising Through the Complaints of Damage Done in the State of Washington by Fumes Discharged from the Smelter of the Consolidated Mining and Smelting Company, Trail, British Columbia, 15 April 1935, United States–Canada, 162 LNTS 73.

⁹ 3 RIAA 1907 at 1965 (1941). ¹⁰ See Chapter 2, p. 28, above.

¹¹ Moscow, 5 August 1963, in force 10 October 1963, 480 UNTS 43.

¹² On subsequent developments declaring the region a nuclear-free zone, see Chapter 11, pp. 543–6, below.

consistent with applicable rules of international law and to order France not to carry out any further such tests. Australia claimed that the tests would:

- (1) violate its right to be free from atmospheric nuclear weapon tests by any country;
- (2) allow the deposit of radioactive fallout on its territory and airspace without its consent;
- (3) allow interference with ships and aircraft on the high seas and in the superjacent airspace, and the pollution of the high seas by radioactive fallout, thereby infringing the freedom of the high seas.¹³

New Zealand's claim was slightly different: it argued that French nuclear tests violated rules and principles of international law for similar reasons, but framed the application in terms of the violation of 'the rights of all members of the international community' to be free from nuclear tests which gave rise to radioactive fallout and the right to be preserved from 'unjustified artificial radioactive contamination of the terrestrial, maritime and aerial environment'.¹⁴ Australia and New Zealand also sought interim measures of protection requiring the French Government to avoid nuclear tests causing the deposit of radioactive fallout on their territory, pending the ICJ's judgments.¹⁵

France chose not to appear in the case. In June 1973, by eight votes to six, the ICJ indicated interim measures of protection, which asked France to take no action that might aggravate the dispute or prejudice the rights of the other parties in carrying out whatever decision the ICJ might render.¹⁶ The ICJ did not have an opportunity to address the merits of the case. Following the unilateral declaration by France that it would cease to carry out atmospheric tests, the ICJ held in December 1974 that the declaration made it unnecessary for the case to proceed, since the claims of Australia and New Zealand no longer had any object, and the ICJ therefore was not called upon to give a decision.¹⁷

The pleadings put forward in the case by Australia and New Zealand, the oral exchanges between some of the judges and counsel for the two applicant states, and the various opinions set forth by the judges, provide a useful source of evidence as to the relevant international law. Australia argued that the 1963 Test Ban Treaty 'embodied and crystallised an emergent rule of customary international law' prohibiting atmospheric nuclear tests, which might have assumed the status of a rule of *jus cogens*.¹⁸ During the oral hearings, Australia was asked by the President of the ICJ, Sir Humphrey Waldock, whether it took the view that 'every transmission by natural causes of chemical or other matter from one state into another state's territory, air space or territorial sea automatically created a legal cause of action in international law without the need to establish anything more'. Australia responded that:

¹³ *Nuclear Tests case (Australia v. France) (Interim Measures) (1973) ICJ Reports 99 at 103.*

¹⁴ *Nuclear Tests case (New Zealand v. France) (Interim Measures) (1973) ICJ Reports 135 at 139.*

¹⁵ See p. 171, above.

¹⁶ *Nuclear Tests cases (Australia v. France) (Interim Measures) (1973) ICJ Reports 99; (New Zealand v. France) (Interim Measures) (1973) ICJ Reports 135; on interim measures, see Chapter 5, pp. 171–5, above.*

¹⁷ *Nuclear Tests cases (Australia v. France) (Jurisdiction) (1974) ICJ Reports 253; (New Zealand v. France) (Jurisdiction) (1974) ICJ Reports 457; L. Goldie, 'Nuclear Test Cases: Restraints on Environmental Harm', *Journal of Maritime Law and Commerce* 491 (1974); on the French unilateral declaration, see Chapter 4, pp. 118–19, above. In 1995, New Zealand requested the ICJ to consider France's resumption of underground nuclear testing, but the ICJ declined jurisdiction: see Chapter 5, p. 158, note 174 above.*

¹⁸ *Nuclear Tests cases (Australia v. France) (Interim Measures) (1973) ICJ Reports 99; (New Zealand v. France) (Interim Measures) (1973) ICJ Reports 135.*

where, as a result of a normal and natural use by one state of its territory, a deposit occurs in the territory of another, the latter has no cause of complaint unless it suffers more than merely nominal harm or damage. The use by a state of its territory for the conduct of atmospheric nuclear tests is not a normal or natural use of its territory. The Australian government also contends that the radioactive deposit from the French tests gives rise to more than merely nominal harm or damage to Australia . . . [T]he basic principle is that intrusion of any sort into foreign territory is an infringement of sovereignty. Needless to say, the government of Australia does not deny that the practice of states has modified the application of this principle in respect of the interdependence of territories. It has already referred to the instance of smoke drifting across national boundaries. It concedes that there may be no illegality in respect of certain types of chemical fumes in the absence of special types of harm. What it does emphasise is that the legality thus sanctioned by the practice of states is the outcome of the toleration extended to certain activities which produce these emissions, which activities are generally regarded as natural uses of territory in modern industrial society and are tolerated because, while perhaps producing some inconvenience, they have a community benefit.¹⁹

The exchange illustrates the challenge of striking a balance between the community benefit of 'nominal harm or damage' and the individual right not to be subject to significant harm or damage.²⁰ In relation to atmospheric pollution, the difficulty in striking that balance may be acute, and the ICJ avoided the issue following the unilateral decision by France to stop carrying out atmospheric nuclear tests. One of the ICJ judges, Judge de Castro, nevertheless took the opportunity, in his dissent, to cite the award in the *Trail Smelter* case, with apparent approval.²¹ In the *Aerial Herbicide Spraying* case (*Ecuador v. Colombia*) currently before the ICJ, the Court has an opportunity to revisit and clarify the issue of the level of environmental damage from atmospheric forms of pollution that is actionable under international law.

Customary law

The issues underlying the *Trail Smelter* and *Nuclear Tests* cases raise the question of whether rules of customary law exist specifically in relation to transboundary or other air pollution. This matter was considered by the International Law Association (ILA) and the Institut de Droit International (IDI), both of which adopted resolutions on the subject. Article 3(1) of the ILA's 1982 Montreal Draft Rules on Transboundary Pollution restates customary international law as requiring states 'to prevent . . . transfrontier air pollution to such an extent that no substantial injury is caused in the territory of another state'.²² The general obligation to refrain from causing pollution that might result in substantial injury is reinforced by Article 4, which

¹⁹ *Nuclear Tests* cases (*Australia v. France*) (Interim Measures) (1973) ICJ Reports 99; (*New Zealand v. France*) (Interim Measures) (1973) ICJ Reports 135.

²⁰ See more generally Chapter 6, p. 196, above; and Chapter 17, pp. 709–10, below.

²¹ *Nuclear Tests* case (*Australia v. France*) (1974) ICJ Reports 253 at 389. He stated: 'If it is admitted as a general rule that there is a right to demand prohibition of the emissions by neighbouring properties of noxious fumes, the consequence must be drawn, by an obvious analogy, that the applicant is entitled to ask the Court to uphold its claim that France should put an end to the deposit of radioactive fall-out on its territory.'

²² ILA 60th Report (1982), Art. 3(1). The ILA, founded in 1873, is a private organisation of lawyers whose objects include 'the study, clarification and development of international law, both public and private, and the furtherance of international understanding and respect for international law' (Art. 3.1 of the ILA Constitution, adopted at the 74th Conference, 2010).

provides, *inter alia*, that ‘states shall refrain from causing transfrontier pollution by discharging into the environment substances generally considered as being highly dangerous to human health’.

The rule adopted by the IDI in its 1987 Resolution on Transboundary Air Pollution, which does not purport to restate custom, is less strict. Article 2 provides that:

In the exercise of their sovereign right to exploit their resources pursuant to their own environmental policies, states shall be under a duty to take all appropriate and effective measures to ensure that their activities or those conducted within their jurisdiction or under their control cause no transboundary air pollution.²³

With the ICJ’s 1996 Advisory Opinion on nuclear weapons, it is clear that customary international law – as reflected in state practice, treaties and other international instruments – prohibits states from causing significant environmental damage from transboundary pollution, including atmospheric pollution.²⁴ The point is confirmed by the International Law Commission’s (ILC) 2001 draft Articles on Prevention of Transboundary Harm.²⁵ One of the key issues which remains is the identification of the threshold at which significant, and therefore unlawful, damage has occurred.²⁶ To a certain extent this aspect has been clarified by some of the treaties discussed in the following sections: those which set limits on the individual or collective emissions of certain substances also provide a basis for determining the level at which damage will be more than nominal and in respect of which an action lies under international law. More generally, the opportunity to develop this issue further, through state practice, following the accident at the Chernobyl plant, was lost as a result of the decision by affected states not to press any claim for damages, although several reserved their right to do so.²⁷

UNCED and WSSD

Atmospheric protection was an important area of consideration at both UNCED and WSSD. Agenda 21 devoted an entire chapter to the subject, identifying four programme areas. These related to: addressing uncertainties (essentially concerned with improving understanding of the processes that influence and are influenced by the Earth’s atmosphere on a global, regional and local scale, enhancing international co-operation, and improving understanding of the economic and social consequences of atmospheric changes and mitigation and response

²³ 62 *Annuaire de l’Institut de Droit International* (1987-II), Art. 10, requires states to ‘prohibit, prevent and refrain from carrying out any nuclear explosion likely to cause transboundary air pollution of a radioactive nature’. The Institut de Droit International, founded in 1873, is a private association of scholars of public and private international law that aims to facilitate the progress of international law (Art. 1(2) of the IDI Statute).

²⁴ Chapter 6, pp. 195–6, above. ²⁵ At draft Art. 3; see Chapter 6, pp. 200–1, above.

²⁶ See Chapter 17, pp. 708–11, below. The *Aerial Herbicide Spraying* case before the ICJ may provide further clarification on this question.

²⁷ Chapter 17, p. 718, below. The release of radioactive pollution from the Fukushima Nuclear Power Plant in northern Japan following the devastating earthquake and tsunami in March 2011 potentially raises similar issues if radioactive materials cause widespread marine pollution, affecting other countries in the region.

measures);²⁸ promoting sustainable development; preventing stratospheric ozone depletion;²⁹ and strengthening arrangements for limiting transboundary air pollution.³⁰

Underpinning the Agenda 21 provisions was the recognition that the realisation of sustainable development lies at the heart of solving problems of transboundary air pollution, ozone depletion and climate change. With regard to the energy sector, for instance, Agenda 21 noted that:

the need to control atmospheric emissions of greenhouse and other gases and substances will increasingly need to be based on efficiency in energy production, transmission, distribution and consumption, and on growing reliance on environmentally sound energy systems, particularly new and renewable sources of energy.³¹

The programme area on sustainable development also identified activities to be carried out by governments, which might serve as a possible basis for future international legislation, and was important as the first occasion on which the whole of the international community came together to propose the basis for future international energy policy. Accordingly, the programme area sought: to promote research into, and the development, transfer and use of, improved energy efficient technologies and practices and sound energy systems; to promote the development of capacities to develop, produce and use increasingly efficient and less polluting forms of energy; to review current energy supply mixes; to co-ordinate energy plans regionally and sub-regionally; to promote cost-effective policies or programmes (including administrative, social and economic measures) to improve energy efficiency; to promote energy efficiency and emissions standards at the national level; to encourage education and public awareness about energy efficiency and environmentally sound energy systems; and to establish energy efficiency labelling programmes.³²

Other programme areas dealt with by Agenda 21 also have significance for the development of international law on the prevention of atmospheric pollution. For instance, Agenda 21 includes a programme area on transportation, which may be an indicator of possible future international legal developments. The overall objective of this programme area is to develop cost-effective policies and programmes to limit, reduce or control harmful atmospheric emissions and other adverse environmental effects of the transport sector, taking into account development priorities, safety and national circumstances.³³ Likewise, the programme area on industrial development seeks to encourage industrial development in ways that minimise adverse impacts on the atmosphere by increasing industry's efficiency in consumption and production, improving pollution abatement technologies, and developing new environmentally sound technologies.³⁴ Agenda 21 envisaged the achievement of both programme areas through measures taken by governments, intergovernmental and non-governmental organisations and the private sector, *inter alia*, by: developing cost-effective, more efficient and less polluting

²⁸ Agenda 21, para. 9.7. ²⁹ Agenda 21, paras. 9.23 and 9.24(a). ³⁰ Agenda 21, paras. 9.26, 9.27(e) and 9.28(a).

³¹ Agenda 21, para. 9.9. New and renewable sources of energy are defined as 'solar thermal, solar photovoltaic, wind, hydro, biomass, geothermal ocean, animal and human power, as referred to in the reports of the Committee on the Development and Utilisation of New and Renewable Sources of Energy', prepared specifically for UNCED: see A/CONF.151/PC/119 and A/AC.218/1992/5.

³² Para. 9.12. ³³ Para. 9.14. ³⁴ Para. 9.17.

transport systems, particularly rural and urban mass transit; encouraging the transfer of resource-efficient and less polluting transport and other industrial technologies, particularly to developing countries; developing technologies, products and processes which are less polluting and more efficient in their use of natural resources; and promoting administrative, social and economic measures to encourage modes of transport and industrial practices which minimise adverse impacts on the atmosphere.³⁵ Further, the programme area on terrestrial and marine resource development and land use is designed: to reduce atmospheric pollution and limit anthropogenic emissions of greenhouse gases; to conserve, sustainably manage and enhance greenhouse gas sinks and natural and environmental resources; and to ensure that atmospheric changes are fully taken into account in planning and implementing policies and programmes.³⁶

Compared with Agenda 21, the WSSD Plan of Implementation provided far less concrete guidance on the future development of international regulation of atmospheric pollution. At the summit itself, much of the attention was focused on climate change and the need for states to ratify the Kyoto Protocol 'in a timely manner'.³⁷ Subsequent ratifications by Canada and Russia paved the way for the Protocol's eventual entry into force in early 2005. On other issues of atmospheric pollution, the Plan of Implementation called for strengthening of the capacity of developing countries and economies in transition to assess and reduce the impacts of transboundary air pollution; ensuring replenishment of the fund maintained under the 1987 Montreal Protocol and supporting the Protocol's compliance mechanism; and addressing illegal traffic in ozone-depleting substances.³⁸

URBAN AND TRANSBOUNDARY AIR POLLUTION³⁹

Concerns over urban and transboundary air pollution began to emerge in the late nineteenth century as the consequences of large-scale industrialisation and intensive development became evident. The *Trail Smelter* case, discussed above, was the first major international dispute over transboundary air pollution and was notable for its reliance on scientific expertise to discern the links between gaseous emissions from the zinc smelter at Trail, and damage to crops, forests, soil and waterways across the border in Washington State. Science has continued to be a crucial element of regulatory efforts addressing urban and transboundary air pollution given the need to identify the environmental and human health effects of emissions of particular gases.

Today, anthropogenic emissions of gases that are prevalent worldwide, both as urban air pollutants and as transboundary atmospheric depositions, include oxides of sulphur (SO_x), nitrogen oxides (NO_x), carbon monoxide (CO), ozone (O₃), trace organics (aldehydes, benzene and polyaromatic hydrocarbons), selected trace metals (most notably, lead) and suspended particulates,⁴⁰ as well as air pollution from ships.⁴¹ Sulphur dioxide (SO₂) (the pollutant at

³⁵ Paras. 9.15 and 9.18. ³⁶ Para. 9.20. ³⁷ Para. 36. ³⁸ Para. 37.

³⁹ I. H. Van Lier, *Acid Rain and International Law* (1981); J. Brunnée, *Acid Rain and Ozone Layer Depletion: International Law and Regulation* (1988); J. Carroll, *Trans-boundary Air Quality Relations* (1990); P. Mercure, 'Principes de Droit International Applicables au Phénomène des Pluies Acides', 21 *Revue de Droit de l'Université de Sherbrooke* 373 (1991); T. Stephens, R. Baird and M. Simons, 'Ocean Acidification: A Litmus Test for International Law', 3 *Carbon and Climate Law Review* 459 (2009).

⁴⁰ See UNEP, *Environmental Data Report* (1991), 10, 12 and 37–40. The GEO Data Portal is now the authoritative source for data sets used by UNEP. Its online database can be accessed at <http://geodata.grid.unep.ch>.

⁴¹ Chapter 9, p. 378, below.

issue in *Trail Smelter*) is produced by the combustion of high-sulphur-content fossil fuels (coal and oil) and contributes to acid rain, as well as being harmful to human health as a potent respiratory tract irritant. Combustion of fossil fuels, particularly from motor vehicles and power stations, also produces two oxides of nitrogen (nitric oxide (NO) and nitrogen dioxide (NO₂), collectively known as NO_x). Ambient concentrations of NO₂ are generally considered to be too low to pose a significant threat to human health, but NO_x, together with hydrocarbons, are important precursors to the formation of tropospheric O₃ and other photochemical oxidants. Sulphur and nitrogen oxides are transported by prevailing winds for distances up to 1,000 km from their original source before returning to the surface of the Earth as wet or dry deposits.

Acid rain associated with fluxes of sulphur and nitrogen over North America and Europe emerged as a concern in the 1960s, with observations of adverse effects flowing from deposits, including the acidification of freshwaters and terrestrial ecosystems. Although these problems were initially limited to developed countries, there are indications that certain tropical regions in developing countries, including southern China, India, Thailand, Korea, southeastern Brazil and northern Venezuela, are also experiencing significant problems with acidification, in large part due to rapid industrialisation. Haze caused by atmospheric pollution from forest fires in Indonesia also emerged as a major concern in the Asian region during the late 1990s. The urban and transboundary air pollutants responsible for such environmental problems are subject to a number of regional arrangements,⁴² although outside Europe and North America there are few specific international agreements.⁴³

1979 UNECE Convention on Long Range Transboundary Air Pollution and its Protocols

The 1979 UNECE Convention on Long-Range Transboundary Air Pollution (1979 LRTAP Convention)⁴⁴ addresses the problem of acid rain and other air pollutants, and is the only major multilateral agreement concerned with the control of transboundary air pollution. While the treaty has a restricted regional scope (Europe and North America), it has nevertheless served

⁴² See e.g. the UNECE Vehicle Regulations adopted under the 1958 Agreement Concerning the Adoption of Uniform Technical Prescriptions for Wheeled Vehicles, Equipment and Parts Which Can Be Fitted and/or Be Used on Wheeled Vehicles and the Conditions for Reciprocal Recognition of Approvals Granted on the Basis of These Prescriptions, Geneva, 20 March 1958, in force 20 June 1959; 335 UNTS 211. The Regulations establish uniform conditions for the licensing of motor vehicles and parts as well as the standardisation of environmental specifications for cars.

⁴³ There is evidence, however, of moves towards regulation in several regions initiated under the auspices of UNEP. See e.g. Malé Declaration on Control and Prevention of Air Pollution and Its Likely Transboundary Effects for South Asia, 20 March 1998; Eastern Africa Regional Framework Agreement on Air Pollution, Nairobi, 23 October 2008; Southern African Development Community (SADC) Regional Policy Framework on Air Pollution, Lukasa, 7 March 2008; West and Central Africa Regional Framework Agreement on Air Pollution, Abidjan, 22 July 2009. See also 2002 ASEAN Agreement on Transboundary Haze Pollution, pp. 259–60, below.

⁴⁴ Geneva, 13 November 1979, in force 16 March 1983, 18 ILM 1442 (1979); www.unece.org/env/lrtap. Fifty states and the European Community are parties to the Convention. See generally A. Rosencrantz, 'ECE Convention of 1979 on Long-Range Transboundary Air Pollution', 75 *American Journal of International Law* 975 (1981); C. I. Jackson, 'A Tenth Anniversary Review of the ECE Convention on Long-Range Transboundary Air Pollution', 2 *International Environmental Affairs* 217 (1990); A. Fraenkel, 'The Convention on Long-Range Transboundary Air Pollution: Meeting the Challenge of International Co-operation', 30(2) *Harvard International Law Journal* 447 (1989); T. Kuokkanen, 'Putting Gentle Pressures on Parties: Recent Trends in the Practice of the Implementation Committee under the Convention on Long-Range Transboundary Air Pollution', in J Petman and J Klabbers (eds.), *Nordic Cosmopolitanism: Essays in International Law for Martti Koskenniemi* (2004), 315–26.

as a model for subsequent treaties adopted at the global level to address climate change and ozone depletion, and provides a precedent for other regions in their efforts to address acid rain and related transboundary atmospheric problems.

The 1979 LRTAP Convention was developed following the Stockholm Declaration, in particular Principle 21, and the environmental chapter of the Final Act of the 1975 Conference on Security and Co-operation in Europe (CSCE). It was one of the first treaties to recognise the adverse effects of air pollution over the short and long term. The Convention is supplemented by eight Protocols (on the financing of the monitoring programme, on the emissions of sulphur, nitrogen oxides, volatile organic compounds, heavy metals and persistent organic pollutants (POPs), and on abatement of acidification, eutrophication and ground-level ozone).

1979 LRTAP Convention

The 1979 LRTAP Convention established a regional framework to protect man and the environment against air pollution, and includes a general obligation on parties to ‘endeavour to limit and, as far as possible, gradually reduce and prevent air pollution including long-range transboundary air pollution’.⁴⁵ This soft commitment, which is without target or timetable, nevertheless establishes a general limitation on the right to emit atmospheric pollutants. The definitions set out in the Convention have been relied upon in other instruments. The definition of ‘air pollution’ is broad enough to include atmospheric emissions of greenhouse gases and ozone-depleting substances as ‘air pollutants’, although the use of the word ‘resulting’ suggests that actual deleterious effects must have occurred and that gases subject to precautionary measures of regulatory action in the absence of actual deleterious effects may not be considered to be pollutants.⁴⁶ ‘Long-range transboundary air pollution’ is defined as:

air pollution whose physical origin is situated wholly or in part within the area under the national jurisdiction of one state and which has adverse effects in the area under the jurisdiction of another state at such a distance that it is not generally possible to distinguish the contribution of individual emission sources or groups of sources.⁴⁷

The 1979 LRTAP Convention includes general commitments on policies and strategies to combat the discharge of air pollutants, the exchange of relevant information and review of policies, scientific activities and technical measures, and co-operation in research.⁴⁸ Consultations are to be held between parties actually affected by, or exposed to, a significant risk of long-range transboundary air pollution, and parties within which and subject to whose jurisdiction a significant contribution originates or could originate from activities carried on or contemplated.⁴⁹ While the requirement to consult may appear rather obvious now, it was, at the time, a notable development that influenced subsequent practice in related areas.⁵⁰

⁴⁵ Art. 2.

⁴⁶ Art. 1(a), Chapter 1, pp. 13–15, above.

⁴⁷ Art. 1(b).

⁴⁸ Arts. 3, 4 and 7.

⁴⁹ Art. 5.

⁵⁰ Chapter 15, pp. 636–9, below.

Without being bound by any specific commitments for air quality management, the parties nevertheless must develop the best policies and strategies, including air quality management and control measures, in particular by using best available technology that is economically feasible, as well as low- and non-waste technology.⁵¹ Information is to be exchanged on: the emissions data of agreed air pollutants; major changes in policies and industrial development and their potential impact; control technologies; the costs of emissions control; physico-chemical and biological data relating to the effects of long-range transboundary air pollution and the extent of the resulting damage; and policies and strategies for the control of sulphur compounds and other major oil pollutants.⁵²

The LRTAP Convention also establishes a 'Co-operative Programme for the Monitoring and Evaluation of the Long-Range Transmission of Air Pollutants in Europe' (EMEP), to monitor sulphur dioxide and related substances and to develop and use comparable or standardised monitoring procedures, and establish monitoring stations as part of an international programme.⁵³ Institutional arrangements comprise an Executive Body, composed of representatives of the parties to review implementation of the Convention, utilising EMEP's Steering Body, and assisted by the Executive Secretary of the UNECE, which carries out secretariat functions.⁵⁴

Although the 1979 LRTAP Convention is essentially a framework convention setting general commitments, it has subsequently provided the forum for the adoption of eight protocols. These establish more detailed commitments, including regulations on the levels of emissions of particular substances.

1984 Monitoring and Evaluation Protocol

The first Protocol to the LRTAP Convention provides for 'Long-Term Financing of the Co-operative Programme for Monitoring and Evaluation of the Long-Range Transmission of Air Pollutants in Europe'.⁵⁵ It seeks to ensure the availability of adequate financial resources to implement EMEP beyond the amounts provided by UNEP and voluntary contributions. The 1984 Protocol provides for financing the costs of the international centres co-operating within EMEP on the basis of mandatory contributions covering the annual costs of the EMEP work programme, supplemented by voluntary contributions.⁵⁶ The basis of annual contributions is set out in an Annex.⁵⁷

1985 Sulphur Protocol

The second Protocol to the LRTAP Convention concerns the 'Reduction of Sulphur Emissions or Their Transboundary Fluxes by at Least 30 Per Cent' (1985 Sulphur Protocol).⁵⁸ It was

⁵¹ Art. 6.

⁵² Art. 8; this Article includes a footnote which states that '[t]he present Convention does not contain a rule on State Liability as to damage'.

⁵³ Art. 9. ⁵⁴ Arts. 10 and 11.

⁵⁵ Geneva, 28 September 1984, in force 28 January 1988, 2 SMTE 285; forty-three states are parties to the Protocol. Related international monitoring systems include the WMO's Atmospheric Research and Environment Programme. The ECE has also established six International Co-operative Programmes on Assessment and Monitoring of Air Pollution Effects on Forests (1985); on Assessment and Monitoring of Acidification in Rivers and Lakes (1985); on Effects on Materials, Including Historic and Cultural Monuments (1985); on Effects of Air Pollution on Natural Vegetation and Crops (1987); on Integrated Monitoring of Air Pollution Effects on Ecosystems (1988); and on Modelling and Mapping of Critical Loads and Levels and Air Pollution Effects, Risks and Trends (1988).

⁵⁶ Arts. 2 and 3(1), (2) and (4). ⁵⁷ Art. 4 and Annex.

⁵⁸ Helsinki, 8 July 1985, in force 2 September 1987; twenty-five states are parties to the Protocol; 27 ILM 707 (1988).

adopted in response to evidence of widespread damage in parts of Europe and North America to natural resources, and to historical monuments and human health, caused by acidification of the environment from sulphur dioxide, nitrogen oxides and other pollutants from the combustion of fossil fuels. The 1985 Protocol established a 'Thirty Per Cent Club' by committing all parties to

reduce their national annual sulphur emissions or their transboundary fluxes by at least thirty per cent as soon as possible and at the latest by 1993, using 1980 levels as the basis for calculation of reductions.⁵⁹

This inflexible approach to standard-setting has not been adopted in the subsequent Protocols to the 1979 LRTAP Convention because it fails to take account of current and historic emissions and other differentials existing between states. For EU member states, in any event, the Protocol was superseded by the 1988/2001 Large Combustion Plants Directive.⁶⁰ The 1985 Protocol required parties to report annually to the Executive Body of the LRTAP Convention on their national, annual sulphur emissions, including the method of calculation, the progress made towards achieving targets (without specifying a particular timeframe), and the national programmes, policies and strategies adopted for reaching targets.⁶¹

As a result of the Protocol, substantial cuts in sulphur emissions have been recorded in Europe. By 1993, the parties to the 1985 Sulphur Protocol as a whole had reduced 1980 sulphur emissions by more than 50 per cent. Individually, some eleven parties achieved even more substantial reductions of at least 60 per cent. The 1985 Sulphur Protocol envisaged further reductions, and revisions were adopted in the 1994 Protocol on Further Reduction of Sulphur Emissions, discussed further below.⁶²

1988 NO_x Protocol

The third Protocol to the LRTAP Convention concerns the 'Control of Emissions of Nitrogen Oxides or Their Transboundary Fluxes' (1988 NO_x Protocol).⁶³ It is more comprehensive and flexible than the 1985 Sulphur Protocol. It requires the reduction of 'total annual emissions', introducing into international law the concepts of 'national emissions standards' and an approach based on 'critical loads aimed at the establishment of an effect-oriented scientific basis'. It also recognises the need to 'create more favourable conditions for exchange of technology'.⁶⁴ The 1988 NO_x Protocol specifically required all parties,

⁵⁹ Art. 2. To this end, parties agree to develop national programmes, policies and strategies: Art. 6.

⁶⁰ See Council Directive 88/609/EEC of 24 November 1988 on the limitation of emissions of certain pollutants into the air from large combustion plants, as amended, OJ L336, 7 December 1988, 1; Directive 2001/80/EC on the limitation of emissions of certain pollutants into the air from large combustion plants, OJ L309, 27 November 2001, 1. A 'large' combustion plant is one with a rated thermal input equal to or greater than 50 MW: Art. 1.

⁶¹ Arts. 4 and 6.

⁶² Oslo, 14 June 1994, in force 5 August 1998, 33 ILM 1540 (1994); twenty-nine states are parties to the Protocol.

⁶³ Sofia, 31 October 1988, in force 14 February 1991; thirty-four states are parties to the Protocol; 28 ILM 214 (1989).

⁶⁴ Preamble paras. 3, 6, 8 and 9.

as soon as possible and as a first step, [to] take effective measures to control and/or reduce their national annual emissions of nitrogen oxides or their transboundary fluxes so that these, at the latest by 31 December 1994, do not exceed their national annual emissions of nitrogen oxides or transboundary fluxes of such emissions for the calendar year 1987 or any previous year to be specified upon signature of, or accession to, the Protocol, provided that in addition, with respect to any party specifying such a previous year, its national average annual transboundary fluxes or national average annual emissions of nitrogen oxides for the period from 1 January 1987 to 1 January 1996 do not exceed its transboundary fluxes or national emissions for the calendar year 1987.⁶⁵

All parties must apply national emissions standards to new mobile sources in all major source categories, and introduce pollution control measures for major existing stationary sources.⁶⁶ National standards must be based on 'best available technologies which are economically feasible' and take into consideration, *inter alia*, the Technical Annex to the Protocol.⁶⁷ By the end of 1994, overall emissions of parties to the 1988 NO_x Protocol demonstrated a reduction of 9 per cent compared to the 1987 baseline. In addition, nineteen parties have reached the target set by the Protocol, stabilising emissions at 1987 levels or below.

However, the parties to the 1988 NO_x Protocol are required to take additional measures, which are proving more difficult to achieve. Within six months of the entry into force of the Protocol, parties were to commence negotiations on further steps to reduce national annual emissions, taking into account the best available scientific and technological developments, internationally accepted critical loads, and other elements resulting from work programmes.⁶⁸ Parties are required also to co-operate to establish critical loads, reductions based on critical loads, and measures and a timetable commencing no later than 1 January 1996 for achieving such reductions.⁶⁹ Parties are free to adopt more stringent measures than those required by Article 2.⁷⁰

The 1988 NO_x Protocol provides for the exchange of technology to reduce emissions, consistent with national laws, regulations and practices, and requires that unleaded fuel be made sufficiently available to facilitate the international circulation of vehicles equipped with catalytic converters.⁷¹ The Protocol further requires parties: to give high priority to research and monitoring through national research programmes and the work plan of the Executive Body; to develop national programmes, policies and strategies to control and reduce emissions under the Protocol; to participate in information exchange; and to report annually to the Executive Body on obligations under the Protocol (including, in particular, levels of national annual emissions, progress in applying national emissions standards and on introducing pollution control measures, in making unleaded fuel available, and in establishing critical loads).⁷² EMEP provides the Executive Body with calculations of nitrogen budgets, transboundary fluxes, and deposits of nitrogen oxides.⁷³ The Protocol is implemented under the authority of the institutions of the LRTAP Convention.

⁶⁵ Art. 2(1). ⁶⁶ Art. 2(2)(a), (b) and (c).

⁶⁷ *Ibid.* The Technical Annex forms an integral part of the Protocol but is only recommendatory in nature: Art. 10.

⁶⁸ Art. 2(3)(a). 'Critical load' is defined as 'a quantitative estimate of the exposure to one or more pollutants below which significant harmful effects on specified sensitive elements of the environment do not occur according to present knowledge': Art. 1(7).

⁶⁹ Art. 2(3)(b). ⁷⁰ Art. 2(4). ⁷¹ Arts. 3 and 4. ⁷² Arts. 6, 7 and 8. ⁷³ Art. 9.

1991 Volatile Organic Compounds Protocol

The fourth Protocol addresses the 'Control of Emissions of Volatile Organic Compounds and Their Transboundary Fluxes' (1991 VOC Protocol).⁷⁴ Volatile organic compounds (VOCs) are mainly emitted through incomplete combustion of fossil fuels in the engines of motor vehicles,⁷⁵ and are released into the atmosphere due to evaporation during refining, distribution and use of petrol and during the use of products containing solvents such as paints, glues and inks. In keeping with the developing complexity and sophistication of the earlier Protocols, the 1991 VOC Protocol built significantly on the base provided by its earlier siblings, and established specific targets and timetables committing parties to control and reduce their emissions of VOCs. Unlike the earlier LRTAP Protocols, the parties have a choice of at least three ways to meet this requirement, specified upon signature. This reflects the need to adopt differentiated commitments based on a party's emissions and particular geographic and demographic circumstances. The first option is for a party simply to

take effective measures to reduce its national annual emissions of VOCs by at least thirty per cent by the year 1999, using 1988 levels as a basis or any other annual level during the period 1984 to 1990, which it may specify upon signature of or accession to the present Protocol.⁷⁶

The second option is only available to a party whose annual emissions contribute to tropospheric ozone concentrations in areas under the jurisdiction of one or more other parties, and where such emissions originate only from areas under its jurisdiction that are specified as tropospheric ozone management areas (TOMAs) under Annex 1 to the Protocol.⁷⁷ A party that chooses this option is required to:

- (1) reduce its annual emissions of VOCs from the areas so specified by at least 30 per cent by the year 1999, using 1988 levels as a basis or any other annual level during the period 1984–90, which it may specify upon signature of or accession to the present Protocol; and
- (2) ensure that its total national annual emissions of VOCs by the year 1999 do not exceed the 1988 levels.⁷⁸

The third option is only available to a party whose annual emissions of VOCs in 1988 were lower than 500,000 tonnes and 20 kilogrammes per inhabitant and 5 tonnes per square kilometre. Such a party may opt as soon as possible, and as a first step, to 'take effective measures to ensure at least that at the latest by the year 1999 its annual emissions of VOCs do

⁷⁴ Geneva, 18 November 1991, in force 29 September 1997, 31 ILM 568 (1992); twenty-four states are parties to the Protocol.

⁷⁵ VOCs are defined, unless otherwise specified, as 'all organic compounds of anthropogenic nature, other than methane, that are capable of producing photochemical oxidants by reactions with nitrogen oxides in the presence of sunlight': Art. 1(9).

⁷⁶ Art. 2(2)(a). This option was chosen by Austria, Belgium, Estonia, Finland, France, Germany, the Netherlands, Portugal, Spain, Sweden and the United Kingdom (with 1988 as base year), by Denmark (with 1985 as base year), by Liechtenstein, Switzerland and the United States (with 1984 as base year) and by the Czech Republic, Italy, Luxembourg, Monaco and Slovakia (with 1990 as base year).

⁷⁷ Art. 2(2)(b). Canada has designated two TOMAs within its territory, and Norway has designated the whole of its mainland and parts of its exclusive economic zone as TOMAs: Annex I.

⁷⁸ *Ibid.*

not exceed the 1988 levels'.⁷⁹ Of the states that have signed the Protocol, three chose the option under Article 2(2)(c),⁸⁰ three chose the option under Article 2(2)(b)⁸¹ and sixteen chose the option under Article 2(2)(a).⁸² One state apparently failed to make the choice.

No later than two years after the Protocol entered into force, each party was required to apply appropriate national or international emissions standards to new stationary sources based on the 'best available technologies which are economically feasible' (BATEF), to apply national or international measures to products that contain solvents and to promote the use of labelling of products specifying their VOC content, taking into consideration Annex II. Within the same timeframe, the parties were required to 'apply appropriate national or international emissions standards to new stationary sources based on best available technologies which are economically feasible, taking into consideration Annex II',⁸³ and encourage further public participation in emission control programmes, as well as the best use of all modes of transport and the promotion of traffic management schemes.⁸⁴

No later than five years after the provision entered into force, in areas where international tropospheric ozone standards are exceeded or where transboundary fluxes originate or are expected to originate, each party must apply BATEF to existing stationary sources in major source categories, taking into consideration Annex II; each party must also apply techniques to reduce VOC emissions from petrol distribution sources and motor vehicle refuelling operations, and to reduce the volatility of petrol, taking into consideration Annexes II and III.⁸⁵ The Protocol requires that high priority be given to reducing and controlling emissions of substances with the greatest photochemical ozone creation potential, taking into consideration Annex IV, and that states ensure that in product-substitution measures they do not substitute toxic and carcinogenic VOCs and those that harm the stratospheric ozone layer for other VOCs.⁸⁶ This last requirement amounts to a requirement that an environmental and health assessment of substitute products be carried out; this is an innovative provision that may influence future international agreements.

Within six months of the Protocol entering into force, the parties were required to commence negotiations on further steps to reduce national annual emissions of VOCs or transboundary fluxes of such emissions and the resulting secondary photochemical oxidant products. They must also: co-operate to develop, *inter alia*, control strategies; ensure cost-effectiveness, possibly through the use of economic instruments; and adopt measures and a timetable commencing no later than 1 January 2000 for achieving such reductions.⁸⁷ Parties are free to take more stringent measures, and are not relieved by the Protocol from obligations to reduce emissions that may contribute significantly to climate change, the formation of tropospheric background ozone or the depletion of stratospheric ozone, or that are toxic or carcinogenic.⁸⁸ The Protocol provides for the exchange of technology, research and monitoring, regular review and the establishment of national programmes, policies and strategies.⁸⁹ Implementation of the Protocol is verified by the exchange of information and annual reporting requirements, and by

⁷⁹ Art. 2(2)(c). ⁸⁰ Bulgaria, Greece and Hungary.

⁸¹ Canada (1988 as base year), Norway (1989 as base year) and Ukraine. ⁸² See note 76 above.

⁸³ Art. 2(3)(a)(i) and (ii). Annex II establishes Control Measures for Emissions of VOCs from Stationary Sources.

⁸⁴ Art. 2(3)(a)(iii) and (iv). Annex III establishes control measures for Emissions of VOCs from on-road motor vehicles.

⁸⁵ Art. 2(3)(b).

⁸⁶ Art. 2(4) and (5). Annex IV provides classification of VOCs based on their 'motorchemical ozone creation potential'.

⁸⁷ Art. 2(6) and (7). ⁸⁸ Art. 3(1) and (2). ⁸⁹ Arts. 4 to 7.

the Implementation Committee for the Convention's Protocols established in 1997.⁹⁰ Even so, there are continuing problems of non-compliance by some parties.⁹¹

1994 Sulphur Protocol

Negotiations under the auspices of the 1985 Sulphur Protocol resulted in the conclusion of the 1994 Oslo Protocol on Further Reduction of Sulphur Emissions, which entered into force on 5 August 1998. Like its predecessor, the 1994 Protocol contemplates future negotiations on further obligations to reduce sulphur emissions.⁹² The 1994 Protocol applies and develops the concepts of 'critical loads' and the 'effects-based approach' introduced in the 1988 NO_x Protocol. The basic obligation to which the parties commit is to

control and reduce their sulphur emissions in order to protect human health and the environment from adverse effects, in particular acidifying effects, and to ensure, as far as possible, without entailing excessive costs, that depositions of oxidised sulphur compounds in the long term do not exceed critical loads for sulphur given, in Annex I, as critical sulphur depositions, in accordance with present scientific knowledge.⁹³

The 'critical loads' for sulphur are intended as long-term targets for reductions in sulphur emissions, and it is recognised that they will not be reached in a single step. Instead, as a first step, parties are required to meet the targets and timetable for reductions of sulphur emissions specified in Annex II.⁹⁴ In line with an effects-based approach, the emission reduction obligations of parties are differentiated, with greater emission reductions allocated to those countries where the overall benefit would be the greatest.

The Protocol requires the parties to make use of the 'most effective measures for the reduction of sulphur emissions' from new and existing sources, including controlling the sulphur content of fuel, energy efficient measures, promotion of renewable energy and the application of best available control technologies using the guidance provided in Annex IV to the Protocol.⁹⁵ The Protocol also permits the parties to apply economic instruments to encourage the adoption of cost-effective approaches to the reduction of sulphur emissions, and to enter into agreements for the joint implementation of the Protocol with other parties.⁹⁶

All parties (other than the United States and Canada) must apply national emissions limits to major new stationary sources, and were required to introduce pollution control measures for major existing stationary sources by 1 July 2004.⁹⁷ Parties were also required to apply national standards for the sulphur content of gas oil no later than two years after the Protocol entered into force.⁹⁸

Parties must implement their basic obligations under Article 2 through the adoption of national strategies, policies and programmes and by taking and applying national measures

⁹⁰ Arts. 3(3) and 8.

⁹¹ For example: Spain has been non-compliant for ten years, and the Implementation Committee does not expect Spain to achieve compliance before 2020; this non-compliance is compounded by the fact that the projections show a gradual increase in total emissions after 2010, which makes achieving compliance in the near future even less likely (Implementation Committee reports to the Executive Body, twelfth report, ECE/EB.AIR/2009/3).

⁹² Art. 2(8). ⁹³ Art. 2(1). ⁹⁴ Art. 2(2) and (3). ⁹⁵ Art. 2(4). ⁹⁶ Art. 2(6) and (7).

⁹⁷ Art. 2(5)(a) and (b); emissions limits are specified in Annex V. ⁹⁸ Art. 2(5)(c).

to control and reduce sulphur emissions.⁹⁹ Each party must collect and maintain information on actual levels of sulphur emissions, and of ambient concentrations and depositions of oxidised sulphur and other acidifying compounds; and on the effects of depositions of oxidised sulphur and other acidifying compounds.¹⁰⁰ The Protocol requires periodic reporting to the Executive Body on national implementation measures and the levels of national annual sulphur emissions.¹⁰¹

The Protocol requires parties to facilitate the exchange of technologies and techniques for reducing sulphur emissions. The Protocol also encourages research, development, monitoring and co-operation in respect of various matters relating to: the harmonisation of methods for the establishment of critical loads; the improvement of monitoring techniques and modelling systems; the development of strategies for the further reduction of sulphur emissions; the understanding of the wider effects of sulphur emissions on human health and the environment; emission abatement and energy efficiency technologies; and the economic evaluation of benefits for the environment and human health resulting from the reduction of sulphur emissions.¹⁰²

Like the other Protocols, the 1994 Sulphur Protocol makes use of the institutions established under the 1979 LRTAP Convention. Article 7 contemplates the establishment of an Implementation Committee to oversee compliance, which was set up by the Executive Body in 1997.¹⁰³ In 1998, the parties to the 1994 Protocol decided that the structure, functions and procedures of the Implementation Committee should be those set out by Decision 1997/2 of the Executive Body.¹⁰⁴ The Implementation Committee now oversees compliance with all of the Protocols to the LRTAP Convention.

1998 Aarhus Protocol on Heavy Metals

The 1998 Heavy Metals Protocol was adopted in Aarhus on 24 June 1998 and entered into force on 29 December 2003.¹⁰⁵ It targets three particularly harmful heavy metals – lead, cadmium and mercury – and requires parties to reduce their emissions of these metals below the levels in a selected reference year (between 1985 and 1995).¹⁰⁶ The Protocol aims to reduce emissions of heavy metals from industrial sources, combustion processes and waste incineration. Parties are required to implement emissions standards for these pollutants for stationary sources, based on the best available technologies suggested in the Protocol.¹⁰⁷ In addition, parties undertake to phase out the use of leaded petrol and to introduce measures designed to lower heavy metal emissions from other products.¹⁰⁸ A number of other product management measures are proposed for products containing mercury.¹⁰⁹

Parties are to develop strategies, policies and programmes, without undue delay, to discharge their obligations under the Protocol. A range of measures are suggested for this purpose, including economic instruments, government/industry covenants and voluntary agreements, more efficient use of resources, use of less polluting sources, development of a less polluting transport system, phasing out certain polluting industrial processes and developing cleaner

⁹⁹ Art. 4(1). ¹⁰⁰ Art. 4(2). ¹⁰¹ Art. 5. ¹⁰² Arts. 3 and 6. ¹⁰³ Chapter 5, p. 165, above.

¹⁰⁴ Decision 1998/6, The Application of the Compliance Procedure to the Oslo Protocol (ECE/EB.AIR/59, Annex II).

¹⁰⁵ Aarhus, 24 June 1998, 29 December 2003, 2237 UNTS 4; thirty states are parties to the Protocol.

¹⁰⁶ Art. 3(1) and Annex I. ¹⁰⁷ Art. 3(2) and Annex III.

¹⁰⁸ Art. 3(3) and Annex VI. ¹⁰⁹ Art. 3(4) and Annex VII.

processes. Parties are free to adopt more stringent measures than those required by the Protocol.¹¹⁰ As for the other Protocols, the Heavy Metals Protocol promotes technology exchange and other forms of co-operation between the parties.¹¹¹ Parties must report periodically to the Executive Body on measures taken to implement the Protocol, with compliance overseen by the Implementation Committee.¹¹²

1998 Aarhus Protocol on Persistent Organic Pollutants

The Protocol on Persistent Organic Pollutants (POPs) was adopted by the Executive Body at the same time as the Heavy Metals Protocol and also came into force in 2003.¹¹³ Its ultimate objective is to eliminate discharges, emissions and losses of POPs to the atmosphere. The Protocol focuses on a list of sixteen substances (including pesticides, industrial chemicals and contaminants) singled out according to agreed risk criteria.¹¹⁴ Parties to the Protocol undertake to eliminate the production and use of certain POPs listed in Annex I and to restrict the use of other substances listed in Annex II.¹¹⁵ For a third group of POPs listed in Annex III, parties are required to reduce their emissions of these substances from the level of emissions in a given reference year (between 1985 and 1995).¹¹⁶ For emissions of dioxins and furans, parties are required to apply emissions limits, based on best available technologies, for new and existing stationary sources, and must take effective measures to control emissions of POPs from mobile sources.¹¹⁷

The Protocol includes provisions dealing with the disposal of wastes containing or generated from listed substances.¹¹⁸ Parties are to ensure the environmentally sound destruction and disposal of these wastes. For Annex I substances, domestic disposal should take place where possible, and any transboundary movement of these wastes should be in accordance with applicable sub-regional, regional and global regimes governing the transboundary movement of hazardous wastes, in particular the 1989 Basel Convention. Parties are to: develop strategies, policies and programmes to discharge their obligations under the Protocol; promote the provision of information to the general public, including individuals who are direct users of POPs; facilitate the exchange of technology and information; and engage in co-operative research, development and monitoring in relation to POPs.¹¹⁹ Parties must report periodically to the Executive Body on measures taken to implement the Protocol, with compliance overseen by the Implementation Committee.¹²⁰

1999 Gothenburg Protocol to Abate Acidification, Eutrophication and Ground-Level Ozone

The most recent Protocol to the LRTAP Convention is the 1999 Gothenburg Protocol to Abate Acidification, Eutrophication and Ground-Level Ozone, adopted by the Executive Body on 30 November 1999.¹²¹ The Protocol's objective is to control and reduce anthropogenic emissions

¹¹⁰ Art. 5. ¹¹¹ Arts. 4 and 6. ¹¹² Arts. 7 and 9.

¹¹³ Aarhus, 24 June 1998, 23 October 2003, 2230 UNTS 79; thirty states are parties to the Protocol.

¹¹⁴ On 18 December 2009, parties amended the Protocol and its Annexes to include seven new substances: Decisions 2009/1, 2009/2 and 2009/3 (not yet in force), Twenty-Seventh Session of the Executive Body, Geneva, Switzerland, 18 December 2009, C.N.555.2010.TREATIES-3; C.N.556.2010.TREATIES-4; C.N.554.2010.TREATIES-2.

¹¹⁵ Art. 3(1). Parties may grant exemptions from these requirements for research purposes or in the event of a public health emergency: see Art. 4.

¹¹⁶ Art. 3(5)(a). ¹¹⁷ Art. 3(5)(b) and Annexes IV and V. ¹¹⁸ Art. 3(1) and (3).

¹¹⁹ Arts. 5–8. ¹²⁰ Arts. 9 and 11.

¹²¹ Gothenburg (Sweden), 30 November 1999, in force 17 May 2005, UN Doc. EB.AIR/1999; twenty-six states are parties to the Protocol.

of four pollutants – sulphur, NO_x, ammonia and VOCs – which are likely to cause adverse effects on human health, natural ecosystems, materials and crops due to acidification, eutrophication or ground-level ozone.¹²² Following full implementation of the Protocol, it is estimated that the area of Europe suffering from excessive levels of acidification will shrink from 93 million hectares (measured in 1990) to 15 million hectares. Similarly, excessive levels of eutrophication are expected to fall from 165 million hectares (in 1990) to 108 million hectares and the number of days with excessive ozone levels to be halved.

The Protocol builds on the previous sulphur, NO_x and VOC Protocols, employing a range of mechanisms to reduce atmospheric emissions of the four types of pollutants. On a long-term step-wise basis, the parties commit to ensuring that atmospheric depositions or concentrations of the pollutants do not exceed the critical loads of acidity, nutrient nitrogen and ozone specified in Annex I to the Protocol.¹²³ Annex II sets emissions ceilings for sulphur, NO_x, VOCs and ammonia which parties were required to attain by 2010. Required emission reductions are differentiated between the parties on the basis that parties whose emissions have more severe environmental or health impacts and which are relatively inexpensive to reduce will be required to make the largest cuts. In addition, the Protocol sets tight limit values for specific emission sources, fuels and new mobile sources, and requires the best available technologies to be used to minimise emissions.¹²⁴ Guidance documents adopted together with the Protocol provide details of a wide range of abatement techniques and economic instruments for the reduction of emissions in relevant sectors, including the transport sector.¹²⁵

The Protocol is the first agreement under the Convention to deal specifically with emissions of reduced nitrogen compounds (ammonia), which are particularly associated with farming activities. Parties are required to: apply ammonia control measures, including developing advisory codes of good agricultural practice to control ammonia emissions; take such steps as are feasible to limit ammonia emissions from the use of solid fertilisers based on urea; and implement control measures with respect to manure application and storage, and animal housing.¹²⁶ A Guidance Document adopted in 2007 provides guidance to parties in identifying ammonia control options and techniques for reducing emissions from agricultural and other stationary sources.¹²⁷

Once again, parties are required: to develop strategies, policies and programmes to discharge their obligations under the Protocol; to promote the provision of information to the general public; to facilitate the exchange of technology and information; and to engage in co-operative research, development and monitoring.¹²⁸ Parties must report periodically to the Executive Body on measures taken to implement the Protocol, with compliance overseen by the Implementation Committee.¹²⁹ Negotiations for revision of the 1999 Gothenburg Protocol are currently underway with the aim of agreeing on amendments or a new Protocol to address additional aspects such as particulates, black carbon and intercontinental transport of air pollution.

¹²² Art. 2. ¹²³ *Ibid.* ¹²⁴ Art. 3(2)–(6).

¹²⁵ Decision 1999/1, The Guidance Documents for the Protocol to Abate Acidification, Eutrophication and Ground-Level Ozone (ECE/EB.AIR/68, Annex I).

¹²⁶ Art. 3(8) and Annex IX.

¹²⁷ Guidance Document on Control Techniques for Preventing and Abating Emissions of Ammonia, ECE/EB.AIR/WG.5/2007/13, 16 July 2007.

¹²⁸ Arts. 4–6 and 8. ¹²⁹ Arts. 7 and 9.

The 1999 Gothenburg Protocol illustrates the extent to which the LRTAP regime has evolved and gained sophistication over time. Compared with the early LRTAP Protocols, which focused on single pollutants and a single problem (acid rain), the 1999 Gothenburg Protocol targets four substances and their broad-ranging environmental effects. In addition, the 'critical loads' approach adopted in Protocols since the 1994 Sulphur Protocol allows for the tailoring of emission reduction targets in accordance with the ecological vulnerability of different regions. These innovations pave the way for a more integrated, and potentially more effective, approach to managing and controlling the environmental impacts of air pollution.

1991 Canada–US Air Quality Agreement

During the 1970s, transboundary air pollution emerged as a significant environmental issue in North America as well as in Europe. Both the US and Canada are parties to the LRTAP Convention and its Protocols. However, the countries have also agreed to bilateral arrangements to address air pollution issues arising from emissions of sulphur dioxide and nitrogen oxides. The 1991 Agreement Between the United States of America and Canada on Air Quality (1991 Canada–US Air Quality Agreement)¹³⁰ is designed to control transboundary air pollution between the two countries and to provide a framework for addressing shared concerns.¹³¹ The Agreement followed disputes over responsibility for causing acid rain, an issue that dates back at least to the 1930s and the differences over the sulphur emissions from the Trail Smelter.¹³² At the heart of the Agreement are air quality objectives to limit and reduce emissions of sulphur dioxide and nitrogen oxides and to prevent air quality deterioration and visibility protection.¹³³ The 1991 Agreement also requires compliance monitoring by continuous emissions monitoring systems or their equivalent for certain utilities and comparably effective methods of emissions estimation from other major stationary sources.¹³⁴ The Agreement resulted in reductions in acid rain in North America during the 1990s. In December 2000, the parties concluded negotiations for an Ozone Annex to the Agreement to reduce transboundary flows of ground-level ozone, one of the main contributors to smog, and are currently considering an additional Annex to control particulate matter emissions.¹³⁵

Sulphur dioxide

Under the Agreement, the United States was obliged to reduce its annual sulphur dioxide emissions by approximately 10 million tons from 1980 levels by the year 2000, in accordance with its own national legislation (1990 Clean Air Act), to achieve a permanent national emissions cap of 8.95 million tons of sulphur dioxide per year for electric utilities by 2010. It must also adopt new or revised standards as the Administrator of the Environmental Protection Agency deems appropriate, aimed at limiting sulphur dioxide emissions from industrial sources

¹³⁰ Ottawa, 13 March 1991, in force 13 March 1991, 30 ILM 676 (1991).

¹³¹ Arts. II and III(1). 'Air pollution' is defined in similar terms to the definition in the 1979 LRTAP Convention except for the exclusion of 'energy': Art. I(1).

¹³² E. G. Lee, 'International Law and the Canada–United States Acid Rain Dispute', in D. Magraw (ed.), *International Law and Pollution* (1991), 322.

¹³³ Art. IV(2) and Annex I, Section 4. ¹³⁴ Annex I, Section 3.

¹³⁵ See www.epa.gov/airmarkt/progsregs/usca/jointstatement.html.

in the event that they may be expected to exceed 5.6 million tons per year.¹³⁶ For its part, Canada agreed to reduce sulphur dioxide emissions in its seven easternmost provinces to 2.3 million tonnes per year by 1994 and to establish a cap on emissions from those provinces of 2.3 million tonnes per year from 1995 to 31 December 1999, and a permanent national emissions cap of 3.2 million tonnes per year by 2000.¹³⁷

Nitrogen oxides

The United States committed to reduce the total annual emissions of nitrogen oxides by approximately 2 million tons from 1980 emissions levels by 2000. This is to be achieved through controls on stationary sources (establishing emissions standards for electric utility boilers) and mobile sources (emissions standards from old and new light duty trucks, light duty vehicles and heavy duty trucks).¹³⁸ Canada agreed as an interim requirement to reduce by the year 2000 annual national emissions from stationary sources by 100,000 tonnes below its forecast level of 970,000 tonnes for the year 2000, to develop by 1 January 1995 further national annual emission reduction requirements from stationary sources to be achieved by 2000 and/or 2005, and to limit emissions from mobile sources by adopting specified emissions standards (for light, medium and heavy duty vehicles).¹³⁹

Ozone

The long-term goal of the parties pursuant to the 2000 Ozone Annex is to reduce emissions of nitrogen oxides and VOCs in designated 'Pollution Emission Management Areas' (PEMAs) in order to attain ozone air quality standards in both countries.¹⁴⁰ In the case of the US, these standards are the National Ambient Air Quality Standards for Ozone, established under the 1990 Clean Air Act. For Canada, the relevant standard is the Canada-wide Standard for Ozone agreed between the Canadian federal and provincial governments. The parties are permitted to take more stringent measures than those specified in the agreement to achieve reductions. The Ozone Annex envisages attainment of the ozone air quality standards by 2010, with estimated annual NO_x reductions for Canada of 44 per cent from 1990 levels and 20 per cent reductions from 1990 levels for VOC emissions.¹⁴¹ In the case of the US, the equivalent estimated emission reductions are 36 per cent from 1990 levels for NO_x and 38 per cent from 1990 levels for VOCs.¹⁴² Under the Agreement, the parties agreed to assess progress in implementation in 2004 with a view to negotiating further reductions.¹⁴³

Assessment, information and institutions

The 1991 Agreement requires assessment of proposed activities likely to cause significant transboundary air pollution, notification and consultation, and measures must be taken to avoid or mitigate the risks posed by actions likely to cause significant transboundary air pollution.¹⁴⁴ It also provides for research, the exchange of information, and other consultations.¹⁴⁵ A bilateral Air Quality Committee was established to prepare progress reports on a

¹³⁶ Annex I, Section 1A. ¹³⁷ Annex I, Section 1B. 1 ton = 0.91 tonnes (metric tons).

¹³⁸ Annex I, Section 2A. ¹³⁹ Annex I, Section 2B. ¹⁴⁰ Part I. ¹⁴¹ Part IV.A. ¹⁴² Part IV.B.

¹⁴³ Part IV.A. ¹⁴⁴ Art. V. ¹⁴⁵ Arts. VI, VII and XI and Annex 2.

biennial basis,¹⁴⁶ and the International Joint Commission assists the parties in implementation, by receiving public comments and dealing with other requests from the parties.¹⁴⁷ In an innovative provision, the Agreement envisages a role for the public and interested organisations in assessing reports and implementing the Agreement.¹⁴⁸

2002 ASEAN Agreement on Transboundary Haze Pollution

In response to concerns over widespread haze caused particularly by Indonesian forest fires in the late 1990s, the governments of the ASEAN countries signed an Agreement on Transboundary Haze Pollution in June 2002, which came into force on 25 November 2003.¹⁴⁹ The objective of the Agreement is 'to prevent and monitor transboundary haze pollution as a result of land and/or forest fires which should be mitigated, through concerted national efforts and intensified regional and international cooperation', an objective to be 'pursued in the overall context of sustainable development'.¹⁵⁰ As in the Climate Change Convention (see below), this objective is augmented by the elaboration of several 'principles' that include a restatement of Principle 2 of the Rio Declaration, a requirement to take precautionary measures '[w]here there are threats of serious or irreversible damage from transboundary haze pollution, even without full scientific certainty', a commitment to manage natural resources including land and forest resources in an ecologically sound and sustainable manner, and the principle that the parties in addressing transboundary haze pollution should involve 'all stakeholders', including local communities, NGOs, farmers and business.¹⁵¹ The Agreement defines 'haze pollution' as meaning 'smoke resulting from land and/or forest fire which causes deleterious effects of such a nature as to endanger human health, harm living resources and ecosystems and material property and impair or interfere with amenities and other legitimate uses of the environment'.¹⁵²

Under the Agreement, parties agree to co-operate and take legal, administrative or other measures to implement their obligations regarding: the development and implementation of measures to prevent, monitor and mitigate transboundary haze pollution by controlling sources of land and forest fires; development of monitoring, assessment and early warning systems; exchange of information and technology; and provision of mutual assistance.¹⁵³ Parties are also required to respond promptly to any request for information sought by states that are or may be affected by transboundary haze pollution, with a view to minimising adverse effects.¹⁵⁴ Specific obligations are established in respect of monitoring,¹⁵⁵ provision of data,¹⁵⁶ preparedness and the preparation of response plans,¹⁵⁷ technical co-operation,¹⁵⁸ scientific research¹⁵⁹ and activities to prevent haze pollution.¹⁶⁰ The measures parties must take in respect of the latter include developing and implementing legislative and other regulatory measures, programmes and strategies to promote a 'zero burning policy'; developing other appropriate policies to curb activities that may lead to land and/or forest fires; identifying and monitoring areas prone to occurrence of land and/or forest fires; strengthening local fire management and

¹⁴⁶ Progress reports are available online from www.ec.gc.ca/air/default.asp?lang=En&nav=83930AC3-1. The most recent progress report was released in 2010.

¹⁴⁷ Arts. VIII and IX. ¹⁴⁸ Art. XIV(3).

¹⁴⁹ ASEAN Agreement on Transboundary Haze Pollution, Kuala Lumpur, Malaysia, 10 May 2002, in force 25 November 2003; <http://haze.asean.org/hazeagreement>.

¹⁵⁰ Art. 2. ¹⁵¹ Art. 3. ¹⁵² Art. 1(6). ¹⁵³ Art. 4(1) and (3). ¹⁵⁴ Art. 4(2). ¹⁵⁵ Art. 7.

¹⁵⁶ Art. 8. ¹⁵⁷ Art. 10. ¹⁵⁸ Art. 16. ¹⁵⁹ Art. 17. ¹⁶⁰ Art. 9.

firefighting capability and co-ordination to prevent the occurrence of land and/or forest fires; promoting public education and awareness-building campaigns and strengthening community participation in fire management; promoting and utilising indigenous knowledge and practices in fire prevention and management; and ensuring that legislative, administrative and/or other relevant measures are taken to control open burning and to prevent land clearing using fire.

The Agreement is implemented under the auspices of the Conference of the Parties, assisted by a secretariat. The Agreement establishes an ASEAN Coordinating Centre for Transboundary Haze Pollution Control to facilitate co-operation and co-ordination in assessing and managing the impact of land and forest fires, particularly the haze pollution arising from such fires.¹⁶¹ In the case of an emergency situation, the Centre may also provide assistance, including through co-ordinating the provision of assistance by other parties to the Agreement.¹⁶²

Aircraft emissions: ICAO Convention

Aircraft emissions make a significant contribution to global atmospheric problems, including climate change.¹⁶³ Annex 16 to the 1944 Convention on International Civil Aviation (ICAO Convention)¹⁶⁴ establishes rules on 'Aircraft Engine Emissions' (1980 ICAO Aircraft Emissions Standards and Recommended Practices).¹⁶⁵ The Standards were adopted by the ICAO Council in 1980, following proposals to develop Standards and Recommended Practices to achieve 'maximum compatibility between the safe and orderly development of civil aviation and the quality of human environment'.¹⁶⁶ The 1980 ICAO Aircraft Emissions Standards and Recommended Practices were adopted under Article 37 of the ICAO Convention, which requires contracting states

to collaborate in securing the highest practicable degree of uniformity in regulations, standards, procedures and organisation . . . in all matters in which such uniformity will facilitate and improve air navigation.

Where a state finds it 'impracticable' to comply with an international standard, it must, under Article 38, immediately notify the ICAO of the differences between its own practices and those established by the international standard. The Emissions Standards establish rules for vented fuel (Part II) and emission certification (Part III), including emissions limits for smoke, hydrocarbons, carbon monoxide and oxides of nitrogens for subsonic and supersonic

¹⁶¹ Art. 5. ¹⁶² See Arts. 12–15.

¹⁶³ See the *Special Report on Aviation and the Global Atmosphere* (1999) prepared at the ICAO's request by the IPCC in collaboration with the Scientific Assessment Panel to the Montreal Protocol (available at www.grida.no/climate/ipcc/aviation/index.htm). At the request of the ICAO, the findings of this report were updated in the IPCC's 2007 Assessment Report: IPCC, *Climate Change 2007 – Impacts, Adaptation and Vulnerability* (2007).

¹⁶⁴ 7 December 1944, in force 4 April 1947, 15 UNTS 295.

¹⁶⁵ ICAO, *International Standards and Recommended Practices, Environmental Protection, Annex 16 to the 1944 ICAO Convention*, vol. II (2008, 3rd edn), incorporating Amendments 1–6. A 'Consolidated Statement of Continuing Policies and Practices Related to Environmental Protection' is revised and updated by the ICAO Council every three years for adoption by the ICAO Assembly. The present version, updated by Assembly Res. A37-18 and Res. A37-19, was adopted in 2010.

¹⁶⁶ ICAO Assembly Res. A18-11, para. 2.

aircraft,¹⁶⁷ and standard techniques for measurement and evaluation, and compliance procedures.¹⁶⁸ In recent years, the ICAO has begun to address the impacts of the aviation industry on climate change,¹⁶⁹ with work underway to explore the development of a carbon dioxide emissions standard for aircraft.

Emissions from international shipping

Together with aircraft emissions, emissions from international shipping – particularly from the combustion of bunker fuels – contribute significantly to global atmospheric problems, such as climate change.¹⁷⁰ Emissions from international shipping fall outside the international climate change regime. Instead, the Kyoto Protocol (discussed further below) calls upon parties to pursue limitation or reduction of shipping-related bunker fuels emissions through the International Maritime Organization (IMO).¹⁷¹ After many years of inaction, the IMO has recently stepped up its efforts in respect of this issue, with the IMO's Marine Environment Protection Committee adopting in July 2011 a package of technical and operational measures to reduce carbon dioxide and other greenhouse gas emissions from international shipping.¹⁷² These measures – which will take the form of a new Annex to the MARPOL 73/78 on the 'Energy Efficiency Design Index' (EEDI) – are expected to come into force by 1 January 2013 and will apply to all new ships of more than 400 gross tonnage (existing ships are exempt from the requirements).¹⁷³ Ships flagged by developing countries will be able to delay implementation of

¹⁶⁷ Sections 2.2, 2.3, 3.2 and 3.3. In February 2010, agreement was reached on a new NO_x Standard, which improves on the current Standard by up to 15 per cent with an effective date of 31 December 2013, as well as a production cut-off of engines according to the current Standard with an effective date of 31 December 2012.

¹⁶⁸ Appendix 6.

¹⁶⁹ See IPCC, *Special Report on Aviation and the Global Atmosphere* (1999); see also ICAO Assembly Res. A33-7, resolving to promote scientific research aimed at addressing uncertainties and requesting the ICAO Council to continue to co-operate closely with the IPCC and other organisations involved in the definition of aviation's contribution to environmental problems in the atmosphere. This was reiterated by the Assembly in 2007, which called for the establishment of a new Group on International Aviation and Climate Change (GIACC) composed of senior government officials representative of all ICAO regions, for the purpose of developing and recommending to the Council an aggressive Programme of Action on International Aviation and Climate Change. This Programme was finalised in May 2009 and accepted by the Council in June 2009. It was followed by a High-Level Meeting on International Aviation and Climate Change in October 2009 that agreed on several key initiatives including a global goal of 2 per cent annual improvement in fuel efficiency until the year 2050, and further exploration of the feasibility of more ambitious medium and long-term goals, including carbon-neutral growth and emission reductions; development of a global CO₂ Standard for aircraft and facilitation of further operational changes to reduce aviation emissions; and development of a framework for market-based measures in international aviation.

¹⁷⁰ V. Eyring, H. W. Köhler, J. van Aardenne and A. Lauer, 'Emissions from International Shipping: 1. The Last 50 Years', 110 *Journal of Geophysical Research* D17305 (2005). Although international maritime transport contributes only around 3 per cent of global greenhouse gas emissions, the size of the sector means that its overall contribution to the quantity of greenhouse gases in the atmosphere is substantial.

¹⁷¹ Art. 2(2).

¹⁷² The Marine Environment Protection Committee (MEPC) of the IMO adopted mandatory measures to reduce greenhouse gas emissions from international shipping at its 62nd session, held in London from 11 to 15 July 2011: IMO, 'Mandatory Energy Efficiency Measures for International Shipping Adopted at IMO Environment Meeting', IMO Press Briefing 42, 15 July 2011, available at www.imo.org/MediaCentre/PressBriefings/Pages/42-mepc-ghg.aspx. See further Chapter 9, pp. 384–5, below.

¹⁷³ IMO, 'Mandatory Energy Efficiency Measures for International Shipping Adopted at IMO Environment Meeting', IMO Press Briefing 42, 15 July 2011, available at www.imo.org/MediaCentre/PressBriefings/Pages/42-mepc-ghg.aspx.

the EEDI requirements for six-and-a-half years.¹⁷⁴ The EEDI applies performance-based standards for energy efficiency, requiring ships built after 2013 to increase their efficiency by 10 per cent, rising to 20 per cent between 2020 and 2024 and 30 per cent thereafter. The MEPC's measures take a significant step towards reducing greenhouse emissions from international shipping and represent the first ever, mandatory greenhouse gas reduction regime for an international industry sector.

However, it is recognised that technical and operational measures dealing with energy efficiency will by themselves be insufficient to reduce greenhouse gas emissions from international shipping in light of population growth trends and increasing world trade. Proposals are therefore being considered for a cap-and-trade market mechanism that might provide an incentive for the maritime industry to invest in technology development to further reduce emissions.¹⁷⁵ The issue of bunker fuel emissions, from both international aviation and international shipping, has also been a subject of discussion in the international climate change negotiations since late 2007, although no agreement on a way forward has yet been reached in this forum.¹⁷⁶

OZONE DEPLETION¹⁷⁷

The ozone layer comprises a thin film of O₃ molecules (ozone) that are found in the Earth's atmosphere. Ninety per cent of atmospheric O₃ is found in the stratosphere, with maximum concentrations occurring at altitudes of 25 kms over the equator and 15 kms over the poles. The ozone layer is thought to provide a shield against harmful exposure to ultraviolet radiation from the sun and to control the temperature structure of the stratosphere. Ozone also acts as a greenhouse gas at lower altitude, is a respiratory irritant, and can adversely affect plant growth.¹⁷⁸ Since the 1960s, there have been losses in the ozone layer over the Antarctic during the southern hemisphere spring (September–October), often referred to as a 'hole' in the ozone layer. Significant thinning has also been detected in the northern hemisphere, and ozone

¹⁷⁴ 'IMO Adopts Mandatory Energy Efficiency Standards', 11(14) *Bridges Trade BioRes* 4 (2011).

¹⁷⁵ R. Hildreth and A. Torbitt, 'International Treaties and US Laws as Tools to Regulate the Greenhouse Gas Emissions from Ships and Ports', 25(3) *International Journal of Marine and Coastal Law* 347 (2010). See also C. Pisani, 'Fair at Sea: The Design of a Future Legal Instrument on Marine Bunker Fuels Emissions within the Climate Change Regime', 33(1) *Ocean Development and International Law* 57 (2002).

¹⁷⁶ Such negotiations have been undertaken in accordance with the mandate of the 2007 Bali Action Plan, para. (1)(b)(iv), to consider 'cooperative sectoral approaches and sector-specific actions' to enhance climate change mitigation.

¹⁷⁷ J. Lammers, 'Efforts to Develop a Protocol on Chlorofluorocarbons to the Vienna Convention for the Protection of the Ozone Layer', 1 *Hague Yearbook of International Law* 255 (1988); J. Tripp, 'The UNEP Montreal Protocol: Industrialised and Developing Countries Sharing the Responsibility for Protecting the Stratospheric Ozone Layer', 20 *New York University Journal of International Law and Policy* 733 (1988); D. Caron, 'Protection of Stratospheric Ozone Layer and the Structure of International Environmental Law-Making', 14 *Hastings International and Comparative Law Review* 755 (1991); P. Haas, 'Banning Chlorofluorocarbons: Epistemic Community Efforts to Protect Stratospheric Ozone', 46 *International Organization* 187 (1992); R. E. Benedick, *Ozone Diplomacy* (1998, 2nd edn); F. S. Rowland, 'Atmospheric Changes Caused by Human Activities: From Science to Regulation', 27 *Ecology Law Quarterly* 1261 (2001); O. Yoshida, *The International Legal Regime for the Protection of the Stratospheric Ozone Layer* (2001); E. A. Parson, *Protecting the Ozone Layer: Science and Strategy* (2003); UNEP, *Handbook for the Montreal Protocol on Substances That Deplete the Ozone Layer* (2009, 8th edn); T. Akanle, 'Impact of Ozone Layer Protection on the Avoidance of Climate Change: Legal Issues and Proposals to Address the Problem', 19(2) *Review of European Community and International Environmental Law* 239 (2010).

¹⁷⁸ UNEP, *Environmental Data Report* (1991), 9. The GEO Data Portal is now the authoritative source for data sets used by UNEP. Its online database can be accessed at <http://geodata.grid.unep.ch>.

depletion became progressively greater over the course of the 1990s. Serious levels of UVB radiation have been observed over Antarctica, Australia and mountainous regions of Europe, and damage to phytoplankton has been discovered in Antarctica.¹⁷⁹

The depletion of the ozone layer is caused by the anthropogenic emission of certain inert gases, particularly chlorofluorocarbons (CFCs) and halons. When these gases reach the ozone layer, they are exposed to ultraviolet rays and break down, releasing free chlorine (from CFCs) and bromine (from halons), which break up the ozone molecules, and thus 'deplete' the ozone layer. Increased levels of ultraviolet rays are thought to cause harm to human health and the environment, including organisms in the marine environment. CFCs have been used extensively as refrigerants, air conditioner coolants, aerosol spray-can ingredients and in the manufacture of styrofoam.

The protection of the ozone layer from these destructive elements is the subject of a complex legal regime comprising the 1985 Vienna Convention for the Protection of the Ozone Layer (the 1985 Vienna Convention)¹⁸⁰ and the 1987 Montreal Protocol on Substances That Deplete the Ozone Layer (the 1987 Montreal Protocol).¹⁸¹ Since 1990, there have been various adjustments to the production and consumption of controlled substances listed in the Annexes to the Protocol¹⁸² and four amendments to the Protocol, adopted in London (1990),¹⁸³ Copenhagen (1992),¹⁸⁴ Montreal (1997)¹⁸⁵ and Beijing (1999).¹⁸⁶ The adjustment mechanism, in particular, has lent a significant degree of flexibility to the Protocol's provisions allowing it to adapt better to changing scientific knowledge and technological development.

Since the 1960s, monitoring functions have been carried out by states individually and jointly, as well as under the World Meteorological Organization's (WMO) Global Ozone Observing System. In 2002, evidence began to emerge to suggest that the global regime was limiting the rate of increase in the degradation of the ozone layer, and that within five years the size of the hole in the ozone layer over the Antarctic might begin to decrease in magnitude, following a reduction in the levels of ozone-depleting gases in the stratosphere and of ozone-depleting chemicals in the troposphere.¹⁸⁷ If compliance with the Montreal Protocol is maintained, scientists predict that by 2050 the abundance of ozone-depleting gases should fall to values

¹⁷⁹ Statement from the Co-Chair of the Ozone Scientific Assessment Panel and Chair of the Assessment Panels, Report of the Fourth Meeting of the Parties to the Montreal Protocol, UNEP/OzL.Pro.4/15, 25 November 1992, 5–6. For the latest assessment of ozone depletion, see World Meteorological Organization, *Scientific Assessment of Ozone Depletion: 2010*, Global Ozone Research and Monitoring Project, Report No. 52 (2011).

¹⁸⁰ Vienna, 22 March 1985, in force 22 September 1988, 26 ILM 1529 (1987); 196 states are parties to the Convention.

¹⁸¹ Montreal, 16 September 1987, in force 1 January 1989, 26 ILM 1550 (1987); 196 states are parties to the Protocol.

¹⁸² Adjustments to the Protocol were adopted, in accordance with the procedure laid down in Art. 2(9), at the Second, Fourth, Seventh, Ninth, Eleventh and Nineteenth Meetings of the Parties to the Protocol and came into force for all parties on 7 March 1991, 23 September 1993, 5 August 1996, 4 June 1998, 28 July 2000 and 14 May 2008, respectively.

¹⁸³ London, 29 June 1990, in force 10 August 1992, 30 ILM 537 (1991); 195 states are parties to the 1990 Amendments.

¹⁸⁴ Copenhagen, 25 November 1992, 14 June 1994, 32 ILM 874 (1993); 192 states are parties to the 1992 Amendments; see Report of the Fourth Meeting of the Parties to the Montreal Protocol, UNEP/OzL.Pro.4/15, 25 November 1992, Annexes I, II and III.

¹⁸⁵ Montreal, 25 September 1997, in force 10 November 1999; 181 states are parties to the 1997 Amendments; Annex IV of the Report of the Ninth Meeting of the Parties to the Montreal Protocol, UNEP/OzL.Pro.9/12.

¹⁸⁶ Beijing, 17 December 1999, in force 25 February 2002; 165 states are parties to the 1999 Amendments; Annex V of the Report of the Eleventh Meeting of the Parties to the Montreal Protocol, UNEP/OzL.Pro.11/10.

¹⁸⁷ UNEP Press Release, 16 September 2002.

below those present before the Antarctic ozone hole began to form in the early 1980s.¹⁸⁸ For this reason, the international ozone regime is often hailed as an example of 'successful' environmental regulation.¹⁸⁹

1985 Vienna Convention

The Vienna Convention was negotiated over five years under the auspices of UNEP. It was the first treaty to address a global atmospheric issue and is open to participation by all states. It has since attracted universal support from all industrialised nations and developing countries.¹⁹⁰ The Convention established a framework for the adoption of measures 'to protect human health and the environment against adverse effects resulting or likely to result from human activities which modify or are likely to modify the ozone layer'.¹⁹¹ The Vienna Convention does not set targets or timetables for action but requires four categories of 'appropriate measures' to be taken by parties in accordance with the means at their disposal and their capabilities, and on the basis of relevant scientific and technical considerations.¹⁹² These obligations are: co-operation on systematic observations, research and information exchange; the adoption of appropriate legislative or administrative measures and co-operation on policies to control, limit, reduce or prevent activities that are likely to have adverse effects resulting from modifications to the ozone layer; and co-operation in the formulation of measures, procedures and standards to implement the Convention as well as with competent international bodies.¹⁹³ Parties are free to adopt additional domestic measures, in accordance with international law, and maintain in force compatible measures already taken.¹⁹⁴

Article 3 and Annexes I and II elaborate upon the type of research and systematic observations which are to be carried out directly or through international bodies.¹⁹⁵ Article 4 and Annex II require co-operation in legal, scientific and technical fields, including the exchange of scientific, technical, socio-economic and legal information relevant to the Convention, subject to rules of confidentiality, and the development and transfer of technology and knowledge, taking into account the particular needs of developing countries.

The parties transmit information to the Conference of the Parties on their implementation measures. That body is entrusted with the implementation of the Convention, assisted by a secretariat whose services are provided by UNEP.¹⁹⁶ The Conference of the Parties has other functions, including the adoption of protocols, additional annexes and amendments to protocols and annexes, and the right to take 'any additional action that may be required for the

¹⁸⁸ WMO, *Scientific Assessment of Ozone Depletion: 2006*, Global Ozone Research and Monitoring Project, Report No. 50 (2007), 6. See also WMO, *Scientific Assessment of Ozone Depletion: 2010*, Global Ozone Research and Monitoring Project, Report No. 52 (2011), 5.1.

¹⁸⁹ UNEP, *Handbook for the Montreal Protocol on Substances That Deplete the Ozone Layer* (2009, 8th edn), xi.

¹⁹⁰ Universal participation was achieved on 16 September 2009 with 196 states as parties.

¹⁹¹ Art. 2(1); the 'ozone layer' is defined as 'the layer of atmospheric ozone above the planetary boundary layer': Art. 1(1).

¹⁹² Art. 2(1), (2) and (4). ¹⁹³ Art. 2(2)(a)–(d). ¹⁹⁴ Art. 2(3).

¹⁹⁵ Annex I identifies three main areas of research need (the physics and chemistry of the atmosphere; health, biological and photodegradation effects; effects on climate) and systematic observations on designated matters. Annex I also identifies substances thought at the time to have the potential to modify the ozone layer: carbon substances (carbon monoxide, carbon dioxide, methane, non-methane hydrocarbon species); nitrogen substances (nitrous oxide, nitrogen oxides); chlorine substances (fully halogenated alkanes, partially halogenated alkanes); bromine substances; and hydrogen substances (hydrogen, water).

¹⁹⁶ Arts. 5 to 7.

achievement of the purposes of the Convention'.¹⁹⁷ Annexes to the Convention or to any protocols are restricted to scientific, technical and administrative matters, and are to be considered an integral part of the Convention or of such protocols,¹⁹⁸ and only parties to the Convention may become parties to any protocol.¹⁹⁹

The 1987 Montreal Protocol: Adjustments and Amendments

The first, and to date the only, Protocol to the Vienna Convention is the 1987 Montreal Protocol. It is a landmark international environmental agreement, providing a precedent for new regulatory techniques and institutional arrangements, and the adoption and implementation of innovative financial mechanisms. With hindsight, the Montreal Protocol appears to be a relatively straightforward instrument, and the fact that its approach has subsequently been relied upon extensively in other international environmental negotiations belies the controversy and complexity surrounding it at the time of its negotiations. According to one commentator, most observers in and out of government believed at the time that an agreement on international regulation of CFCs would be impossible to reach. The issues were complex, involving interconnected scientific, economic, technological and political variables. The science was still speculative, resting on projections from evolving computer models of imperfectly understood stratospheric processes – models that yielded varying, sometimes contradictory, predictions of potential future ozone losses each time they were further refined. Moreover, existing measurements of the ozone layer showed no depletion, nor was there any evidence of the postulated harmful effects.²⁰⁰

The Montreal Protocol sets forth specific legal obligations, including limitations and reductions on the calculated levels of consumption and production of certain controlled ozone-depleting substances.²⁰¹ Its negotiation and conclusion, shortly after the 1985 Vienna Convention, were prompted by new scientific evidence indicating that emissions of certain substances were significantly depleting and modifying the ozone layer and would have potential climatic effects.²⁰² The absence of scientific evidence that actual harm was occurring required the international community to take 'precautionary measures to control equitably total global emissions' of substances that deplete the ozone layer.²⁰³ Like the Vienna Convention, the Montreal Protocol is a treaty of universal participation,²⁰⁴ and its amendments have also attracted widespread support.²⁰⁵ Amendments to the Protocol are only binding on those parties that have ratified, accepted or acceded to the amendment. In 1990, the Second Meeting of the Parties to the Montreal Protocol adopted the first Adjustment and Amendments to the Montreal Protocol. Those Amendments have since been ratified by 195 states, including all but one of the developing countries. In 1992, the Fourth Meeting of the Parties to the Montreal Protocol adopted a second round of Adjustment and Amendments. The 1992 changes were

¹⁹⁷ Arts. 6(4), 8, 9 and 10. ¹⁹⁸ Art. 10(1). ¹⁹⁹ Art. 16(1).

²⁰⁰ R. Benedick, *Ozone Diplomacy* (1991), xii, an insider's account of the negotiations of the Montreal Protocol (see also the second edition, 1998).

²⁰¹ 1987 Montreal Protocol, Art. 3, provides for the method of calculating control levels.

²⁰² *Ibid.*, preambular paras. 3 and 4. ²⁰³ Preambular para. 6.

²⁰⁴ 196 states are parties as of 11 November 2010. The Vienna Convention and the Montreal Protocol are the first treaties in the UN system to attract universal support.

²⁰⁵ On the procedure for the adoption of adjustments and amendments, see Chapter 4, pp. 107–8, above.

adopted within four months of the entry into force of the 1990 Amendments and have now been ratified by 192 states. Since 1992, there have been four further rounds of Adjustments in 1995, 1997, 1999 and 2007; and two additional Amendments have been adopted, the first at the Ninth Meeting of the Parties in 1997 (in force 10 November 1999, with 181 ratifications) and the second at the Eleventh Meeting of the Parties in 1999 (in force 25 February 2002, with 165 ratifications).

The 1990 Amendments introduced important changes to the Montreal Protocol. The Preamble was amended to include a reference to the need to take into account the 'developmental needs of developing countries', the provision of 'additional financial resources and access to relevant technologies', and the 'transfer of alternative technologies'.²⁰⁶ The definitions of 'controlled substances' and 'production' were amended,²⁰⁷ and a definition of 'transitional substances' was introduced.²⁰⁸ The amended definition of 'production' excludes 'recycled' and 'reused' amounts.²⁰⁹ Article 2(5) was amended to establish new rules concerning transfers of calculated levels of production between parties and changes were introduced to all the important operational provisions, particularly those requiring the reduction and, ultimately, the prohibition of the use of controlled substances which were subject to control measures relating to consumption, production and trade. New rules were also adopted relating to financial arrangements and technology transfer.

The 1992 Adjustments and Amendments introduced changes to the timetable for phasing out substances under Articles 2A to 2E of the amended Protocol; listed three new controlled substances and further trade restrictions; adopted new reporting requirements; enlarged the Implementation Committee; and adopted an indicative list of measures to be taken against parties which were not in compliance; it also established the Multilateral Fund on a permanent basis.

The 1997 Montreal Amendment established a new timetable for phasing out the use of methyl bromide and adopted a new licensing system for controlling trade based on licences issued by the parties for each export and import of controlled substances. The licensing system enables customs and police officials to track trade in ozone-depleting substances and to detect unlicensed trade. The 1999 Amendment provided for new production controls on Group I, Annex C substances, listed bromochloromethane as a controlled substance and instituted new reporting obligations for quarantine and pre-shipment uses of methyl bromide.

Controlled substances

At the heart of the Montreal Protocol is its designation of 'controlled substances' that attract special regulation under its provisions. Compared to the pre-existing international environmental rules, the original control measures established by Article 2 and Annex A of the 1987

²⁰⁶ 1990 Amendments, sixth, seventh and ninth preambular paragraphs.

²⁰⁷ *Ibid.*, Art. 1(4) and (5); see also Decision IV/12 of the Fourth Meeting of the Parties to the Montreal Protocol excluding 'insignificant quantities' from the definition: see Report of the Fourth Meeting of the Parties to the Montreal Protocol, UNEP/OzL.Pro.4/15, 25 November 1992.

²⁰⁸ 1990 Amendments, Art. 1(9). 'Transitional substances' are those in Annex C to the Protocol.

²⁰⁹ *Ibid.*, Art. 1(5), Decision IV/24 of the Meeting of the Parties adopted 'clarifications' of the terms 'recovery' ('collection and storage of controlled substances . . . during servicing or prior to disposal'), 'recycling' (by re-use of a recovered controlled substance following a basic cleaning process) and 'reclamation' ('re-processing' and upgrading of a recovered controlled substance): Report of the Fourth Meeting of the Parties to the Montreal Protocol, UNEP/OzL.Pro.4/15, 25 November 1992.

Montreal Protocol were relatively complex and sophisticated.²¹⁰ Annex A established two groups of 'controlled substances' and an estimate of the ozone-depleting potential of each substance in the two groups. Group I lists certain chlorine substances,²¹¹ and Group II lists certain halon substances.²¹² Subsequent amendments to the 1987 Protocol have added additional categories of controlled substances in Articles 2C to 2I and Annexes B, C and E respectively.²¹³ These cover substances such as carbon tetrachloride (Article 2D), methyl chloroform (Article 2E), hydrochlorofluorocarbons (HCFCs) (Article 2F), hydrobromofluorocarbons (Article 2G), methyl bromide (Article 2H) and bromochloromethane (Article 2I). Article 2(9) of the 1987 Protocol allows the parties to make adjustments to the ozone-depleting potentials specified in Annexes A, B, C and/or E, as well as further adjustments and reductions of production and consumption.²¹⁴

Control measures: consumption and production

Article 2 of the 1987 Montreal Protocol adopted limitation and reduction requirements on the consumption and production of all Annex A substances (i.e. CFCs and halons). Similar requirements have since been adopted for the other controlled substances specified in Articles 2C to 2I and Annexes B, C and E. By Article 6, as amended by the 1992 and 1999 Amendments, the parties are to assess with the assistance of panels of experts all the Article 2 and 2A to 2I control measures on the basis of available scientific, environmental, technical and economic information.²¹⁵ More stringent control measures in respect of those substances, including an accelerated timetable for phase-out, were imposed by the various Adjustments and Amendments to the Protocol. However, differentiated obligations exist for parties that are industrialised countries and so-called 'Article 5(1)' parties, covering developing countries. This includes different baseline years and extended periods to achieve the phase-out of controlled substances.

CFCs

Under the 1987 Montreal Protocol as adjusted and amended, each non-Article 5(1) party was required to limit its calculated level of consumption of Annex A, Group I substances to 1986 levels within nineteen months of the entry into force of the Protocol.²¹⁶ Thereafter, annual consumption was to be

²¹⁰ The relevant provisions of Art. 2 have now been divided into two Articles: Art. 2A covering CFCs and Art. 2B covering halons.

²¹¹ CFC-11, CFC-12, CFC-113, CFC-114 and CFC-115. ²¹² Halon-1211, halon-1301 and halon-2402.

²¹³ The 1990 Amendments added controlled substances in two new Annexes to the Protocol. Annex B added three new groups of controlled substances (Group I (additional CFCs), Group II (carbon tetrachloride) and Group III (methyl chloroform)), and Annex C added a list of transitional substances (HCFCs). The 1992 Amendment replaced Annex C with a new section. In 1991, the parties to the Montreal Protocol added an Annex D to the Protocol: Report of the Third Meeting of the Parties to the Montreal Protocol, UNEP/OzL.Pro.3/11, 21 June 1991, Decision III/15. The 1992 Amendments added methyl bromide as a controlled substance in a new Annex E. The 1999 Amendments added bromochloromethane as a controlled substance in a new Group III in Annex C.

²¹⁴ 1987 Montreal Protocol, Art. 2(9). Such adjustments are subject to a simplified decision-making procedure whereby decisions binding on all parties may, as a last resort and consensus having failed, be taken by two-thirds of parties present and voting and representing 50 per cent of total consumption. By Art. 2(1), the parties may also decide to add or remove substances from Annex A and what control measures should apply to those substances, subject to a two-thirds majority vote of parties present and voting.

²¹⁵ 1987 Montreal Protocol, Art. 6. Under the Protocol, the control measures are to be assessed at least every four years on the basis of available scientific, environmental, technical and economic information; by Art. 2(11) of the 1987 Montreal Protocol, parties remain free to take more stringent measures than those required by Art. 2.

²¹⁶ *Ibid.*, Art. 2A(3).

reduced to 25 per cent of 1986 levels by 1 June 1994, with a complete phase-out by 1 January 1996.²¹⁷ For Article 5(1) parties, the base level is the 1995–7 average with a freeze in consumption required by 1999 and reductions of 50 per cent by 1 January 2005, 85 per cent by 1 January 2007 and a complete phase-out by 1 January 2010.²¹⁸ Each party is also to reduce calculated levels of production of Annex A substances by the same amounts and by the same dates.²¹⁹ Production of CFCs by all parties is thus now completely prohibited, though limited exemptions may be allowed for ‘essential uses’ specified in decisions of the Protocol’s Meeting of the Parties.

Halons

For the halons listed in Group II of Annex A, each non-Article 5(1) party was required to freeze its calculated level of consumption at 1986 levels by 1 January 1992, with a complete phase-out by 1 January 1994.²²⁰ Thereafter, production was to be limited to 1986 levels, with a 15 per cent increase permitted until 1 January 2002 to satisfy the ‘basic domestic needs’ of parties operating under Article 5.²²¹ Since 1 January 2002, developing country parties operating under Article 5 have also been required to phase out production, with a 50 per cent reduction by 1 January 2005, and a complete phase-out by 1 January 2010, based on a 1995–7 baseline.²²² Again, exemptions from the ban on production may be allowed for approved essential uses.

Additional CFCs

Under the 1990 Amendments, the new Article 2C required each non-Article 5(1) party to ensure that its calculated levels of consumption and production of controlled substances in Annex B, Group I (additional CFCs) for the twelve-month period commencing 1 January 1993 and each twelve-month period thereafter did not exceed 80 per cent of consumption and production levels of those substances in 1989.²²³ Annual consumption and production of these controlled substances was not to exceed 25 per cent of 1989 levels in the twelve-month period commencing 1 January 1994 and in each twelve-month period thereafter, and the consumption and production of these additional CFCs were totally prohibited as from 1 January 1996.²²⁴ For developing countries, a different base level of 1998–2000 applies, with required reductions of 20 per cent by 1 January 2003, 85 per cent by 1 January 2007 and 100 per cent by 1 January 2010 (subject to possible essential use exemptions).²²⁵

Carbon tetrachloride

Under the 1990 Amendments, each non-Article 5(1) party’s calculated annual levels of consumption and production of Annex B, Group II controlled substances (carbon tetrachloride) for

²¹⁷ *Ibid.*, Art. 2A(3) and (4).

²¹⁸ *Ibid.*, Art. 2A(5)–(8). The 1999 Amendments introduced new reductions for production for Art. 5 parties. These parties are required to phase out production of Group I, Annex A CFCs by 1 January 2010, with intermediate reductions of 20 per cent by 2003, 50 per cent by 2005 and 85 per cent by 2007, based on their average annual production for basic domestic needs for the period 1995–7.

²¹⁹ Montreal Protocol Arts. 2A and 2B. ²²⁰ *Ibid.*, Art. 2B(1) and (2). ²²¹ *Ibid.*, Art. 2(2).

²²² *Ibid.*, Art. 2B(3) and (4). ²²³ 1990 Amendment, Art. 2C(1).

²²⁴ *Ibid.*, Art. 2C(1), (2) and (3). In order to satisfy ‘basic domestic needs’, a party operating under Art. 5(1) was permitted to exceed that level of production by 15 per cent of its 1989 levels up to 1 January 2003. By 1 January 2003, production for basic domestic needs was to be reduced by 20 per cent, with a cut of 85 per cent by 1 January 2007 before a total phase-out by 1 January 2010; *ibid.*, Art. 2C(3)–(5).

²²⁵ *Ibid.*, Art. 2C(3)–(5).

the twelve-month period commencing 1 January 1995, and each twelve-month period thereafter was not to exceed 15 per cent of 1989 levels for those substances,²²⁶ and the production and consumption of carbon tetrachloride were totally prohibited as from 1 January 1996.²²⁷ For Article 5(1) developing countries, the relative commitments were for an 85 per cent reduction from the 1998–2000 average level by 1 January 2005, and complete phase-out of consumption and production from 1 January 2010.²²⁸

Methylchloroform

Under the 1990 Amendments, each non-Article 5(1) party's calculated annual levels of consumption and production of Annex B, Group III controlled substances (methylchloroform) for the twelve-month period commencing 1 January 1993 and each twelve-month period thereafter was not to exceed its consumption and production levels of those substances in 1989.²²⁹ Thereafter, consumption and production were to be reduced to 50 per cent of 1989 levels by 1 January 1994 and in each twelve-month period thereafter, with a total prohibition on the consumption and production of methylchloroform as from 1 January 1996.²³⁰ Again, differentiated requirements apply for developing countries operating under Article 5: a 70 per cent reduction from the average of 1998–2000 levels was required by 1 January 2010, with a complete phase-out in production and consumption set for 1 January 2015.

HCFCs, hydrobromofluorocarbons and methyl bromide

The 1992 Amendments added three new Articles to the Montreal Protocol to phase out the use of the three controlled substances listed in Annex C to the Protocol. Article 2F was introduced to require parties to limit their annual consumption of Annex C, Group I substances (HCFCs) to no more than 3.1 per cent²³¹ of their level of consumption of Annex A, Group I substances in 1989 *and* their total level of consumption of Annex C, Group I substances in 1989.²³² Article 2F, as adjusted by the 2007 Adjustments, then requires a gradual thirty-five-year phase-out of consumption of HCFCs to levels of 65 per cent (1 January 2004), 25 per cent (1 January 2010), 10 per cent (1 January 2015), 0.5 per cent (1 January 2020) and zero (1 January 2030).²³³ For Article 5(1) developing countries, a different base level of 2009–10 is allowed, with a freeze in consumption required by 1 January 2013, followed by staged reductions of 10 per cent by 1 January 2015, 35 per cent by 1 January 2020, 67.5 per cent by 1 January 2025, 97.5 per cent by 1 January 2030 and 100 per cent by 1 January 2040.²³⁴ Article 2F also commits parties to 'endeavour' to ensure that the use of HCFCs is limited to applications where alternatives are not available, that such use is not outside the areas of application currently met by substances in

²²⁶ 1990 Amendments, Art. 2D(1).

²²⁷ 1990 Amendments, Art. 2D(1) and (2). In order to satisfy 'basic domestic needs', a party operating under Art. 5(1) was permitted to exceed that level of production by 15 per cent of its 1998–2000 levels until 1 January 2005 but had to achieve a phase-out by 2010; *ibid.*, Arts. 2D(2) and 5(8bis).

²²⁸ *Ibid.*, Arts. 2D(2) and 5(8bis). ²²⁹ 1990 Amendments, Art. 2E(1).

²³⁰ *Ibid.*, Art. 2E(1)–(4). Parties operating under Art. 5(1) were required to freeze production for 'basic domestic needs' at 1998–2000 levels by 1 January 2003. Reductions in production were to be achieved by 2005 (30 per cent) and 2010 (70 per cent) with a total phase-out by 1 January 2015; *ibid.*, Arts. 2E(3) and 5(8bis).

²³¹ This level was changed to 2.8 per cent by the 1995 Amendments. ²³² 1992 Amendments, Art. 2F(1).

²³³ *Ibid.*, Art. 2F(2)–(6). ²³⁴ 2007 Montreal Adjustment on Production and Consumption of HCFCs.

Annexes A, B and C (except in some cases for the protection of human life and/or human health), and that they are used in a manner that minimises ozone depletion.²³⁵

Amendments to Article 2F agreed in the 1999 Amendments commit the parties to new control measures for the production of HCFCs. Developed countries were required to limit their annual production of HCFCs to a level calculated as an average of (1) the sum in 1989 of HCFC consumption and 2.8 per cent of the level of consumption of Annex A, Group I substances *and* (2) the sum in 1989 of HCFC production and 2.8 per cent of the level of consumption of Annex A, Group I substances by 1 January 2004. Thereafter, a staged timetable for reductions is set, of 90 per cent by 1 January 2015, 99.5 per cent by 1 January 2020 and zero production levels by 1 January 2040. Developing countries operating under Article 5 will be subject to a freeze on HCFC production starting in 2013 based on average production and consumption in 2009–10, with a phased reduction over the following twenty-seven years.²³⁶

Article 2G introduced a prohibition on the production and consumption of Annex C, Group II substances (hydrobromofluorocarbons) after 1 January 1996, except for ‘essential uses’.

Article 2H was introduced to limit the annual production and consumption of Annex E substances (methyl bromide) to 1991 levels from 1995 for developed country parties. A new phase-out programme for methyl bromide was introduced by the 1997 Amendments. Developed country parties were required gradually to reduce the production and consumption of methyl bromide from 1991 levels by 25 per cent (1 January 1999), 50 per cent (1 January 2001), 70 per cent (1 January 2003) and 100 per cent (1 January 2005). Developing country parties operating under Article 5 committed to freeze production of methyl bromide for basic domestic needs at 1995–8 levels by 1 January 2002, with a total phase-out by 2015. Exemptions to these requirements may apply for certain ‘critical uses’ and amounts used for quarantine and pre-shipment purposes are also exempted.

Bromochloromethane

The 1999 Amendments added new control measures for bromochloromethane, applicable to those parties that have ratified or otherwise accepted these amendments. Pursuant to Article 2I, parties are subject to a ban on the production and consumption of bromochloromethane from 1 January 2002.

Transfer of production

The 1987 Montreal Protocol also provides for transfer of production and rules regarding facilities under construction. Article 2(5) sets out the conditions under which parties may transfer to any other party any portion of its calculated level of production set out in Articles 2A to 2F and 2H. The 1992 Amendments introduced a new Article 2(5*bis*) allowing any party not operating under Article 5(1) also to transfer to another such party any portion of its calculated level of *consumption* set out in Article 2F provided that certain conditions are fulfilled. Article 2(6) allowed a party not operating under Article 5 to complete facilities for production under construction or contracted for prior to 16 September 1987, provided that facilities were completed by 31 December 1990 and the party’s level of consumption remained below 0.5 kilograms per capita.

²³⁵ 1992 Amendments, Art. 2F(7).

²³⁶ Art. 5(8*ter*).

By Article 2(8), parties who are member states of a regional economic integration organisation (such as the EC) may 'jointly fulfil' their obligations provided that their total combined level of consumption does not exceed levels set by the Protocol, and that certain procedural obligations are fulfilled (the parties to any such agreement must inform the secretariat and all member states of the regional organisation, and the organisation itself).

Control measures: trade in controlled substances

Article 4 of the 1987 Montreal Protocol established innovative trade provisions to achieve its environmental objectives. Although initially somewhat controversial, they are now widely recognised for their effectiveness in creating incentives for states to become party to the Protocol. These measures address: the trade in controlled substances by parties with states which are not parties to the Protocol; the trade in products containing controlled substances; and the trade in products produced with but not containing controlled substances. Article 4 represents the first occasion on which the international community adopted trade measures for environmental protection outside the field of flora and fauna, although the trade prohibition will not apply to a non-party that is found by the parties to be in full compliance with Articles 2, 2A to 2I, 4 and 7 of the Protocol.

Imports of controlled substances in Annex A from non-parties are banned,²³⁷ and from 1 January 1993 developing country parties were prohibited from exporting to non-parties.²³⁸ Subsequent amendments to Article 4 have extended import and export bans to and from non-parties to cover controlled substances listed in the other Annexes.²³⁹ Articles 4(3), 4(3*bis*) and 4(3*ter*) provide for the ban on imports of certain products containing controlled substances into certain parties from non-party states. Parties are also required to determine the feasibility of banning or restricting imports of products produced with, but not containing, controlled substances, and if feasible adopt the necessary bans or restrictions.²⁴⁰ The 1987 Montreal Protocol further requires parties to discourage exports of technology for producing and using controlled substances,²⁴¹ and to refrain from providing new subsidies, aid, credits, guarantees or insurance for the export to non-party states of products, equipment, plants or technology which would facilitate the production of controlled substances.²⁴² Exceptions are allowed for products, equipment, plant or technology that improve containment, recovery, recycling or destruction of controlled substances, promote the development of alternative substances, or otherwise contribute to reductions of controlled substances.²⁴³

Changes introduced by the 1997 Amendments required parties, by February 2000, to implement a system for licensing the import and export of new, used, recycled and reclaimed controlled substances.²⁴⁴ Those parties unable to cease the production of a controlled substance for domestic production by the applicable phase-out date must ban the export of used, recycled and reclaimed quantities of that substance, other than for the purpose of destruction.²⁴⁵

²³⁷ Art. 4(1). ²³⁸ Art. 4(2).

²³⁹ 1990 Amendments, Annex A and B substances; 1992 Amendments, Group II Annex C; 1997 Amendments, Annex E; 1999 Amendments, Group I and Group III of Annex C.

²⁴⁰ 1987 Montreal Protocol, Art. 4(4), (4*bis*) and (4*ter*). ²⁴¹ *Ibid.*, Art. 4(5).

²⁴² *Ibid.*, Art. 4(6). ²⁴³ *Ibid.*, Art. 4(7).

²⁴⁴ 1997 Amendments, Art. 4B. Delays permitted for developing countries in implementation.

²⁴⁵ 1997 Amendments, Art. 4A.

Developing countries

The 1987 Montreal Protocol included provisions to take account of the special needs of developing countries, including large users of CFCs such as India and China, who were unwilling to become parties to the Protocol because of the economic and developmental implications of the Protocol. Article 5(1) of the Protocol allowed developing country parties whose calculated level of consumption was less than 0.3 kilograms per capita a grace period of ten years beyond the dates then set for phase-out in Article 2(1)–(4) of the Protocol. In addition, but without specifying how it was to be achieved, the parties agreed to facilitate access to ‘environmentally safe alternative substances’ and to provide developing countries with subsidies, aid, credits, guarantees or insurance programmes for alternative and substitute products.²⁴⁶

The original provisions of the Montreal Protocol were insufficiently attractive to encourage the participation of many developing countries, and further incentives were adopted by the 1990 Amendments. These developed the rules concerning the special situation of developing countries by replacing Article 5 in full and establishing, under a new Article 10, a mechanism to provide financial resources. The amended Article 5 created an incentive for developing countries to become parties to the Protocol before 1 January 1999 by fixing that date as the final point at which states would be able to benefit from the commencement of the ten-year period of delay for compliance with the control measures in Articles 2A to 2E, as amended.²⁴⁷ Significantly, Article 5(5) of the 1990 Amendments recognised that the capacity of developing country parties to fulfil their obligations and their implementation would depend upon ‘the effective implementation of the financial co-operation as provided by Article 10 and transfer of technology as provided by Article 10A’. This marked the first time that an international environmental agreement linked implementation to the receipt of financial resources and the transfer of technology.

The 1992 Amendments created the possibility that the period of grace would also apply to the 1992 Amendments substances after the 1995 review required under Article 5(8) of the 1990 Amendments.²⁴⁸ The 1992 Amendments also introduced a new Article 5(1*bis*) requiring the parties to decide by 1 January 1996 on phase-out and/or consumption and production timetable for Annex C, Groups I and II, and Annex E substances for parties operating under Article 5(1). Other changes provided by the new Article 5 include limiting parties operating under Article 5(1) to those with annual levels of consumption of 0.2 kilograms per capita of Annex B substances and providing for the situation in which a party operating under Article 5(1) finds itself unable to obtain an adequate supply of controlled substances or unable to implement any or all of its obligations in Articles 2A to 2E and 2I (or obligations in Articles 2F to 2H decided pursuant to Article 5(1*bis*)) due to the inadequate implementation of the provisions on financial co-operation and transfer of technology.²⁴⁹ The really significant change, however, was the amendment to Article 10, which set a precedent followed in subsequent agreements addressing global environmental problems.

Technical, financial and other assistance

The original Article 10 of the Montreal Protocol contained rather innocuous and traditional environmental treaty provisions on technical assistance, particularly for developing countries,

²⁴⁶ 1987 Montreal Protocol, Art. 5(2) and (3). ²⁴⁷ 1990 Amendments, Art. 5(1).

²⁴⁸ 1992 Amendments, Art. 5(1). ²⁴⁹ 1990 Amendments, Art. 5(2), (4) and (6).

to facilitate participation in and implementation of the Protocol, including through the preparation of workplans. The 1990 Amendments introduced a radical and innovative change that has had profound consequences on the negotiation of subsequent global environmental treaties, particularly the Climate Change and Biodiversity Conventions. The innovation was to introduce financial incentives, almost of a compensatory nature, to entice hesitant developing countries to join the Montreal Protocol regime.

The new Article 10 established a 'Financial Mechanism' to provide financial and technical co-operation, including the transfer of technologies, to parties operating under Article 5(1) of the Protocol to enable their compliance with Articles 2A to 2E and 2I of the amended Protocol.²⁵⁰ The mechanism, which is to meet 'all agreed incremental costs' of such parties, includes a Multilateral Fund to meet, on a grant or concessional basis, the agreed incremental costs; to finance certain clearing house functions related to, *inter alia*, identifying needs for and facilitating co-operation; and to finance the secretariat services of the Fund.²⁵¹ The Fund operates under the authority of the parties, who decide on its overall policies, and is operated by an Executive Committee which discharges its tasks and responsibilities with the co-operation of the World Bank, UNEP, UNDP and (more latterly) UNIDO.²⁵² The Multilateral Fund is financed by contributions from parties not operating under Article 5(1) on the basis of the UN scale of assessments, in convertible currency, in kind and/or in national currencies.²⁵³ The Protocol as amended in 1990 also allows bilateral and regional co-operation in financing in certain specified circumstances.²⁵⁴ Resources are to be disbursed with the concurrence of the beneficiary party.²⁵⁵ Under Article 10A, also introduced by the 1990 Amendments, each party agrees to take every practicable step to ensure that the best available environmentally safe substitutes and technologies are expeditiously transferred, under fair and most favourable conditions, to parties operating under Article 5(1).

Reporting and compliance

The principal techniques for ensuring compliance with the Protocol and its amendments are the reporting requirements, coupled with the non-compliance procedure and trade sanctions, which are more detailed than most environmental treaties.²⁵⁶ Article 7(1) requires all parties to report data on production, imports and exports of each controlled substance for 1986 and for the year during which it became a party and each year thereafter. Article 9 provides for research, development, public awareness and exchange of information. Subsequent

²⁵⁰ 1990 Amendments, Art. 10(1); for further details, see Chapter 16, pp. 675–6, below. The 1992 Amendments extended the application of the Financial Mechanism to control measures under Arts. 2F to 2H that are decided pursuant to Art. 5(1*bis*) of the 1992 Amendments. Since the establishment of the Multilateral Fund in 1990, the Executive Committee has approved the expenditure of more than US\$2.5 billion, to support over 6,200 projects and activities in 148 developing countries (see www.multilateralfund.org).

²⁵¹ 1990 Amendment, Art. 10(2) and (3); see Annex VIII of the Report of the Fourth Meeting of the Parties to the Montreal Protocol for an 'Indicative List of Categories of Incremental Cost', UNEP/OzL.Pro.4/15, 25 November 1992.

²⁵² 1990 Amendments, Art. 10(4) and (5); on financial resources, see Chapter 16, pp. 666–78, below.

²⁵³ 1990 Amendments, Art. 10(6). The Fund has been replenished seven times: US\$240 million (1991–3), US\$455 million (1994–6), US\$466 million (1997–9), US\$440 million (2000–2), US\$474 million (2003–5), US\$400.4 million (2006–8) and US\$40 million (2009–11). As at November 2010, the contributions made to the Multilateral Fund by some forty-five industrialised countries amounted to US\$2.76 billion (see www.multilateralfund.org).

²⁵⁴ *Ibid.* ²⁵⁵ *Ibid.*, Art. 10(8).

²⁵⁶ On the Implementation Committee and the Non-Compliance Procedure established by the Meeting of the Parties to the Montreal Protocol, see Chapter 5, pp. 163–4, above.

amendments introduced changes to Article 7 concerning the provision of data on production, imports and exports of controlled substances in Annexes A, B, C and E,²⁵⁷ and separate data on amounts used for feedstocks, amounts destroyed by approved technologies, and imports and exports to parties and non-parties.²⁵⁸

Institutional arrangements

The Protocol is operated under the auspices of regular Meetings of the Parties whose functions include: reviewing implementation of the Protocol; deciding on any adjustments or reductions under Article 2(9) and on the addition or removal of substances from any Annex under Article 2(10); assessing the Article 2A to 2I control measures; and considering and adopting proposals for amendment of the Protocol or any Annex and for any new Annex.²⁵⁹ Twenty-one Meetings of the Parties have been held to date. The Protocol also establishes specific tasks for the secretariat, which is provided by UNEP.²⁶⁰ At their second meeting, the parties to the 1987 Montreal Protocol approved procedures and mechanisms for determining non-compliance and the consequences thereof.²⁶¹ This innovative non-compliance mechanism has served as a model for subsequent international environmental treaties, including the climate change regime.

CLIMATE CHANGE²⁶²

The Earth's climate is determined in large part by the presence in the atmosphere of naturally occurring greenhouse gases, including in particular water vapour, carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O) and tropospheric ozone (O₃). These are transparent to incoming shortwave solar radiation but absorb and trap longwave radiation emitted by the Earth's surface. Their presence exerts a warming influence on the Earth. Scientific evidence suggests that continued increases in atmospheric concentrations of selected greenhouse gases

²⁵⁷ Art. 7(2).

²⁵⁸ Art. 7(1), (2) and (3) as amended by the 1990 Amendments. See also Art. 7(2) and (3) as amended by the 1992 Amendments; Art. 7(3bis) of the 1992 Amendments introduced a reporting requirement on imports and exports of certain substances that have been recycled.

²⁵⁹ 1987 Montreal Protocol, Art. 11(1) and (3). ²⁶⁰ *Ibid.*, Art. 12.

²⁶¹ *Ibid.*, Art. 8; see Chapter 5, pp. 163–4, above.

²⁶² V. Nanda (ed.), *World Climate Change: The Role of International Law and Institutions* (1983); C. Tickell, *Climatic Change and World Affairs* (1986); M. Grubb, *The Greenhouse Effect: Negotiating Targets* (1989); R. Benedick, 'The Montreal Ozone Treaty: Implications for Global Warming', 5 *American University Journal of International Law and Policy* 217 (1990); R. Benedick, A. Chayes, D. A. Lashof et al., *Greenhouse Warming: Negotiating a Global Regime* (1991); D. Caron, 'When Law Makes Climate Change Worse: Rethinking the Law of Baselines in Light of a Rising Sea Level', 17 *Ecology Law Quarterly* 621 (1991); R. Churchill and D. Freestone (eds.), *International Law and Global Climate Change* (1991); T. Iwama (ed.), *Policies and Laws on Global Warming: International and Comparative Analysis* (1991); P. Sands, 'The United Nations Framework Convention on Climate Change', 1 *Review of European Community and International Environmental Law* 270 (1992); D. Bodansky, 'The United Nations Framework Climate Change Convention: A Commentary', 18 *Yale Journal of International Law* 451 (1993); I. Mintzer and J. Leonard (eds.), *Negotiating Climate Change: The Inside Story of the Rio Convention* (1994); Symposium on Climate Change, 11 *Review of European Community and International Environmental Law* (2002); D. Bodansky, 'The United Nations Framework Convention on Climate Change: A Commentary on a Commentary', 25(2) *Yale Journal of International Law* 315 (2000); D. Freestone and C. Streck (eds.), *Legal Aspects of Implementing the Kyoto Protocol Mechanisms: Making Kyoto Work* (2005); M. Doelle, 'The Cat Came Back, or the Nine Lives of the Kyoto Protocol', 16(3) *Journal of Environmental Law and Practice* 265 (2006); D. Hunter, 'Implications of the Copenhagen Accord for Global Climate Governance', 10(2) *Sustainable Development Law and Policy* 4 (2010); and see <http://unfccc.int>.

due to human activities will lead to an enhanced 'greenhouse effect' and global climatic change.²⁶³ Carbon dioxide from emissions from the combustion of fossil fuels, the production of cement, and agricultural and other land use (including deforestation) is widely considered to be the most significant contribution to the threat of climate change, but global emissions of CFC-11 and 12, methane and nitrous oxide also pose a significant threat. In 1988, UNEP and the WMO established the Intergovernmental Panel on Climate Change (IPCC) to provide the scientific guidance necessary to take further action.²⁶⁴ The fourth IPCC report, published in 2007, predicted that, under various 'business-as-usual' emissions scenarios, global mean temperatures could rise by between 1.8°C and 4°C over the twenty-first century.²⁶⁵ Such a rate of increase would be expected to lead to a diminution in the areas of sea ice and snow cover, a rise in global mean sea level of between 18 cm and 59 cm by the end of the twenty-first century (not taking into account future rapid dynamic changes in ice flow), and an increased frequency of extreme weather events.²⁶⁶ An increase in global mean temperature of more than 2°C above that occurring in pre-industrial times is thought to constitute dangerous global warming, although some scientists and small island states argue for a more precautionary level of a maximum 1.5°C increase.²⁶⁷

The negotiation of a treaty to address climate change and its effects was formally set in motion by the UN General Assembly and the specialised agencies. In 1988 and 1989, the General Assembly determined that 'climate change is a common concern of mankind' and urged governments and intergovernmental and non-governmental organisations to collaborate in a concerted effort to prepare, as a matter of urgency, a framework convention on climate change.²⁶⁸ The political process leading to the negotiation of a legal instrument was given further impetus by the 1990 Ministerial Declaration of the Second World Climate Conference,²⁶⁹ which called for negotiations on an effective framework convention on climate change containing appropriate commitments to begin without delay. In December 1990, the UN General Assembly established a single intergovernmental negotiating process under the auspices of the General Assembly, supported by UNEP and WMO, for the preparation by an Intergovernmental Negotiating Committee for a Framework Convention on Climate Change (INC/FCCC).²⁷⁰ The INC/FCCC held five sessions, and the Convention was adopted at the close of the resumed fifth session in May 1992. The UN Framework Convention on Climate Change (1992 Climate Change Convention) was signed by 155 states and the EC in June 1992 at UNCED. It comprised a package that contained elements for almost all the negotiating states but left

²⁶³ See IPCC, WG I, 'Climate Change 2007: The Physical Scientific Basis', in *Fourth Assessment Report: Climate Change 2007* (2007); see also *The Copenhagen Diagnosis: Updating the World on the Latest Climate Change Science* (2009). The 1992 Climate Change Convention defines 'greenhouse gases' as 'those gaseous constituents of the atmosphere, both natural and anthropogenic, that absorb and re-emit infra-red radiation': Art. 1(5).

²⁶⁴ The IPCC has produced four reports: in 1990, 1992, 2001 and 2007. The fifth assessment report is in the process of preparation and is expected to be completed by early 2015.

²⁶⁵ IPCC, WG I, 'Climate Change 2007: The Physical Scientific Basis', in *Fourth Assessment Report: Climate Change 2007* (2007), Summary for Policymakers, 13.

²⁶⁶ Scenarios modelled using different assumptions about economic growth, implementation of climate policies, etc. For details, see *ibid.*, Summary for Policymakers.

²⁶⁷ The IPCC has calculated that stabilisation of atmospheric carbon dioxide concentrations at 450 ppm is necessary to have a 50:50 chance of avoiding a 2°C warming.

²⁶⁸ UNGA Res. 43/53 (1988); UNGA Res. 44/207 (1989).

²⁶⁹ UN Doc. A/45/696/Add.1, Annex III (1990). ²⁷⁰ UNGA Res. 45/221 (1990).

none entirely satisfied.²⁷¹ Instead, the Convention reflected a compromise between those states which were seeking specific targets and timetables for emission reductions, and those which wanted only a 'bare-bones' skeleton treaty which could serve as the basis for future Protocols, like the 1985 Vienna Convention. In 1997, the Kyoto Protocol was adopted, establishing more detailed commitments for developed parties for the first (and only) commitment period, 2008–12. Negotiations are currently ongoing to address post-2012 arrangements. At the time of writing, it is uncertain what the eventual outcome of these negotiations may be and whether the Kyoto Protocol will be extended to a second commitment period.

1992 Climate Change Convention

The 1992 Climate Change Convention goes beyond the scope of the 1985 Vienna Convention, which took nearly three times as long to negotiate among a smaller group of states. Indeed, the word 'Framework' in the title is something of a misnomer, since the 1992 Convention establishes:

- (1) commitments to stabilise greenhouse gas concentrations in the atmosphere at a safe level, over the long term, and to limit emissions of greenhouse gases by developed countries in accordance with soft targets and timetables;
- (2) a financial mechanism and a commitment by certain developed country parties to provide financial resources for meeting certain incremental costs and adaptation measures;
- (3) two subsidiary bodies to the Conference of the Parties;
- (4) a number of important guiding 'Principles'; and
- (5) potentially innovative implementation and dispute settlement mechanisms.

The Convention was the first international environmental agreement to be negotiated by virtually the whole of the international community, with 143 states participating in the final session of the INC/FCCC, and is potentially unique in the scope of its direct and indirect consequences: it is difficult to identify any type of human activity which will, over time, fall outside its scope. Affecting the vital economic interests of almost all states, it attempts to adopt a comprehensive approach to integrating environmental considerations into economic development and defines, in legal terms, rights and obligations of different members of the international community in the quest for 'sustainable development' and the protection of the global climate.²⁷² The differing economic capacities of developed countries, and in particular the problems faced by the former socialist countries of central and eastern Europe, led to a novel distinction being drawn in the Convention: for the purposes of differentiating specific commitments relating to sources and sinks,²⁷³ and those relating to finance, a distinction was drawn

²⁷¹ New York, 9 May 1992, in force 24 March 1994, 31 ILM 849 (1992), Art. 23(1). The Convention attracted twenty-six ratifications within a year of its adoption, and it currently enjoys near universal participation with 195 parties.

²⁷² The relationship between the Climate Change Convention and vital national economic, social and environmental interests was evident from the different interest groups of states which emerged during the negotiations. For a discussion of the various country groupings and their interests, see the second edition of this book, pp. 360–1.

²⁷³ Under the Convention, a 'source' is 'any process or activity which releases a greenhouse gas, aerosol or precursor of a greenhouse gas into the atmosphere': Art. 1(9); a 'sink' is 'any process, activity or mechanism which removes a greenhouse gas or a precursor of a greenhouse gas from the atmosphere': Art. 1(8).

between all developing country parties and developed country parties (included in Annex I)²⁷⁴ and those developed country parties and developed parties not ‘undergoing the process of transition to a market economy’ (listed in Annex II).²⁷⁵

Preamble, definition, objective and principles

The Convention’s Preamble reflects a wide range of interests. It includes matters jettisoned from the ‘Principles’, and expressly recognises, *inter alia*, ‘the principle of sovereignty’, that the largest share of historical and current global emissions has originated in developed countries, and includes (for the first time in a treaty) Principle 2 of the Rio Declaration (rather than Principle 21 of the Stockholm Declaration). The Preamble also refers to the concepts of ‘per capita emissions’ and ‘energy efficiency’, matters that did not receive sufficient support to be included in the operational part of the Convention. Of note in the definitions Article is the omission of the concept of ‘net emissions’ (sources minus sinks, but no agreement was possible on whether to include natural sinks such as oceans), and a footnote to the title of the first Article (Article 1, ‘Definitions’) which states that: ‘Titles of articles are included solely to assist the reader.’²⁷⁶

The ultimate objective of the Climate Change Convention is to stabilise greenhouse gas concentrations in the atmosphere ‘at a level that would prevent dangerous anthropogenic interference with the climate system’.²⁷⁷ Although ‘dangerous anthropogenic interference’ is not defined in the Convention, scientific evidence has increasingly converged on 2°C warming (or a lower figure such as 1.5°C) above pre-industrial levels as the best indicator in this regard.²⁷⁸ This statement of the Convention’s objective emphasises that prevention of climate change is the primary goal. However, the Convention implicitly recognises that some climate change is inevitable, since the objective is to be achieved within a timeframe sufficient to allow ‘ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner’.²⁷⁹ Moreover, the Convention includes numerous references to the ‘effects’ and ‘adverse effects’ of climate change (twenty-two times), and to ‘vulnerability’ and ‘impacts’ (seven times), suggesting that it also has the additional, but unstated, objective of establishing an instrument to address the adverse effects of climate change and ensure that countries, particularly those

²⁷⁴ Annex I lists all the OECD countries as at 1992 and the EC, together with Liechtenstein and Monaco (designated by the term ‘developed party’, apparently for the first time in international law), plus several former socialist countries: Belarus, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Russia, Slovakia, Slovenia and Ukraine. Albania, Yugoslavia and certain members of the Commonwealth of Independent States appear in neither Annex and must therefore be deemed to be developing countries within the meaning of the Convention. See also Decision 4/CP.3 adopted at COP 3.

²⁷⁵ Annex II lists all OECD member countries as at 1992 (Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States) and the EC. Decision 26 at the seventh Conference of the Parties (2001) removed Turkey from Annex II.

²⁷⁶ On the possible legal consequences of this footnote, see Chapter 4, p. 100, above.

²⁷⁷ Art. 2. The ‘climate system’ is defined as ‘the totality of the atmosphere, hydrosphere, biosphere and geosphere and their interactions’: Art. 1(3); ‘climate change’ is ‘a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods’: Art. 1(2).

²⁷⁸ See Decision 1/CP.16, Cancún Agreements: Outcome of the Work of the Ad Hoc Working Group on Long-Term Cooperative Action under the Convention, FCCC/CP/2010/7/Add.1, I.4.

²⁷⁹ Art. 2.

most vulnerable, are able to prepare adequately for adaptation to the adverse effects of climate change.²⁸⁰ Since the release of the IPCC's 2007 assessment report, greater attention has been devoted to the area of adaptation, particularly in respect of vulnerable developing countries, with the recognition that current levels of greenhouse gas emissions mean that some level of warming is now unavoidable.

Article 3 of the Convention sets out a number of 'Principles' to guide the parties in achieving the objective and implementing the provisions of the Convention. The obligation of parties to protect the climate system is 'on the basis of equity' and 'in accordance with their common but differentiated responsibilities and respective capabilities', in accordance with which developed country parties should take the lead.²⁸¹ Parties should adopt measures and policies which are 'precautionary', 'cost-effective' and 'comprehensive', and which take into account different 'socio-economic contexts'.²⁸² Climate change policies should also be integrated with national development programmes, and measures to combat climate change 'should not constitute a means of arbitrary or unjustifiable discrimination or a disguised restriction on international trade'.²⁸³ Finally, throughout the 'Principles' section, and elsewhere in the Convention, reference is made to the need to ensure 'sustainable economic growth' in order to address the problems of climate change.

General commitments

To achieve the objectives of the Convention, all parties are committed under Article 4(1) to take certain measures, taking into account their common but differentiated responsibilities and priorities, objectives and circumstances. These general commitments include the development of national inventories of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol,²⁸⁴ and the formulation and implementation of national and, where appropriate, regional programmes containing measures to mitigate climate change by addressing emissions and removals of these gases and by facilitation of adequate adaptation to climate change.²⁸⁵ All parties are required: to promote, and co-operate in the diffusion of, technologies, practices and processes that control, reduce or prevent anthropogenic emissions of greenhouse gases not controlled by the Montreal Protocol; to promote sustainable management, conservation and enhancement of sinks and reservoirs of these greenhouse gases; and to co-operate in preparing for adaptation to the impacts of climate change.²⁸⁶ All parties are also required to take climate change into account, to the extent feasible, in their social, economic and environmental policies; to promote and co-operate in research, systematic observation and development of data archives to the further understanding of climate change and response strategies; to promote and co-operate in full, open and prompt exchange of relevant information, and to promote and co-operate in education, training and public awareness.²⁸⁷

²⁸⁰ 'Adverse effects of climate change' means 'changes in the physical environment or biota resulting from climate change which have significant deleterious effects on the composition, resilience or productivity of natural and managed ecosystems or on the operation of socio-economic systems or on human health and welfare': Art. 1(1).

²⁸¹ Art. 3(1). ²⁸² Art. 3(3). ²⁸³ Art. 3(5). ²⁸⁴ Art. 4(1)(a). ²⁸⁵ Art. 4(1)(b).

²⁸⁶ Art. 4(1)(c)-(e); a 'reservoir' is defined as 'a component or components of the climate system where a greenhouse gas or a precursor of a greenhouse gas is stored': Art. 1(7).

²⁸⁷ Art. 4(1)(f)-(i).

Reporting

The Convention establishes broad reporting requirements for the communication of certain information, with specific provision for financial resources to be made available to developed country parties. All parties are required to communicate, to the Conference of the Parties: information on implementation; a national inventory of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol; a general description of steps taken or envisaged to implement the Convention; and any other relevant information including that relevant for calculating global emissions trends.²⁸⁸ The effective implementation by developing country parties of their communication commitments is linked to the effective implementation by developed country parties of their financial commitments, including the need for adequacy and predictability in the flow of funds.²⁸⁹ Annex I parties are to include information relating to measures and policies to fulfil commitments under Article 4(2)(a) and (b), and a specific estimate of the effects of those policies and measures on emissions and removals by the year 2000.²⁹⁰ Annex II parties must include details of measures taken in accordance with Article 4(3), (4) and (5).²⁹¹

Initial communications for each Annex I party were required within six months of the entry into force of the Convention for that party, and most have now reported five times.²⁹² For all other parties, reports were to be made within three years of entry into force for that party, or upon the availability of financial resources under Article 4(3), and least-developed country parties could make their initial communications at their discretion. The timetable for subsequent communications is set by the Conference of the Parties.²⁹³ Article 12 also provides for joint communication by a group of parties, for the protection of confidential information, and for making communications public.²⁹⁴

Specific commitments: sources and sinks

At the heart of the Convention are the specific commitments relating to sources and sinks of greenhouse gases binding on all developed country parties and the EC under Article 4(2). The extent of these commitments is unclear as a result of the convoluted language agreed to by way of compromise between various OECD members, and the different interests in and between developed and developing countries. Nonetheless, they remain important as the only source of emission reduction commitments binding on non-parties to the Kyoto Protocol, such as the United States. The relevant provisions of the opaque language of Article 4(2) provide:

²⁸⁸ Arts. 4(1)(j) and 12(1). ²⁸⁹ Art. 4(3) and (7). ²⁹⁰ Art. 12(2). ²⁹¹ Art. 12(3).

²⁹² Annex I parties were requested to submit a fifth national communication to the secretariat by 1 January 2010 (Decision 10/CP.13).

²⁹³ Art. 12(5). Decisions 9/CP.2 and 10/CP.2 of the second Conference of the Parties established guidelines, a schedule and a process for consideration of communications from Annex I and non-Annex I parties (see Report of the Conference of the Parties on Its Second Session, Geneva, 8–19 July 1996, FCCC/CP/1996/15/Add.1, 29 October 1996). The reporting guidelines were substantially revised by the fifth Conference of the Parties (see Decisions 3/CP.5 and 4/CP.5, Report of the Conference of the Parties on Its Fifth Session, Bonn, 25 October–5 November 1999, FCCC/CP/1999/6/Add.1, 17 January 2000). Most developing country parties had submitted at least one national communication by January 2009: see UNFCCC, Fact Sheet: UNFCCC Emissions Reporting, http://unfccc.int/files/press/backgrounders/application/pdf/fact_sheet_unfccc_emissions_reporting.pdf.

²⁹⁴ Art. 12(8)–(10).

(a) Each [Annex I party] shall adopt national policies and take corresponding measures on the mitigation of climate change, by limiting its anthropogenic emissions of greenhouse gases and protecting and enhancing its greenhouse gas sinks and reservoirs. These policies and measures will demonstrate that developed countries are taking the lead in modifying longer-term trends in anthropogenic emissions consistent with the objective of this Convention, recognising that the return by the end of the present decade to earlier levels of anthropogenic emissions of carbon dioxide and other greenhouse gases not controlled by the Montreal Protocol would contribute to such modification; and taking into account the differences in these parties' starting points and approaches, economic structures and resource bases, the need to maintain strong and sustainable economic growth, available technologies and other individual circumstances, as well as the need for equitable and appropriate contributions by each of these parties to the global effort regarding that objective. These parties may implement such policies and measures jointly with other parties and may assist other parties in contributing to the achievement of the Convention and, in particular, that of this sub-paragraph;

(b) In order to promote progress to this end, each [Annex I party] shall communicate, within six months of the entry into force of the Convention for it and periodically thereafter, and in accordance with Article 12, detailed information on its policies and measures referred to in sub-paragraph (a) above, as well as on its resulting projected anthropogenic emissions by sources and removals by sinks of greenhouse gases not controlled by the Montreal Protocol for the period referred to in sub-paragraph (a), with the aim of returning individually or jointly to their 1990 levels of these anthropogenic emissions of carbon dioxide and other greenhouse gases not controlled by the Montreal Protocol ...

Even when read together, these two paragraphs do not reflect a clear commitment to stabilise carbon dioxide and other greenhouse gas emissions by the year 2000 at 1990 levels, as advocated by the EC and others during the negotiations. Article 4(2)(a) requires only the 'limitation' by each developed country party of its anthropogenic emissions of greenhouse gases, as opposed to stabilisation at a particular level or reduction. It also recognises, in an especially unattractive 117-word sentence, that the return to 'earlier levels' by the year 2000 'would' contribute to the modification of longer-term trends in emissions consistent with the objective of the Convention. This is clearly something other than a provision requiring a mandatory return to a specified earlier level by a specified date. Also noteworthy is the absence of any express commitment to keep emissions no higher than 1990 levels after 2000 (although it is not readily apparent that increases or unchecked emissions after 2000 will be compatible with the Convention's object and purpose). Further, each party's contribution is dependent on a series of factors, including its economic structure, resource base, starting point and approach, as well as the application of 'equity'. Article 4(2)(b) is perhaps a little less opaque. It requires information to be provided on projected anthropogenic emissions for the period up to 2000, and establishes only the 'aim' of returning to 1990 levels without providing a date by when such a return should be achieved. The most that can reasonably be said of these provisions is that they establish soft targets and timetables with many loopholes; the adequacy of Articles 4(2)(a) and (b) was reviewed at the first Conference of the Parties. The parties agreed 'to begin a process to enable [the Conference of the Parties] to take appropriate action for the period beyond 2000, including the strengthening of the commitments of the Parties included in Annex I to the Convention

(Annex I Parties) in Article 4, paragraph 2(a) and (b), through the adoption of a protocol or another legal instrument'.²⁹⁵ This process led to the adoption of a Protocol to the Convention at the third Conference of the Parties in Kyoto in 1997. The Kyoto Protocol set quantified targets and a timetable for the reduction of greenhouse gas emissions by developed country parties.²⁹⁶ The second review of adequacy mandated by Article 4(2)(d) remains subject to competing views as to whether the review extends to the commitments of developing countries or is limited to those of Annex I parties. In any event, current negotiations under the auspices of the 'Ad Hoc Working Group on Long-Term Cooperative Action under the Convention' address the obligations of both developed and developing country parties to the Convention.

The Convention provides for 'joint implementation' by Annex I parties of their policies and measures, subject to further decisions to be taken by the Conference of the Parties regarding criteria for such 'joint implementation'.²⁹⁷ The Convention additionally requires that 'a certain degree of flexibility' should be allowed to developed country parties 'undergoing the process of transition to a market economy'.²⁹⁸ Parties are also to take into consideration in the implementation of commitments the situation of parties, particularly developing country parties, with economies vulnerable to the adverse effects of implementation of response measures.²⁹⁹

The calculation of emissions by sources and removal by sinks must take into account the best available scientific knowledge, in accordance with the common methodologies determined by the Conference of the Parties.³⁰⁰ Each developed country party is also required to co-ordinate relevant economic and administrative instruments and identify and periodically review its own policies and practices that encourage activities that lead to greater levels of anthropogenic emissions.³⁰¹

Commitments: financial resources and technology transfer

Annex II parties (the developed countries that form a subset of the parties listed in Annex I) undertake specific financial commitments. They agree to provide 'new and additional' financial resources to meet the 'agreed full costs' incurred by developing country parties in fulfilling

²⁹⁵ In accordance with Art. 2(4)(d), a second review of the adequacy of Art. 4(2)(a) and (b) took place during the fourth Conference of the Parties at Buenos Aires in 1998. The parties failed to reach a decision on the review and subsequent consideration of the matter at the fifth and sixth Conferences of the Parties has similarly produced no agreed result. The second review of the adequacy of Art. 4(2)(a) and (b) was 'held in abeyance' at COP 16: UNFCCC, Report of the Conference of the Parties on Its Sixteenth Session, Held in Cancún from 29 November to 10 December 2010. Part One: Proceedings (2010), 16.

²⁹⁶ See Decision 1/CP.3, Report of the Conference of the Parties on Its Third Session, Kyoto, 1–11 December 1997, FCCC/CP/1997/7/Add.1.

²⁹⁷ Art. 4(2)(a) and (d). At its first session, the Conference of the Parties launched a 'pilot phase of activities implemented jointly' (AIJ) (see Decision 5/CP.1, Report of the Conference of the Parties on Its First Session, Berlin, 28 March–7 April 1995, FCCC/CP/1995/7/Add.1). Under the pilot phase, parties may implement projects that reduce greenhouse gas emissions, or enhance removals of greenhouse gases by 'sinks', in the territories of other parties, although no credits may accrue to any party for greenhouse gas emission reductions or removals. In 2000, COP 5 decided to continue the pilot phase beyond 2000 (see Decision 13/CP.5) and in 2006, at its twelfth session, the Conference of the Parties agreed on the continuation of the AIJ under the pilot phase. See http://unfccc.int/cooperation_support/activities_implemented_jointly/items/2307.php.

²⁹⁸ Art. 4(6). ²⁹⁹ Art. 4(10).

³⁰⁰ Art. 4(2)(c). See also Decision 4/CP.1 on Methodological Issues, Report of the Conference of the Parties on Its First Session, Berlin, 28 March–7 April 1995, FCCC/CP/1995/7/Add.1. Since then, the UNFCCC Secretariat has prepared a note on methodological issues: UNFCCC, Methodological Issues. Review of Methodological Work under the Convention and the Kyoto Protocol: Note by the Secretariat (2002). There have also been several workshops: see e.g. UNFCCC, Report on the Workshop on Methodological Issues Relating to Reducing Emissions from Deforestation and Forest Degradation in Developing Countries: Note by the Secretariat (2008).

³⁰¹ Art. 4(2)(e).

their commitment to communicate information relating to implementation (Article 12), and to provide such financial resources needed by developing country parties 'to meet the agreed full incremental costs of implementing measures' relating to their general commitments under Article 4(1) and which are agreed between the developing country party and the entity responsible for the financial mechanism.³⁰² Annex II parties also undertake to assist developing country parties that are 'particularly vulnerable to the adverse effects' of climate change in meeting the costs of adaptation to those adverse effects.³⁰³ In what amounts to an implicit acceptance by developed country parties of responsibility for causing climate change, Article 4(4) may ultimately emerge as one of the more unusual, contentious, and perhaps costly, commitments in the Convention.

In the implementation of Article 4, the parties must give full consideration to the actions necessary to meet the specific needs and concerns of developing country parties arising from the adverse effects of climate change, and/or the impact of implementing response measures, including actions related to funding, insurance and the transfer of technology.³⁰⁴ Certain categories of countries are identified, including small island countries, countries with low-lying coastal areas, countries with areas liable to drought and desertification, and countries whose economies are highly dependent on income generated from, or the consumption of, fossil fuels.

Annex II parties are required to take all practicable steps to promote, facilitate and finance the transfer of, or access to, environmentally sound technologies and know-how, and support the development of endogenous capacities and technologies of developing country parties.³⁰⁵

Institutional arrangements

The Climate Change Convention establishes a Conference of the Parties, a secretariat, two subsidiary bodies and a financial mechanism.³⁰⁶ The Conference of the Parties is the supreme body of the Convention, entrusted with keeping the implementation of the Convention under regular review and making decisions to promote its effective implementation.³⁰⁷ It met for the first time in 1995 and has subsequently met annually.³⁰⁸ In recent times, the Conference of the Parties has served as the primary negotiating forum for considering extensions to the climate change regime. The functions of the Conference of the Parties, include:

- to examine periodically the obligations of the parties;
- to facilitate the co-ordination of measures;
- to promote and guide comparable methodologies for preparing inventories of greenhouse gas emissions;
- to assess the implementation of the Convention by all parties and the overall effect of measures; and
- to adopt regular reports on the implementation of the Convention.

A multidisciplinary Subsidiary Body for Scientific and Technological Advice was established to provide information on scientific and technological matters to the Conference of the Parties.³⁰⁹

³⁰² Art. 4(3). ³⁰³ Art. 4(4). ³⁰⁴ Art. 4(8) and (9). ³⁰⁵ Art. 4(5).

³⁰⁶ Arts. 7–11. Several expert groups also exist to support work under the Convention. These include: a Consultative Group of Experts on National Communications from Non-Annex I Parties; a Least Developed Country Expert Group; and an Expert Group on Technology Transfer.

³⁰⁷ Art. 7(2). ³⁰⁸ Art. 7(4). ³⁰⁹ Art. 9(1).

A Subsidiary Body for Implementation was established to assist the Conference of the Parties in the assessment and review of the implementation of the Convention.³¹⁰ Although some states wanted to limit participation, both subsidiary bodies are open to participation by all parties.

The Convention defines a financial mechanism for the provision of financial resources on a grant or concessional basis, including for the transfer of technology.³¹¹ After specific commitments this was the most disputed aspect of the Convention. The mechanism functions under the guidance of, and is accountable to, the Conference of the Parties, which is responsible for its policies, programme priorities and eligibility criteria, and its operation was to be entrusted to one or more existing international entities.³¹² The mechanism is required to have an equitable and balanced representation of all parties within a transparent system of governance. The Global Environment Facility (GEF) of UNDP, UNEP and IBRD was initially entrusted with the operation of the financial mechanism on an interim basis, and, in 1996, the second Conference of the Parties adopted a memorandum of understanding with the GEF on their respective roles and responsibilities.³¹³ In 1998, the fourth Conference of the Parties entrusted the GEF with the operation of the financial mechanism on a long-term basis, subject to review every four years.³¹⁴

Implementation and dispute settlement

Apart from the role of the Conference of the Parties and the Subsidiary Body for Implementation, the Convention provides for the possibility of establishing a 'multilateral consultative process' for the resolution of implementation questions, which will be available to parties on their request.³¹⁵ This whittles down two more ambitious original proposals. Additionally, a dispute settlement Article provides for possible compulsory recourse to arbitration or the International Court of Justice with the consent of the relevant parties to a dispute, as well as the possibility for the compulsory establishment of a conciliation commission, with the power to make a recommendatory award, at the request of one of the parties to a dispute twelve months after notification of the dispute.³¹⁶ The Convention provides for amendment, the adoption and amendment of Annexes, and the adoption of Protocols.³¹⁷ No reservations are permitted.³¹⁸

The 1997 Kyoto Protocol

The Kyoto Protocol to the Climate Change Convention was adopted by the third Conference of the Parties in December 1997.³¹⁹ Negotiations for a Protocol to the Convention commenced in

³¹⁰ Art. 10(1). ³¹¹ Art. 11(1). ³¹² Art. 11(1)–(3).

³¹³ See Decision 13/CP.2, Memorandum of Understanding Between the Conference of the Parties and the Council of the Global Environment Facility, Report of the Conference of the Parties on Its Second Session, Geneva, 8–19 July 1996, FCCC/CP/1996/15/Add.1.

³¹⁴ See Decision 3/CP.4, Report of the Conference of the Parties on Its Fourth Session, Buenos Aires, 2–14 November 1998, FCCC/CP/1998/16/Add.1. Four reviews of the financial mechanism have been undertaken, with the last review being adopted by COP 16: Decision 2/CP.16. The GEF remains an operating entity.

³¹⁵ Art. 13. ³¹⁶ Art. 14. ³¹⁷ Art. 24. ³¹⁸ Art. 24.

³¹⁹ Kyoto, 10 December 1997, 16 February 2005; reprinted at 37 ILM 22 (1998). P. Davies, 'Global Warming and the Kyoto Protocol', 47 *International and Comparative Law Quarterly* 446 (1998); F. Yamin, 'The Kyoto Protocol', 7 *Review of European Community and International Environmental Law* 113 (1998); D. French, '1997 Kyoto Protocol to the 1992 UN Framework on Climate Change', 10 *Journal of Environmental Law* 227 (1998); M. Grubb, C. Vrolijk and D. Brack, *The Kyoto Protocol: A Guide and Assessment* (1999); S. Oberthur and H. Ott, *The Kyoto*

1995 after the first Conference of the Parties, meeting in Berlin, determined that the commitments provided for in Article 4(2)(a) and (b) of the Convention were 'not adequate' and decided to launch a process to strengthen the commitments of Annex I parties through the adoption of a protocol or another legal instrument.³²⁰ The 'Berlin Mandate' was to

[a]im, as the priority in the process of strengthening the commitments in Article 4.2(a) and (b) of the Convention, for developed country/other Parties included in Annex I, both to elaborate policies and measures, as well as to set quantified limitation and reduction objectives within specified timeframes, such as 2005, 2010 and 2020, for their anthropogenic emissions by sources and removals by sinks of greenhouse gases not controlled by the Montreal Protocol.³²¹

The process was not intended to introduce any new commitments for non-Annex I parties, but merely to 'reaffirm existing commitments in Article 4.1 and continue to advance the implementation of these commitments'.³²² Negotiations were to be conducted as a matter of urgency with a view to adopting the results at the third Conference of the Parties in 1997.³²³ This ambitious negotiating timetable was eventually met, with the adoption of the Kyoto Protocol at the third Conference of the Parties, and opened for signature on 16 March 1998.

Given the economic and developmental implications, it is not surprising that the Kyoto Protocol negotiations were among the most difficult and complex ever conducted for a multilateral environmental agreement. Deep divisions between the parties emerged in relation to a range of key issues, such as emission reduction targets, sinks, emissions trading, joint implementation and the treatment of developing countries. Although consensus was reached at Kyoto, subsequent negotiations on the detailed rules, guidelines and methodologies needed to implement the Protocol proved equally contentious as the original negotiations for the Protocol. A number of issues reflected divisions between states. Some of these covered matters relating to the implementation of commitments under the Convention, particularly those relating to financing, capacity-building, adaptation and transfer of technology. Other matters related to the Protocol, such as carbon sinks, rules for emissions trading and penalties for non-compliance with commitments. In early 2001, the future of the Protocol was thrown into doubt with the announcement by then President George W. Bush that the United States (responsible for about a quarter of 1990 global greenhouse gas emissions) would not ratify the Protocol.³²⁴ Nevertheless, at subsequent Conferences of the Parties, held in Bonn and Marrakesh during

Protocol (1999); F. Depledge, 'Tracing the Origins of the Kyoto Protocol: An Article by Article History', UN Doc. FCCC/TP/2000/2 (2000); M. Vespa, 'Climate Change 2001: Kyoto at Bonn and Marrakech', 29(2) *Ecology Law Quarterly* 395 (2002); M. Doelle, 'The Kyoto Protocol: Reflections on Its Significance on the Occasion of Its Entry into Force', 27(2) *Dalhousie Law Journal* 555 (2004); D. Freestone and C. Streck (eds.), *Legal Aspects of Implementing the Kyoto Protocol Mechanisms: Making Kyoto Work* (2005); K. Kheng-Lian, L. Lin-Heng and J. Lin (eds.), *Crucial Issues in Climate Change and the Kyoto Protocol: Asia and the World* (2010).

³²⁰ See Decision 1/CP.3, Report of the Conference of the Parties on Its Third Session, Kyoto, 1–11 December 1997, FCCC/CP/1997/7/Add.1.

³²¹ Decision 1/CP.1, Report of the Conference of the Parties on Its First Session, Berlin, 28 March–7 April 1995, FCCC/CP/1995/7/Add.1, para. 2(a).

³²² *Ibid.*, para. 2(b). ³²³ *Ibid.*, para. 6.

³²⁴ See Transcript, Bush Press Conference at White House, 29 March 2001, available at <http://georgewbush-whitehouse.archives.gov/news/briefings/20010328.html#KyotoTreaty>.

2001, the remaining states parties reached agreement on mechanisms for implementing commitments under the Protocol.³²⁵

The ‘Marrakesh Accords’, as they are now known, reflected an important breakthrough on many of the critical negotiating issues, and a clear signal that the world community was prepared to go ahead with the Kyoto Protocol, even without United States support. At the same time, the 218-page Marrakesh Accords comprise a legal text of some complexity, suggesting ‘more possibilities for hidden meanings, ambiguities and “agreements to disagree” than the almost 30 pages of the Kyoto Protocol’.³²⁶ The sections of the Marrakesh Accords dealing with Protocol issues were presented to the first meeting of the Conference of the Parties serving as the Meeting of the Parties to the Protocol for formal adoption.³²⁷ A major component of the Marrakesh Accords relates to the rules for implementation of the Kyoto Protocol’s ‘flexibility mechanisms’, the establishment of a compliance mechanism (potentially one of the most important aspects of the Marrakesh Accords)³²⁸ and the elaboration of permissible land-use, land-use change and forestry (LULUCF) activities. The Accords also consolidate matters under the Convention relating to funding arrangements³²⁹ and capacity-building provisions for developing countries,³³⁰ and provide guidelines for the preparation of National Adaptation Programmes for Action (NAPAs).³³¹ In addition, the Accords provide guidelines on national systems for the estimation of anthropogenic sources of greenhouse gas emissions, the preparation of information required for fulfilment of the reporting obligations under the Protocol, and performance of reviews by expert review teams under Article 8.³³² Conclusion of the Marrakesh Accords paved the way for the Protocol’s entry into force, which occurred on 16 February 2005 following the ratifications of Japan, Canada and Russia.³³³

Emission reduction targets and timetable

The major achievement of the Kyoto Protocol was the commitment of Annex I parties to quantified emission reduction targets and a timetable for their achievement. The basic obligation accepted by the Annex I parties is set out in Article 3(1). It provides that Annex I parties

³²⁵ The Marrakesh Accords are reproduced in four volumes of the report of the seventh Conference of the Parties, FCCC/CP/2001/13/Add.1–Add.4. For a useful summary of the Kyoto Protocol provisions as supplemented by the Marrakesh Accords, see Climate Change Secretariat, *A Guide to the Climate Change Convention and Its Kyoto Protocol* (2002), available at <https://library.conservation.org/Published%20Documents/2002/Guide%20to%20Climate%20Change%20Convention.pdf>.

³²⁶ *Ibid.* ³²⁷ FCCC/KP/CMP/2005/8/Add.1.

³²⁸ FCCC/KP/CMP/2005/8/Add.3, Decision 27/CMP.1; see Chapter 4.

³²⁹ Three new funds were established, two under the Convention and one under the Protocol. The Convention funds are a ‘special climate change’ fund to finance activities, programmes and measures related to climate change and a fund for least developed countries: Marrakesh Accords, FCCC/CP/2001/13/Add.1, Decision 7/CP.7. Under the Protocol, an ‘adaptation fund’ was established to finance concrete adaptation programmes and projects in developing countries. The fund is financed by voluntary contributions and 2 per cent of the proceeds generated by CDM projects: FCCC/CP/2001/13.Add.1, Decision 10/CP.7.

³³⁰ FCCC/CP/2001/13.Add.1, Decision 2/CP.7. Decision 3/CP.7 deals with capacity-building for parties with economies in transition.

³³¹ FCCC/CP/2001/13/Add.4, Decision 28/CP.7.

³³² FCCC/CP/2001/13.Add.1, Decisions 19/CMP.1, 15/CMP.1 and 22/CMP.1.

³³³ In order to enter into force, the Protocol required the ratification, acceptance, approval or accession of at least fifty-five parties to the Convention, including Annex I parties which accounted for at least 55 per cent of the total carbon dioxide emissions of Annex I parties in 1990. The refusal of the world’s largest greenhouse gas emitter, the United States, to ratify the Protocol made the participation by other Annex I parties with significant emissions, such as Japan, the European Community and Russia, essential for the Protocol to come into force.

'shall, individually or jointly, ensure that their aggregate anthropogenic carbon dioxide equivalent emissions of the greenhouse gases listed in Annex A do not exceed their assigned amounts'.³³⁴ The 'assigned amounts' are calculated pursuant to each party's quantified emissions limitation and reduction commitment set out in Annex B. Annex I parties must implement their obligation under Article 3(1) 'with a view to reducing their overall emissions of [Annex A] gases by at least 5 per cent below 1990 levels in the commitment period 2008 to 2012'. Annex I parties with economies in transition can use a base year other than 1990, calculated in accordance with Article 3(5). Banking of assigned amounts for future commitment periods is permitted as any Annex I party with emissions in a commitment period, which are less than its assigned amount, can request that the difference be added to its assigned amount for subsequent commitment periods.³³⁵ Overall, the emission reduction commitments made in the Protocol are estimated to represent a reduction of about 30 per cent below 'business as usual' emissions levels, though poor implementation is likely to result in much higher levels of emissions.

By 2005, each Annex I party was required to 'have made demonstrable progress in achieving its commitments under [the] Protocol'.³³⁶ The first commitment period commenced in 2008 and continues until 2012. Under the Protocol, commitments for subsequent periods are to be established by amendments to Annex B adopted in accordance with the provisions of Article 21(7). The Meeting of the Parties to the Protocol was required to initiate reconsideration of the commitments in Annex B by 2005.³³⁷ Amendments to the Protocol can be adopted by a three-fourths majority vote of the parties present and voting at the meeting at which it is proposed for adoption, followed by its ratification or acceptance by at least three-fourths of the parties to the Protocol.

The determination of emissions targets for the Annex I parties was a difficult issue. Annex B lists differentiated targets for individual countries and regional economic organisations. For example, the EC and its member states agreed to an emissions limitation of 92 per cent of the 1990 base year, or an 8 per cent reduction in the first commitment period of 2008–12. The United States agreed to a 7 per cent reduction. Japan and Canada each accepted a 6 per cent reduction, while Australia and Iceland were permitted to make increases of respectively 8 per cent and 10 per cent. Russia, the largest emitter of the Eastern bloc countries, agreed to stabilise its emissions at 100 per cent of 1990 levels.

Six gases are covered by the emission reduction commitments of the Annex I parties: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride.³³⁸ The number of gases covered by the Protocol was also a controversial issue with strong disagreement during the negotiations as to whether only three (carbon dioxide, methane and nitrous oxide) or six (adding hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride) gases should be covered. In the end, all six gases were listed in Annex A. However, Article 3(8) provides that any Annex I party may use 1995 as its base year for the latter three gases.

³³⁴ The gases covered by the Protocol are carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride.

³³⁵ Art. 3(3). However, borrowing assigned amounts from future commitment periods is not permitted.

³³⁶ Art. 3(2). ³³⁷ Art. 3(9). ³³⁸ Annex A.

Policies and measures

Article 2 of the Protocol contains a list of policies and measures that parties may implement in order to achieve their quantified limitation and emission reduction targets. During negotiations for the Protocol, the EC pushed for the adoption of mandatory and co-ordinated ‘policies and measures’, but this was resisted by the United States, Canada, Australia and some other Annex I parties who sought a more flexible approach, with policies and measures to be determined principally by each individual party. This latter approach was largely adopted in Article 2, which provides that each Annex I party, in achieving its emissions limitation and reduction commitments under Article 3, shall implement policies and measures ‘in accordance with its national circumstances’. A list of indicative measures follows, which includes enhancement of energy efficiency, the protection and enhancement of sinks, the promotion of sustainable forms of agriculture, increased research on and use of new and renewable forms of energy, measures to limit or reduce emissions in the transport sector and the limitation or reduction of methane emissions.³³⁹ Parties are required to co-operate ‘to enhance the individual and combined effectiveness of their policies and measures’ through taking steps to share relevant experience and information, including developing ways of improving the compatibility, transparency and effectiveness of policies and measures.³⁴⁰ Parties must pursue limitation and reduction of emissions from aviation and bunker fuels, which remain outside the scope of the Protocol, by working through the ICAO and IMO, respectively.

Flexibility mechanisms: emissions trading, joint implementation and the CDM

By far the most innovative (and controversial) aspect of the Kyoto Protocol negotiations was the proposal to enable Annex I parties to meet their commitments under the Protocol via various ‘flexibility mechanisms’ that involve purchasing or acquiring credits representing greenhouse gas reductions in other countries. Emissions trading permits an Annex B party to ‘buy’ emission reduction credits, in the form of assigned amount units (AAUs), from another Annex B party where it would be more cost-effective for it to do so rather than to undertake the reduction domestically. The inclusion of emissions trading in the Protocol was strongly supported by the United States, which has domestic experience with similar schemes (although in more discrete areas such as sulphur dioxide emissions)³⁴¹ and advocated their adoption internationally as cost-effective means of achieving reductions of emissions in greenhouse gases. However, emissions trading was strongly opposed by many parties, particularly China and the Group of 77 developing countries. An eleventh-hour compromise text was included in the Protocol as Article 17. This allows Annex B parties to ‘participate in emissions trading for the purposes of fulfilling their commitments under Article 3’, but provides that any such trading must be ‘supplemental’ to domestic actions taken to achieve emission reductions. Article 17 left to the Conference of the Parties the task of defining ‘relevant principles, modalities, rules and guidelines, in particular for verification, reporting and accountability for emissions trading’.³⁴²

³³⁹ Art. 2(1)(a). ³⁴⁰ Art. 2(1)(b).

³⁴¹ For example, its sulphur dioxide emissions trading scheme under Title IV of the Clean Air Act, 42 USC 7651.

³⁴² Subsequently, domestic and regional emissions trading schemes have been adopted by a number of developed countries that are designed to be Kyoto compliant.

A further economic incentive mechanism included in the Protocol allows joint implementation by Annex I parties of their emission reduction commitments. Article 6 provides that, for the purpose of meeting its commitments under Article 3, any Annex I party may transfer to, or acquire from, any other Annex I party 'emission reduction credits resulting from projects aimed at reducing anthropogenic emissions by sources or enhancing anthropogenic removals by sinks of greenhouse gases in any sector of the economy'.³⁴³ An Annex I party may authorise private legal entities, under its responsibility, to participate in actions leading to the generation, transfer or acquisition of emission reduction units (ERUs) from joint implementation.³⁴⁴ However, any such joint implementation must result in a reduction in emissions by sources, or an enhancement of removals by sinks, that is additional to any that would otherwise occur and should be supplemental to domestic actions.³⁴⁵

The Clean Development Mechanism (CDM) defined by Article 12 provides a further innovation, establishing a means for Annex I parties to gain emission reductions credits to assist them in achieving compliance with their quantified emissions limitation and reduction commitments under Article 3. As part of the CDM, Annex I parties invest in emission reduction projects in non-Annex I parties and use the certified emission reductions (CERs) accruing from such project activities 'to contribute to compliance with part of their quantified emission limitation and reduction commitments under Article 3'.³⁴⁶ However, the CDM serves a broader purpose: it is also designed 'to assist Parties not included in Annex I in achieving sustainable development and in contributing to the ultimate objective of the Convention'.³⁴⁷ Certified emission reductions obtained between 2000 and 2005 may be used to assist in achieving compliance in the first commitment period.³⁴⁸ A share of the proceeds from certified project activities must be used to cover administrative expenses 'as well as to assist developing country Parties that are particularly vulnerable to the adverse effects of climate change to meet the costs of adaptation'.³⁴⁹

The CDM is subject to the authority and guidance of the Conference of the Parties serving as the Meeting of the Parties to the Protocol and is supervised by an Executive Board.³⁵⁰ Emission reductions resulting from project activities require certification by operational entities to be designated by the Conference of the Parties serving as the Meeting of the Parties to the Protocol on the basis of various factors, including that the reductions in emissions are additional to any that would occur in the absence of the certified project activity and that there are real, measurable and long-term benefits related to the mitigation of climate change.³⁵¹ As with joint implementation, participation in the CDM may involve private and/or public entities, subject to the guidance of the Executive Board.³⁵² Article 12 leaves the 'modalities and procedures with the objective of ensuring transparency, efficiency and accountability through independent auditing and verification of project activities' to be elaborated by the Meeting of the Parties to the Protocol.³⁵³

The Marrakesh Accords contain a number of decisions relating to implementation of the Protocol's flexibility mechanisms that were subsequently adopted by the first Meeting of the Parties. As a whole, the Marrakesh Accords do not place a numerical cap on the use of the flexibility mechanisms to fulfil emission reduction commitments, as was urged by the EC, developing countries and many environmental NGOs; instead, it is provided that the use of

³⁴³ Art. 6(1). ³⁴⁴ Art. 6(3). ³⁴⁵ Art. 6(1)(b) and (d). ³⁴⁶ Art. 12(3)(b). ³⁴⁷ Art. 12(2).
³⁴⁸ Art. 12(10). ³⁴⁹ Art. 12(8). ³⁵⁰ Art. 12(4). ³⁵¹ Art. 12(5). ³⁵² Art. 12(9). ³⁵³ Art. 12(7).

these mechanisms is to be ‘supplemental to domestic action’ and that domestic action must constitute a ‘significant element’ of the effort made by Annex I parties in meeting their commitments under Article 3(1) of the Protocol.³⁵⁴ While there is thus no quantitative limit on *acquiring* credits to use towards fulfilling emission reduction commitments, the parties did agree to adopt a safeguard against the *over-selling* of emission reduction credits by participating countries. All Annex I parties are required to keep a ‘Commitment Period Reserve’ at all times which consists of either 90 per cent of their originally assigned AAUs, or five times the emissions of the most recently reviewed emissions inventory, whichever is the lower.³⁵⁵

Emission reduction credits, in the form of AAUs, ERUs and CERs, gained through use of the flexibility mechanisms, as well as ‘removal units’ (RMUs) generated by sink activities (see further below), may be used to meet the emission reduction commitments of Annex I parties under Article 3(1).³⁵⁶ Transfers and acquisitions of credits take place between national registries under the responsibility of the parties, and each national registry maintains electronic accounts of a party’s AAUs, ERUs, CERs and RMUs, as well as accounts for holdings of any legal entities authorised by the party to engage in the acquisition and transfer of credits.³⁵⁷

Eligibility to participate in the flexibility mechanisms is limited to Annex I parties which have ratified the Protocol and complied with the methodological and reporting requirements specified under Articles 5 and 7 of the Protocol.³⁵⁸ Japanese and Russian resistance prevented agreement on a strict link between acceptance of the arrangements for dealing with non-compliance under the Protocol and eligibility to participate in the Protocol’s flexibility mechanisms.³⁵⁹

Decisions of the Marrakesh Accords adopted by the Meeting of the Parties establish detailed modalities and guidelines for each of the flexibility mechanisms.³⁶⁰ In relation to the CDM, it is affirmed that it is the host party’s prerogative to confirm whether a CDM project activity assists it in achieving sustainable development, although Annex I parties must ‘refrain from using certified emission reductions generated from nuclear facilities’ to meet their commitments under Article 3(1).³⁶¹ Afforestation and reforestation are the only eligible land-use and forestry projects allowed under the CDM,³⁶² and for the first commitment period the total additions to a party’s assigned amount resulting from such activities may not exceed 1 per cent

³⁵⁴ FCCC/KP/CMP/2005/8/Add.2, Decision 15/CMP.1, para. 1.

³⁵⁵ FCCC/KP/CMP/2005/8/Add.3, Decision 18/CMP.1, Annex, para. 6. The commitment period reserve may consist of holdings of ERUs, CERs, AAUs and/or RMUs for the relevant commitment period which have not been acquired by an Annex I party.

³⁵⁶ FCCC/KP/CMP/2005/8/Add.1, Decision 2/CMP.1, para. 6.

³⁵⁷ FCCC/KP/CMP/2005/8/Add.2, Decision 12/CMP.1, paras. 30–7. The Climate Change Secretariat has established a transaction log to verify transactions of credits as they are proposed and to halt any transactions where a discrepancy is detected.

³⁵⁸ Decision 2/CMP.1, para. 5.

³⁵⁹ Decision 2/CMP.1, para. 5, requires the enforcement branch of the compliance committee to provide oversight of eligibility to participate in the flexibility mechanisms. See also the decisions relating to each of the flexibility mechanisms: Decision 9/CMP.1, Annex, para. 22(b) (joint implementation); Decision 3/CMP.1, Annex, para. 32(b) (CDM); Decision 11/CMP.1, Annex, para. 3(b) (emissions trading).

³⁶⁰ See Decision 9/CMP.1 (joint implementation); Decision 3/CMP.1 (CDM); and Decision 11/CMP.1 (emissions trading).

³⁶¹ Decision 5/CP.6, ‘Implementation of the Buenos Aires Plan of Action’, FCCC/CP/2001/L.7, 24 July 2001, Annex VI, para. 11.

³⁶² The Subsidiary Body for Scientific and Technical Advice was requested by the Conference of the Parties to develop definitions and modalities for including afforestation and reforestation project activities under the CDM. A decision was adopted on this matter at the ninth Conference of the Parties: Decision 19/CP.9.

of the base year emissions of the party multiplied by five. While the hope was that this provision would facilitate CDM projects in least developed countries in regions such as Africa, only a few such projects have received certification. The failure of the CDM to generate significant project activity in the forestry sector in developing countries has led to the consideration of new incentives that would provide credits for reductions in deforestation and forest degradation in developing countries (REDD), discussed further below.

The parties agreed to a 'prompt start' for the CDM, so that project activities starting from 2000 were able to register to accrue CERs.³⁶³ They also agreed upon the composition and functioning of the Executive Board of the CDM.³⁶⁴ Two initial tasks for the Executive Board included the development of a simplified procedure for small-scale projects under the CDM, and the accreditation of independent organisations, known as operational entities, which play a central role in the validation of proposed CDM project activities and the verification and certification of the 'additionality' of emission reductions.³⁶⁵ The issue of a certification report by a designated operational entity is the basis for the Executive Board's issuing CERs equal to the verified amount of emission reductions.³⁶⁶ The Accords also provide that public funding for CDM project activities must not result in a diversion in official development assistance and must be separate from and not counted towards the financial obligations of Annex I parties under the Protocol. The parties agreed that 2 per cent of the certified emission reductions issued for CDM project activities would go towards assisting developing country parties that are particularly vulnerable to the adverse effects of climate change to meet the costs of adaptation.³⁶⁷

The Marrakesh Accords' decisions concerning joint implementation under Article 6 are less elaborate than those for the CDM. An Article 6 supervisory committee was established to supervise the verification of ERUs from joint implementation activities,³⁶⁸ which follows a two-track procedure. Where a host party meets the eligibility requirements for participation in the flexibility mechanisms, it may itself certify ERUs generated by activities within its territory as being additional to reductions that would otherwise be made. If the host party does not meet the eligibility requirements, it may still host joint implementation projects; however, any resulting ERUs have to be verified by the Article 6 supervisory committee under a procedure

³⁶³ Decision 5/CP.6, 'Implementation of the Buenos Aires Plan of Action', FCCC/CP/2001/L.7, 24 July 2001, Annex VI, para. 11 (3. Art. 12, para. 4).

³⁶⁴ *Ibid.*, Annex, paras. 7, 12 and 13.

³⁶⁵ *Ibid.*, Annex, paras. 27 and 43. 'Validation' involves the independent evaluation of a project activity by a designated operational entity against the requirements of the CDM set out in Decision 17/CP.7 and other relevant decisions of the COP/MOP. A validated project then becomes 'registered' when it is formally accepted by the Executive Board as a CDM project activity. 'Verification' involves periodic independent review and *ex post* determination by the designated operational entity of the monitored reductions in anthropogenic emissions by sources that have occurred as a result of the registered CDM project activity and are 'additional' to any that would have occurred in the absence of the project. 'Additionality' is determined by reference to project-specific baselines and monitoring plans devised according to methodologies specified in the Marrakesh Accords. 'Certification' is the written assurance by the operational entity that the project activity achieved the verified reductions within a specified period of time.

³⁶⁶ *Ibid.*, Annex, para. 64. CERs are issued automatically by the Executive Board unless a party involved in the project activity or at least three members of the Executive Board request a review of the proposed issuance; any review of proposed issues of CERs is limited to matters of fraud, malfeasance or incompetence of the designated operational entity: para. 65.

³⁶⁷ Decision 10/CP.7, 'Funding under the Kyoto Protocol'. See also Decision 1/CMP.3 establishing the Adaptation Fund Board as the operating entity of the fund financed by a share of proceeds from the CDM (the Adaptation Fund).

³⁶⁸ Decision 9/CMP.1, para. 3; and Annex, paras. 4 and 15.

comparable to the CDM procedure.³⁶⁹ Projects starting from 2000 are eligible to qualify as joint implementation activities, but the resulting ERUs are only issued for crediting periods starting after 2008.³⁷⁰

Sinks

The inclusion of carbon sinks within the Protocol remained controversial up to the final stages of the negotiations. Some countries, particularly the United States and Australia, were strongly in favour of allowing activities that resulted in carbon sequestration (e.g. afforestation, reforestation and land-use changes) to count towards their quantified commitments. The inclusion of carbon sinks was strongly opposed by other countries, particularly the members of the EC. The final text adopted in Article 3(3) allowed for commitments to be met by 'net changes in greenhouse gas emissions by sources and removals by sinks resulting from direct human-induced land-use change and forestry activities, limited to afforestation, reforestation and deforestation since 1990, measured as verifiable changes in carbon stocks in each commitment period'. A last-minute proposal to include additional sinks resulted in the inclusion of Article 3(4), which provides that the Conference of the Parties serving as the Meeting of the Parties to the Protocol shall, at its first session or as soon as practicable thereafter, 'decide upon modalities, rules and guidelines as to how, and which, additional human-induced activities related to changes in greenhouse gas emissions by sources and removals by sinks in the agricultural soils and land-use change and forestry categories shall be added to, or subtracted from, the assigned amounts for parties included in Annex I'.

At Marrakesh, the parties agreed on a number of new provisions regarding land-use, land-use change and forestry (LULUCF) activities eligible to be credited against the assigned amounts for Annex I parties in accordance with Article 3(4) of the Protocol. These rules were subsequently affirmed in Decision 16/CMP.1 adopted by the first Meeting of the Parties to the Protocol.³⁷¹ Eligible activities include forest management, cropland management, grazing land management and revegetation.³⁷² Various governing principles for the inclusion of LULUCF activities were also articulated, namely, that:

- the treatment of such activities is to be based on 'sound science';
- consistent methodologies are to be used for estimation and reporting of these activities;
- the mere presence of carbon stocks is to be excluded from accounting, as is increased removals due to faster growth caused by increasing concentrations of atmospheric carbon dioxide and indirect nitrogen deposition associated with climate change;
- any reversals of LULUCF removals are to be accounted for at the appropriate time; and
- the implementation of LULUCF activities must contribute to biodiversity conservation and sustainable use of natural resources.³⁷³

Under Article 3(4), a party may choose to have this decision apply for the first commitment period, provided that the 'additional human-induced activities' have taken place since 1990 and the party makes its choice of eligible activities prior to the start of that period.³⁷⁴ When LULUCF activities under Article 3(3) and (4) result in a net removal of greenhouse gases, an Annex

³⁶⁹ Annex, paras. 23 and 24. ³⁷⁰ *Ibid.*, para. 5. ³⁷¹ Annex, para. 6.

³⁷² *Ibid.*, Annex, para. 6. Definitions are in Decision 16/CMP.1, Annex, para. 1.

³⁷³ Decision 16/CMP.1, para. 1. ³⁷⁴ *Ibid.*, Annex, para. 7.

I party can issue removal units (RMUs) on the basis of these activities as part of meeting its commitment under Article 3(1). To be available for credit against an Annex I party's emission reduction commitments, RMUs must be verified by the expert review teams established by the Protocol (see below). Further, use of RMUs to meet emission reduction targets during the first commitment period is subject to conditions. First, as a general rule, any emissions from eligible LULUCF activities must be offset by emissions cuts or removals elsewhere.³⁷⁵ Second, if a party's afforestation, reforestation and deforestation activities result in emissions which are greater than the amount of removals, the party can offset these emissions against removals from forest management activities up to a total of nine megatonnes of carbon (MtC) per year.³⁷⁶ Third, the extent to which removals from forest management activities can be accounted for beyond 9 MtC per year is subject to country-specific numerical caps.³⁷⁷ Finally, emissions and removals from cropland management, grazing management and revegetation can only be used to help meet emissions targets on a net-net basis, i.e. the net change in carbon stocks from LULUCF emissions and removals during 1990, multiplied by five, will be subtracted from the net change in LULUCF carbon stocks during the first commitment period for land where such activities took place.³⁷⁸

Developing countries

Article 10 of the Kyoto Protocol deals with that part of the 'Berlin Mandate' that called for the advancement of the implementation of commitments by all parties, including developing country parties. The Preamble to Article 10 affirms that the provision is not 'introducing any new commitments for Parties not included in Annex I' but is merely reaffirming existing commitments under Article 4(1) of the Convention, and 'continuing to advance the implementation of these commitments in order to achieve sustainable development'. A number of measures are listed in Article 10 which cover areas such as the formulation of 'cost-effective national, and where appropriate regional, programmes to improve the quality of local emission factors, activity data and/or models which reflect the socioeconomic conditions of each Party for the preparation and periodic updating of national inventories' of emissions of greenhouse gases and the formulation, implementation, publication and updating of 'national and, where appropriate, regional programmes containing measures to mitigate climate change and measures to facilitate adequate adaptation to climate change'. Other measures include the provision of information on programmes that contain measures addressing climate change and its adverse impacts, and the promotion of effective modalities relating to the transfer of environmentally sound technologies pertinent to climate change.

Reporting and compliance

Detailed reporting obligations for Annex I parties are established by Articles 5, 7 and 8 of the Protocol. These build upon the reporting and review procedures developed under the Convention, particularly the in-depth review process. Article 5(1) provides that each Annex I party is

³⁷⁵ *Ibid.*, Annex, para. 4. ³⁷⁶ *Ibid.*, Annex, para. 10.

³⁷⁷ *Ibid.*, para. 11 and Appendix. At Bonn, Russia agreed to a figure of 17.63 megatonnes of carbon (MtC) per year from forest management. However, it subsequently questioned the validity of this figure, asserting that carbon-absorbing activities from forest management accounted for 33 MtC annually. To prevent the Accords unravelling, Decision 12/CP.7 was agreed upon, authorising a figure of 33 MtC per year for credits from forest management for Russia.

³⁷⁸ Decision 16/CMP.1, para. 9.

required to have in place, by no later than 2007, a national system for the estimation of anthropogenic emissions by sources and removals by sinks of greenhouse gases. Guidelines for such national systems were decided upon by the Conference of the Parties serving as the Meeting of the Parties to the Protocol at its first session. Under Article 7(1), each Annex I party is required to incorporate in its annual inventory of anthropogenic emissions by sources and removals by sinks, 'the necessary supplementary information for the purposes of ensuring compliance with Article 3'. Annex I parties are also required to include supplementary information to demonstrate compliance with commitments under the Protocol.³⁷⁹

The information submitted under Article 7 by Annex I parties is reviewed by 'expert review teams' in accordance with guidelines adopted by the Meeting of the Parties at its first session.³⁸⁰ The review process is to provide 'a thorough and comprehensive technical assessment of all aspects of the implementation by a Party' of the Protocol.³⁸¹ The expert review teams report to the Meeting of the Parties on the implementation of commitments by the party, identifying any potential problems in, and factors influencing, the fulfilment of commitments.³⁸² The reports of the expert review teams are circulated to all parties to the Convention, and the Conference of the Parties considers the information submitted under Article 7 and the expert review reports and 'take[s] decisions on any matter required for the implementation of [the] Protocol'.³⁸³

Apart from the review of information submitted by parties, the Protocol contemplates a further mechanism for ensuring compliance with commitments under the Protocol. Article 18 provides that the Meeting of the Parties, at its first session, shall 'approve appropriate and effective procedures and mechanisms to determine and to address cases of non-compliance with the provisions of this Protocol, including through the development of an indicative list of consequences, taking into account the cause, type, degree and frequency of non-compliance'. Decisions reached as part of the Marrakesh Accords, and subsequently adopted by the first Meeting of the Parties to the Protocol, elaborate a sophisticated and detailed non-compliance mechanism consisting of Facilitative and Enforcement Branches.³⁸⁴ This mechanism has been fully operational since 2006 and has been described as constituting 'a landmark in international climate policy and global environmental governance more broadly'.³⁸⁵

Subsequent developments: Copenhagen, Cancún and beyond³⁸⁶

The future of the climate change regime is the subject of international negotiations, which have been extended beyond the most recent Conferences of the Parties at Copenhagen (2009),

³⁷⁹ Art. 7(2). ³⁸⁰ Art. 8(1). ³⁸¹ Art. 8(3). ³⁸² *Ibid.* ³⁸³ Art. 8(5) and (6).

³⁸⁴ Decision 27/CPM.1. See also Rules of Procedure CMP.2 and CMP.4. For details, see Chapter 5.

³⁸⁵ S. Oberthür and R. Lefeber, 'Holding Countries to Account: The Kyoto Protocol's Compliance System Revisited After Four Years of Experience', 1 *Climate Law* 133, 134 (2010).

³⁸⁶ D. Bodansky, 'The Copenhagen Climate Change Conference: A Postmortem', 104(2) *American Journal of International Law* 230 (2010); R. Cantley-Smith, 'Climate Change and the Copenhagen Legacy: Where to from Here?', 36(1) *Monash University Law Review* 278 (2010); E. Burlison, 'Climate Change Consensus: Emerging International Law', 34 *William and Mary Environmental Law and Policy Review* 543 (2010); D. Hunter, 'Implications of the Copenhagen Accord for Global Climate Governance', 10(2) *Sustainable Development Law and Policy* 4 (2011); G. Nagtzaam, 'What Rough Beast? Copenhagen and Creating a Successor Agreement to the Kyoto Protocol', 36(1) *Monash University Law Review* 215 (2010); R. L. Ottinger, 'Copenhagen Climate Conference – Success or Failure?', 27(2) *Pace Environmental Law Review* 411 (2010); L. Rajamani, 'The Making and Unmaking of the Copenhagen Accord', 59 *International and Comparative Law Quarterly* 824 (2010); N. A. Robinson, 'The Sands of Time: Reflections on the Copenhagen Climate Negotiations', 27(2) *Pace Environmental Law Review*

Cancún (2010) and Durban (2011) in light of ongoing disagreement. Discussions have been conducted in two negotiating tracks: one to negotiate amendments to the Protocol, including work on developing a second commitment period (Kyoto track);³⁸⁷ and the other to negotiate long-term co-operative action under the Convention (Convention track).³⁸⁸ As the end of the Kyoto Protocol's first commitment period nears, a critical question has been whether the Protocol should be extended into a second commitment period, a question affirmatively answered at Durban. Closely related is the issue of how a post-2012 climate change regime should deal with the emissions of developing country parties and non-parties to the Kyoto Protocol (most prominently, the United States). This includes questions as to whether a new agreement should be adopted under the auspices of the 1992 Climate Change Convention to address the emissions of such countries, or whether a single and more comprehensive new agreement should be adopted to replace the Kyoto Protocol.³⁸⁹

Copenhagen conference (COP 15)

The fifteenth Conference of the Parties to the 1992 Climate Change Convention was held in Copenhagen from 7 to 19 December 2009. The aim of the conference was to reach a formal decision on the future and form of a post-2012 climate regime.³⁹⁰ This objective was not fulfilled. Instead, the conference took 'note of' the Copenhagen Accord,³⁹¹ a document of uncertain status agreed among a subset of the parties to the 1992 Climate Change Convention and Kyoto Protocol.³⁹²

The Copenhagen Accord covers the five pillars of the action plan agreed at the thirteenth Conference of the Parties in Bali in 2007.³⁹³ a shared vision for long-term co-operative action, and enhanced action on mitigation, adaptation, technology development and financing. Key elements of the Accord include: the goal of limiting the increase in global temperature below 2°C;³⁹⁴ important new commitments regarding the provision of financial

599 (2010); D. Ryan, E. Juska, C. Changhua Wu, L. Bas and A. Dass, 'Climate Change after Cancún: A Post-COP-16 Analysis', 18(6) *Environmental Liability* 207 (2010).

³⁸⁷ Conducted in the Ad Hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol (AWG-KP) and initiated at COP 11 in Montreal (28 November–9 December 2005).

³⁸⁸ Established under the Bali Action Plan, Decision 1/CP.13, Report of the Conference of the Parties on Its Thirteenth Session, Bali, 14–15 December 2007, Addendum at [3], UN Doc. FCCC/CP/2007/6/Add.1 (reissued 14 March 2008).

³⁸⁹ D. Bodansky, 'The Copenhagen Climate Change Conference: A Postmortem', 104(2) *American Journal of International Law* 230 (2010).

³⁹⁰ This deadline was set by the Bali Action Plan and a Kyoto Protocol decision: Bali Action Plan, Decision 1/CP.13, Report of the Conference of the Parties on Its Thirteenth Session, Bali, 14–15 December 2007, Addendum at [3], UN Doc. FCCC/CP/2007/6/Add.1 (reissued 14 March 2008).

³⁹¹ Decision 2/CP.15, Report of the Conference of the Parties on Its Fifteenth Session, Copenhagen, 7–19 December 2009, FCCC/CP/2009/11/Add.1 (30 March 2010) (Copenhagen Accord). The Accord was 'noted' rather than 'adopted' due to objections from a group of countries including Bolivia, Sudan and Venezuela: see D. Bodansky, 'The Copenhagen Climate Change Conference: A Postmortem', 104(2) *American Journal of International Law* 230, 231 (2010).

³⁹² The Copenhagen Accord was negotiated among twenty-eight parties to the Climate Change Convention, a group which included all the major economies. The UN Secretary General was also present. The total number of parties that have expressed their intention to be listed as agreeing to the Accord is 141, including the 114 parties currently listed in the chapeau to the Accord: see UNFCCC, 'Information Provided by Parties to the Convention Relating to the Copenhagen Accord', available at <http://unfccc.int/resource/docs/2009/cop15/eng/11a01.pdf>, 22 April 2011 (accessed 3 May 2011).

³⁹³ Decision 1/CP.13, Report of the Conference of the Parties on Its Thirteenth Session, Bali, 14–15 December 2007, FCCC/CP/2007/6/Add.1 (Bali Action Plan).

³⁹⁴ Copenhagen Accord, para. 2.

resources;³⁹⁵ and a 'pledge and review' framework of mitigation commitments by developed countries and mitigation actions by developing countries.³⁹⁶ The Accord also establishes three new bodies: a High Level Panel to study the implementation of financing provisions;³⁹⁷ the Copenhagen Green Climate Fund;³⁹⁸ and a Technology Mechanism.³⁹⁹ Emissions pledges have now been received from seventy-six countries.⁴⁰⁰ However, despite the aspiration in the Copenhagen Accord to limit a change in global temperatures to 2°C, the emission reduction pledges announced so far are likely to be insufficient to meet this goal.⁴⁰¹

Some progress was also made at the Copenhagen conference with regard to the financing of climate change mitigation and adaptation activities and the inclusion of measures for reducing emissions from deforestation and forest degradation in developing countries (REDD). The Accord sets out the collective commitment made by developed countries to provide new and additional funding for mitigation and adaptation approaching US\$30 billion for the period 2010–12, and an additional US\$100 billion by 2020.⁴⁰² Many characterised this commitment as the most successful part of the Accord.⁴⁰³ The Copenhagen Accord also records the parties' agreement that developed countries will provide 'adequate, predictable and sustainable' financial and other resources to support the implementation of adaptation action in developing countries.⁴⁰⁴

REDD was perhaps the area of greatest consensus at Copenhagen. The Accord calls for incentives to be provided to developing countries to reduce deforestation through the 'immediate establishment' of a mechanism including REDD+ to mobilise financial resources from developed countries.⁴⁰⁵ Whilst not actually establishing such a mechanism,⁴⁰⁶ the Accord notes that a 'substantial' part of the mitigation and adaptation finance should be provided to REDD+.⁴⁰⁷ REDD+ is broader than REDD, addressing issues beyond deforestation and forest degradation which also recognise the role of conservation, sustainable forest management and the enhancement of forest carbon stocks in reducing emissions. A separate decision of the parties at Copenhagen outlined methodological guidance for REDD+ activities.⁴⁰⁸ This builds on previous endorsements for REDD activities made in the Bali Action Plan. The UN-REDD Programme, launched in 2008, currently provides financial support to National Programme activities in thirteen of its twenty-nine partner countries across Africa, Asia and Latin

³⁹⁵ *Ibid.*, para. 8. ³⁹⁶ *Ibid.*, paras. 4 and 5. ³⁹⁷ *Ibid.*, para. 9. ³⁹⁸ *Ibid.*, para. 10. ³⁹⁹ *Ibid.*, para. 11.

⁴⁰⁰ UNFCCC Secretariat, 'Press Release: Bonn Climate Talks Make Progress on Fleshing out Specifics of Global Climate Change Regime' (11 June 2010).

⁴⁰¹ UNEP, 'The Emissions Gap Report: Are the Copenhagen Accord Pledges Sufficient to Limit Global Warming to 2°C or 1.5°C?' (2010), available at www.unep.org/publications/ebooks/emissionsgapreport; K. Levin and R. Bradley, 'Comparability of Annex I Emission Reduction Pledges' (World Resources Institute Working Paper, February 2010), available at www.wri.org/publication/comparability-of-annexi-emission-reduction-pledges.

⁴⁰² Copenhagen Accord, para. 8.

⁴⁰³ IISD Reporting Services, 'Summary of the Copenhagen Climate Change Conference: 7–19 December 2009', 12(459) *Earth Negotiations Bulletin* 1, 3 (2009).

⁴⁰⁴ Copenhagen Accord, para. 3. ⁴⁰⁵ *Ibid.*, para. 6.

⁴⁰⁶ *Ibid.* A detailed proposal from the REDD negotiations had been developed prior to Copenhagen, but was never formally adopted: Policy Approaches and Positive Incentives on Issues Relating to Reducing Emissions from Deforestation and Forest Degradation in Developing Countries; and the Role of Conservation, Sustainable Management of Forests and Enhancement of Forest Carbon Stocks in Developing Countries, Draft Decision –/CP.15/FCCC/AWGLCA/2009/L.7/Add.6, available at <http://unfccc.int/resource/docs/2009/awglca8/eng/l07a06.pdf>.

⁴⁰⁷ Copenhagen Accord, para. 8.

⁴⁰⁸ Decision 4/CP.15, Report of the Conference of the Parties on Its Fifteenth Session, Copenhagen, 7–19 December 2009, FCCC/CP/2009/11/Add.1 (30 March 2010).

America.⁴⁰⁹ These activities form part of broader efforts undertaken by countries with the support of multilateral or bilateral initiatives to enhance their 'REDD+ readiness', that is, to build their capacity in order to be ready for the introduction of a REDD+ mechanism.⁴¹⁰ The World Bank Forest Carbon Partnership Facility also provides funding to assist developing countries to be eligible for involvement in a future incentive system under REDD+.⁴¹¹

Despite making headway in relation to mitigation and adaptation financing and REDD, Copenhagen did not see an agreement reached on any of the fundamental divisions in the climate negotiations. The key issue, which was intended to be resolved at Copenhagen, is the lack of an agreement on the future of the Kyoto Protocol. There was no consensus reached as to whether the Protocol will continue into a second commitment period, as intended in its original mandate, or what form any successor agreement will take. The latter issue highlighted the ongoing division of views between developed and developing countries. There were several draft texts proposed for a new agreement, including a controversial Danish text, which contemplated binding emissions cuts on developing countries.⁴¹²

A further shortcoming was that the Copenhagen Accord was not formally adopted by the Conference of the Parties. The Accord is therefore regarded as a political instrument with uncertain status, rather than as a binding legal agreement.⁴¹³ In addition, some countries perceive the Accord as illegitimate, as it was not formally adopted by all parties and its negotiation was conducted outside formal meetings.⁴¹⁴ Other legal and operational challenges include: a lack of consistency in designating the addressees of the Accord;⁴¹⁵ the need for the involvement of the Conference of the Parties before certain parts of the Accord may be implemented; and questions over the authority of the Climate Change Convention secretariat to be involved in facilitating further engagement with the Accord, such as opening it for signature.⁴¹⁶ In light of the shortcomings of the Copenhagen Accord, the Copenhagen conference resulted in further commitments to continue negotiations under the 1992 Climate Change Convention and the Kyoto Protocol.

Cancún conference (COP 16)

The sixteenth Conference of the Parties to the 1992 Climate Change Convention was held in Cancún, Mexico, from 29 November to 10 December 2010. In some ways, the Cancún conference may have been the beneficiary of Copenhagen's failings. With much lower expectations

⁴⁰⁹ UN REDD Programme, 'About the UN-REDD Programme', www.un-redd.org/AboutUNREDDProgramme/tabid/583/Default.aspx.

⁴¹⁰ For an overview of REDD readiness and demonstration activities, see G. A. Cerbu, B. M. Swallow and D. Y. Thompson, 'Locating REDD: A Global Survey and Analysis of REDD Readiness and Demonstration Activities', 14 *Environmental Science and Policy* 168 (2011).

⁴¹¹ See www.forestcarbonpartnership.org/fcp.

⁴¹² The leaked 'Danish text' is available at www.guardian.co.uk/environment/2009/dec/08/copenhagen-climate-change.

⁴¹³ L. Rajamani, 'The Making and Unmaking of the Copenhagen Accord', 59 *International and Comparative Law Quarterly* 824, 828–31 (2010).

⁴¹⁴ *Ibid.*, 825–6; D. Bodansky, 'The Copenhagen Climate Change Conference: A Postmortem', 104(2) *American Journal of International Law* 230, 238 (2010).

⁴¹⁵ The Accord uses two sets of terminology: 'Annex I' and 'non-Annex I'; as well as 'developed countries' and 'developing countries': Copenhagen Accord, paras. 4, 5 and 8.

⁴¹⁶ L. Rajamani, 'The Making and Unmaking of the Copenhagen Accord', 59 *International and Comparative Law Quarterly* 824 (2010).

and less intense media and public scrutiny, the Cancún meeting was able to make modest progress on a number of issues, thus restoring some faith in the capacity of the multilateral climate change process. The conference culminated in the adoption of the two Cancún Agreements: the Convention Cancún Agreement (Convention Agreement)⁴¹⁷ and the Kyoto Cancún Agreement (Kyoto Agreement).⁴¹⁸ These two formal conference decisions reflect progress made in the twin-track Convention and Protocol negotiations since Copenhagen. Both took note of the mitigation targets that formed the Copenhagen Accord pledges.⁴¹⁹

The Convention Agreement, considered the formal successor to the Copenhagen Accord, is the more substantive of the two agreements.⁴²⁰ It incorporates the core elements of the Accord as well as most of the negotiating issues that were left out of the Accord but which were addressed in Convention track negotiations since they were established by the Bali Action Plan.⁴²¹ Significant progress was made in the Convention Agreement in several areas, such as finance, technology, deforestation, and monitoring, reporting and verification (MRV).⁴²² Important elements of the Convention Agreement include: reiteration of the 2°C target with a commitment to review the necessity for further strengthening this goal to limit global average temperature rise to 1.5°C;⁴²³ a formal conference decision on emission reduction pledges;⁴²⁴ an agreement to enhance MRV and international consultation and analysis processes;⁴²⁵ the creation of the Green Climate Fund and associated new climate finance bodies;⁴²⁶ the establishment of an adaptation framework and an adaptation committee;⁴²⁷ the establishment of a new two-part technology mechanism;⁴²⁸ agreement to develop a new deforestation mechanism (REDD+);⁴²⁹ an agreement to consider establishing new market- and non-market-based mechanisms at the next conference;⁴³⁰ a process to review the adequacy of global mitigation efforts;⁴³¹ and the extension of Convention track negotiations.⁴³²

Despite the Convention negotiations at Cancún having progressed beyond what was achieved at Copenhagen, important areas of disagreement remained. There was no consensus reached on a long-term global emissions target, nor any decision made on a peaking year for global emissions. There were two main reasons for the failure to reach an agreement on these points:

⁴¹⁷ Decision 1/CP.16, Report of the Conference of the Parties on Its Sixteenth Session, Cancún, 29 November–10 December 2010, FCCC/CP/2010/7/Add.1 (Convention Agreement).

⁴¹⁸ Decision 1/CMP.6, Conference of the Parties serving as the Meeting of the Parties on Its Sixth Session, 29 November–10 December 2010, FCCC/KP/CMP/2010/12/Add.1 (Kyoto Agreement).

⁴¹⁹ Convention Agreement, para. 36; Kyoto Agreement, para. 3.

⁴²⁰ D. Ryan, E. Juska, C. Changhua Wu, L. Bas and A. Dass, 'Climate Change after Cancún: A Post-COP-16 Analysis', 18(6) *Environmental Liability* 207 (2010).

⁴²¹ Bali Action Plan, Decision 1/CP.13 (14–15 December 2007), COP Report 13, Addendum, at [3], UN Doc. FCCC/CP/2007/6/Add.1 (Bali Action Plan).

⁴²² D. Ryan, E. Juska, C. Changhua Wu, L. Bas and A. Dass, 'Climate Change after Cancún: A Post-COP-16 Analysis', 18(6) *Environmental Liability* 207, 208 (2010).

⁴²³ Convention Agreement, para. 4. The more stringent target has been advocated particularly by small island states that face threats from climate-change-related sea-level rise.

⁴²⁴ *Ibid.*, para. 36. ⁴²⁵ *Ibid.*, paras. 48–67 and 112. ⁴²⁶ *Ibid.*, paras. 102–12. ⁴²⁷ *Ibid.*, para. 20.

⁴²⁸ *Ibid.*, para. 117. See also International Centre for Trade and Sustainable Development, 'The Climate Technology Mechanism: Issues and Challenges' (ICTSD Information Note No. 18, March 2011), available at <http://ictsd.org/downloads/2011/04/technologymechanism.pdf>; and Chapter 16, pp. 685–6, below.

⁴²⁹ Convention Agreement, paras. 68–79. See also F. Daviet, *From Copenhagen to Cancún: Forests and REDD+* (World Research Institute, 23 November 2010), available at www.wri.org/stories/2010/11/copenhagen-cancun-forests-and-redd. REDD+ goes beyond deforestation and forest degradation, and includes the role of conservation, sustainable management of forests and enhancement of forest carbon stocks.

⁴³⁰ Convention Agreement, paras. 80 and 84. ⁴³¹ *Ibid.*, paras. 48–67. ⁴³² *Ibid.*, para. 143.

first, the concern of developing countries about the implications of a global target for their economic development in light of future emissions limitation or reduction responsibilities; and, second, the impasse at Cancún over post-2012 emission reductions targets for developed countries.⁴³³

The parties were also unable to reach an agreement on a general framework for sectoral agreements, such as the treatment of international aviation and maritime transport sectors, with no reference to such matters in the final text of the Convention Agreement. This reflects the lack of consensus on whether sectoral approaches should be voluntary, as well as on the application of the principle of common but differentiated responsibilities.⁴³⁴ A particular obstacle to negotiations around the latter was the ongoing disagreement between developed and developing countries regarding the treatment of the international transport sector.⁴³⁵

The Kyoto Agreement did not progress as far with its track negotiations as the Convention Agreement, with the two-page document reflecting the divergent views on the future of the Kyoto Protocol. The parties did, importantly, agree to continue talks, aiming to complete work 'as early as possible and in time to ensure that there is no gap between the first and second commitment periods'.⁴³⁶ At the Durban conference in 2011, agreement was reached on a second commitment period, running to either 2017 or 2020. Countries such as Japan, Russia and Canada all emphasised that they are not prepared to sign up to a second Kyoto agreement.⁴³⁷

Other areas of the Kyoto negotiations track where the parties were able to reach a consensus include agreements: to use 1990 as a base year for the calculation of emission reductions;⁴³⁸ that countries may use an optional reference year to express their emissions targets 'for [their] own purposes';⁴³⁹ that developed countries may continue to use emissions trading and project-based mechanisms⁴⁴⁰ and LULUCF activities to meet their emissions targets;⁴⁴¹ and that the global warming potentials used to calculate the carbon dioxide equivalence of other greenhouse gas emissions are to be those provided by the IPCC.⁴⁴²

With a view to continuing the negotiations beyond Cancún, the parties, under the leadership of the chair, also developed a set of draft decisions covering key Kyoto track negotiation issues, including emissions targets, land-use and forestry activities, carbon trading and flexibility mechanisms.⁴⁴³

Ongoing negotiations

Despite progress made at Cancún and Durban, significant work remains if a post-2012 climate change framework is to be developed. However, despite observations that Copenhagen, and then Cancún and Durban, were the last opportunities to develop a binding agreement on climate change, the ongoing international negotiations have not yet abandoned the possibility of some kind of new climate change pact achieved through the multilateral process. Whether this will result in the formal legal instrument envisaged for Copenhagen or a more incremental,

⁴³³ D. Ryan, E. Juska, C. Changhua Wu, L. Bas and A. Dass, 'Climate Change after Cancún: A Post-COP-16 Analysis', 18(6) *Environmental Liability* 207, 208 (2010).

⁴³⁴ *Ibid.* ⁴³⁵ *Ibid.* ⁴³⁶ Kyoto Agreement, para. 1.

⁴³⁷ D. Ryan, E. Juska, C. Changhua Wu, L. Bas and A. Dass, 'Climate Change after Cancún: A Post-COP-16 Analysis', 18(6) *Environmental Liability* 207, 208 (2010). In December 2011, Canada announced its withdrawal from the Protocol.

⁴³⁸ Kyoto Agreement, para. 6(a). ⁴³⁹ *Ibid.* ⁴⁴⁰ *Ibid.*, para. 6(b).

⁴⁴¹ *Ibid.*, para. 6(c). ⁴⁴² *Ibid.*, para. 6(d).

⁴⁴³ FCCC/KP/AWG/2010/CRP.4/Rev.4, including the question of whether carbon capture and storage is an eligible activity under the CDM; D. Ryan, E. Juska, C. Changhua Wu, L. Bas and A. Dass, 'Climate Change after Cancún: A Post-COP-16 Analysis', 18(6) *Environmental Liability* 207, 209 (2010).

evolutionary approach remains to be seen.⁴⁴⁴ In light of ongoing disagreements and broader domestic and international political constraints, the outcomes from Copenhagen and Cancún may represent the most that is possible to achieve under the Convention framework.⁴⁴⁵ However, the commitments made at Durban in 2011, for countries to ‘launch a process to develop a protocol, another legal instrument or an agreed outcome with legal force under the Convention applicable to all Parties’, offers new hope that the negotiations will lay sufficient groundwork for a new, comprehensive internationally binding climate agreement to be reached before 2015 and be in force by 2020. The next Conference of the Parties will be held in Qatar from 26 November to 7 December 2012. Preparations for future Conferences of the Parties are under way, in particular through intersessional climate talks.⁴⁴⁶

OUTER SPACE

The international laws discussed so far in this chapter have been concerned with atmospheric protection where the ‘atmosphere’ is conceived as the gaseous envelope surrounding the Earth.⁴⁴⁷ Beyond the reaches of the atmosphere, however, lies the realm of outer space. Environmental problems in outer space are of three types: orbital space debris; environmental damage caused on or to other planets as a result of human exploratory activity; and environmental damage caused on Earth as a result of man-made objects falling from space. The international legal regime regulating environmental aspects of outer space includes three treaties and two sets of principles: the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space Including the Moon and Other Celestial Bodies (1967 Outer Space Treaty);⁴⁴⁸ the Convention on Registration of Objects Launched into Outer Space (1975 Space Registration Convention);⁴⁴⁹ the Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (1979 Moon Treaty);⁴⁵⁰ and the Principles Relevant to the Use of Nuclear Power Sources in Outer Space (1992 Outer Space Principles).⁴⁵¹ The 1972 Space Liability Convention is considered in Chapter 17 below.

Four of these agreements were adopted before environmental considerations had become an important international legal issue, and do not reflect some of the legal innovations which have occurred in the past decade. In the meantime, increased human activity in outer space has contributed to greater environmental threats. It has been estimated that space debris now comprises some 7,000 pieces of debris larger than ten centimetres; 17,500 pieces of between one and ten centimetres; and 3,500,000 pieces of less than one centimetre.⁴⁵² Space debris constitutes an environmental hazard as it increases the risk of collision and consequential

⁴⁴⁴ *Ibid.*

⁴⁴⁵ See e.g. D. Bodansky, ‘The Copenhagen Climate Change Conference: A Postmortem’, 104(2) *American Journal of International Law* 230, 240 (2010).

⁴⁴⁶ E.g. Bonn, Germany, in May 2012. ⁴⁴⁷ IPCC, *Fourth Assessment Report: Climate Change 2007* (2007).

⁴⁴⁸ London, Moscow and Washington, 27 January 1967, in force 10 October 1967, 610 UNTS 205.

⁴⁴⁹ 14 January 1975, in force 15 September 1976, 28 UST 695.

⁴⁵⁰ New York, 5 December 1979, in force 11 July 1984, 18 ILM 1434 (1979).

⁴⁵¹ UNGA Res. 47/68, 32 ILM 917 (1993). See also the Declaration on International Co-operation in the Exploration and Use of Outer Space for the Benefit and in the Interest of All States, Taking into Particular Account the Needs of Developing Countries, UNGA Res. 51/122.

⁴⁵² Figures cited in L. D. Roberts, ‘Addressing the Problem of Orbital Space Debris: Combining International Regulatory and Liability Regimes’, 15 *Boston College International and Comparative Law Review* 53 (1992); the sources of debris include fragments caused by explosion, hyper-velocity impact or deterioration of the surfaces of payloads, as well as inactive payloads, spent rocket thrusters and other material produced by spacecraft operations: *ibid.*, 54–5.

damage; because of the high speed at which objects in orbit travel, objects as small as one centimetre can penetrate the crew compartments of spacecraft, and debris 0.5 millimetres in size can kill an astronaut protected only by a spacesuit.⁴⁵³

1967 Outer Space Treaty

The 1967 Outer Space Treaty states that the exploration and use of outer space (including the Moon and other celestial bodies) is to be carried out for the benefit and interests of all countries, and shall be ‘the province of all mankind’.⁴⁵⁴ Outer space is not subject to national claims of sovereignty and all activities are to be carried out in the interest of maintaining international peace and security.⁴⁵⁵ The Treaty includes provisions with important implications for environmental protection. In particular, nuclear weapons and other weapons of mass destruction may not be placed in orbit around the Earth, installed on celestial bodies, or stationed in outer space, and the Moon and other celestial bodies may only be used for ‘peaceful purposes’.⁴⁵⁶

Article IX sets out some fundamental obligations:⁴⁵⁷ exploration and use of outer space is to be guided by the principle of co-operation and mutual assistance, and all activities are to be conducted ‘with due regard to the corresponding interests’ of all other parties to the Treaty. Moreover, studies and exploration of outer space must avoid ‘the harmful contamination and adverse changes in the environment of the earth resulting from the introduction of extra-territorial matter’. Parties are also under an obligation to undertake ‘appropriate international consultations’ before proceeding with activities or experiments that may cause ‘potentially harmful interference’ with activities of other states parties. It is evident that the approach of Article IX is directed towards the protection of human beings, rather than the protection of the environment as an end in itself.

1979 Moon Treaty

The 1979 Moon Treaty, which applies to the Moon and celestial bodies other than the Earth, provides that the Moon and its natural resources are the ‘common heritage of mankind’ and are to be used exclusively for peaceful purposes.⁴⁵⁸ Exploration and use of the Moon is the province of all mankind, and due regard is to be paid in activities relating to it, and to the interests of present and future generations.⁴⁵⁹ Article 7 sets out provisions on the protection of the environment of celestial bodies going beyond that established in the 1967 Outer Space Treaty. In their exploration and use of the Moon, the parties are required to:

take measures to prevent the disruption of the existing balance of its environment whether by introducing adverse changes in that environment, by its harmful contamination through the introduction of extra-environmental matter or otherwise. States parties shall also take measures to avoid harmfully affecting the environment of the earth through the introduction of extra-territorial matter or otherwise.⁴⁶⁰

⁴⁵³ *Ibid.*, 55. ⁴⁵⁴ Art. I. ⁴⁵⁵ Arts. II and III. ⁴⁵⁶ Art. IV.

⁴⁵⁷ The 1967 Treaty also includes provisions on international responsibility and liability (Arts. VI and VIII): see Chapter 17, pp. 727–9, below.

⁴⁵⁸ Arts. 1(1), 3(1) and 11(1). ⁴⁵⁹ Art. 4(1).

⁴⁶⁰ Art. 7(1). Parties are also required to take all practicable measures to safeguard the life and health of persons on the Moon: Art. 10(1).

The 1979 Treaty does not prohibit the placement of radioactive materials on the Moon but does require the UN Secretary General to be notified in advance of all such placements. The Treaty also provides for the possible designation of international scientific preserves.⁴⁶¹ The exploitation of the natural resources of the Moon is not prohibited by the Treaty. Instead, the parties agree to establish an international regime to govern such exploitation when it is about to become feasible, and to include in such a regime provisions for the orderly and safe development and rational management of the Moon's natural resources.⁴⁶² Although the provisions on the exploitation of the Moon's natural resources do not expressly refer to the need to establish rules on environmental protection, they should be read as being subject to the environmental protection requirements established by Article 7. The 1979 Moon Treaty includes provisions on international responsibility and recognises the need to develop arrangements on liability.⁴⁶³

Outer Space Principles

The eleven Principles Relevant to the Use of Nuclear Power Sources in Outer Space, which were adopted by the UN General Assembly in December 1992, were prepared by the Committee on the Peaceful Uses of Outer Space.⁴⁶⁴ In order to minimise the quantity of radioactive material in space, Principle 3 provides that the use of nuclear power sources in space is to be restricted to those missions that cannot be operated by non-nuclear energy sources in a reasonable way. To that end, the Principles establish general goals for radioactive protection and safety, including the requirement that hazards in foreseeable operational or accidental circumstances are kept within acceptable levels and that radioactive material does not cause a 'significant contamination' of outer space.⁴⁶⁵ The use of nuclear reactors in space is limited to interplanetary missions, in sufficiently high orbits and to low earth orbits if they are subsequently stored in sufficiently high orbits,⁴⁶⁶ and only highly enriched uranium-235 may be used as fuel. Radioisotope generators may only be used for interplanetary missions and other missions leaving Earth's gravity.⁴⁶⁷ The Principles also include rules on safety assessment, the notification of re-entry, consultation and assistance to states, and on responsibility and liability.⁴⁶⁸

CONCLUSIONS

Despite its slow start, the rules of international law governing the protection of the atmosphere and outer space are now among the most detailed and complex in international environmental law. As described in this chapter, regional and global developments have taken place which establish significant limitations on the right of states to allow emissions of gases which cause urban and transboundary air pollution, depletion of the ozone layer, and increased atmospheric concentrations of greenhouse gases. In so doing, a broad range of regulatory techniques has been deployed, including the total phase-out of the production and consumption of certain ozone-depleting substances, the use of a 'target-and-timetable' approach, differentiated commitments for developed and developing countries, and innovative new instruments addressing

⁴⁶¹ Art. 7(2) and (3). ⁴⁶² Art. 11(5) and (7)(a) and (b). ⁴⁶³ Art. 14. ⁴⁶⁴ UNGA Res. 47/68 (1992).

⁴⁶⁵ Principle 3(1)(a). Acceptable levels are defined in Principle 3(1)(b) and (c), including recommendations of the ICRP, generally accepted international radiological protection guidelines and specified numerical values.

⁴⁶⁶ Principle 3(2). ⁴⁶⁷ Principle 3(3). ⁴⁶⁸ Principles 4–7; see Chapter 17, pp. 729–9, below.

the attainment of the objectives of the ozone depletion and climate change regimes. Supplementing these substantive commitments and techniques are a number of novel institutional arrangements (to provide technical assistance and address non-compliance), as well as new procedural obligations, recognition of the primary responsibility of industrialised nations, and the establishment of financial arrangements to encourage the participation of developing countries in new global rules.

The international rules governing the protection of the atmosphere are at the cutting edge of international environmental law. They have attracted interest from states, scientists, business and environmental organisations largely because of the significance of the threat they seek to address and the broad scope of the activities they embrace, including in particular the transport and energy sectors. These are far-reaching and relatively speedy developments. Nevertheless, major gaps remain to be addressed. First, in relation to urban and transboundary air pollution, the rules are almost entirely applicable to developed countries in the OECD/UNECE/EU context; as rapid industrialisation takes place in other regions, there is a need to develop rules to address these related problems. Recent framework agreements concluded in the Asian and African regions suggest this process is underway,⁴⁶⁹ sponsored by UNEP in a manner similar to its successful Regional Seas Programme. Second, with the coming into force of agreements such as the 1999 Gothenburg Protocol, the 1999 Amendments to the Montreal Protocol and the 1997 Kyoto Protocol to the Climate Change Convention, attention now needs to be given to the enforcement of these agreements (including independent verification that targets and timetables have been and are being complied with) as well as the financial arrangements necessary to encourage the participation of developing countries. Third, international lawyers will need to address a myriad of legal issues thrown up by the development of innovative international mechanisms and techniques to assist in compliance: tradeable permits, 'joint implementation' and the Clean Development Mechanism are among the regulatory approaches that raise political, economic and legal questions which have not been fully addressed or understood.

Perhaps the greatest challenge, however, lies in the area of developing the international climate change regime. Arrangements for the period post-2012 need to be put in place as a matter of urgency to ensure the international community is able to avoid the worst predicted effects of climate change. Whether these arrangements will take the form of a new global treaty under the auspices of the 1992 Climate Change Convention, a series of regional agreements or a much looser collection of legal, regulatory and private sector initiatives is not yet settled. Some remain optimistic that the experience of the LRTAP regime and 1987 Montreal Protocol will provide sound foundations for the evolution of rules for the international regulation of climate change. Others fear that these legal precedents have limited relevance for the more complex problem of climate change given the need to address the interests of a wider range of states (developed and developing countries) and the lack of readily available, economically feasible substitutes for fossil fuel combustion, which is the source of the bulk of global greenhouse gas emissions. What seems certain, however, is that this field will continue to challenge the skills of public international lawyers, who will increasingly have to intersect with the work of commercial and private sector lawyers involved in the practical implementation of these arrangements, as well as a wider range of actors such as economists, scientists, NGOs and business organisations.

⁴⁶⁹ See note 43 above.

8

Freshwater resources

INTRODUCTION

A well-developed body of international rules to prevent pollution of freshwater resources (including rivers, lakes, groundwaters and reservoirs) is set forth in bilateral and regional treaties, as well as in the guidelines in non-binding instruments adopted by UNEP, OECD, UNECE and other international organisations, including those in the non-governmental sector, such as the ILA and the IDL.¹ In 1997, under the auspices of the UN, and building on the work of the ILC, a global framework Convention on the Law of Non-Navigational Uses of International Watercourses (1997 Watercourses Convention) was adopted, elements of which are broadly recognised to reflect customary law.²

¹ R. Baxter, *The Law of International Waterways* (1964); C. B. Bourne, 'International Law and Pollution of International Rivers and Lakes', 21 *University of Toronto Law Journal* 193 (1971); A. Utton, 'International Water Quality Law', 13 *Natural Resources Journal* 282 (1973); J. Lammers, *Pollution of International Watercourses: A Search for Substantive Rules and Principles* (1984); J. Sette-Camara, 'Pollution of International Rivers', 186 *Recueil des Cours* 117 (1984); H. Ruiz Fabri, 'Règles Coutumières Générales et Droit International Fluvial', *Annuaire Français de Droit International* 818 (1990); D. Caponera, *Principles of Water Law and Administration, National and International* (1992); A. Nollkaemper, *The Legal Regime for Transboundary Water Pollution: Between Discretion and Constraint* (1993); E. Benvenuti, 'Collective Action in the Utilization of Shared Freshwater: The Challenges of International Water Resources Law', 90 *American Journal of International Law* 384 (1996); S. McCaffrey, 'The Harmon Doctrine One Hundred Years Later: Buried, Not Praised', 36 *Natural Resources Journal* 659 (1996); S. Toope and J. Brunnée, 'Environmental Security and Freshwater Resources: Ecosystem Regime Building', 91 *American Journal of International Law* 26 (1997); S. Salman and L. Boisson de Chazournes (eds.), *International Watercourses: Enhancing Co-operation and Managing Conflict* (World Bank Technical Paper No. 414, 1998); M. Fitzmaurice, 'General Principles Governing the Cooperation Between States in Relation to Non-Navigational Uses of International Watercourses', 14 *Yearbook of International Environmental Law* 3 (2003); S. McCaffrey, *The Law of International Watercourses* (2007, 2nd edn); O. McIntyre, *Environmental Protection of International Watercourses under International Law* (2007); K. Malla, 'Current State of the Law of International Watercourses: Progress and Paradigm Shifts 1815–2008', 77 *Nordic Journal of International Law* 461 (2008); P. Sands, 'Water and International Law: Science and Evidence in International Litigation', 22 *Environmental Law and Management* 151 (2010). See also D. Hunter, J. Salzman and D. Zaelke, *International Environmental Law and Policy* (2011, 4th edn), Chapter 13; D. Freestone and M. Salman, 'Ocean and Freshwater Resources', in D. Bodansky, J. Brunnée and E. Hey (eds.), *The Oxford Handbook of International Environmental Law* (2007), Chapter 15; M. Fitzmaurice, 'The Relationship Between the Law of International Watercourses and Sustainable Development', in M. Fitzmaurice, D. M. Ong and P. Merkouris (eds.), *Research Handbook on International Environmental Law* (2010), Chapter 28; P. Birnie, A. Boyle and C. Redgwell, *International Law and the Environment* (2009, 3rd edn), Chapter 10.

² Adopted on 21 May 1997, by UNGA Res. 51/229, 36 ILM 700 (1997), not yet in force. See also Committee on Economic, Social and Cultural Rights, General Comment No. 15 (Right to Water), 26 November 2002; and Chapter 18, p. 780, below.

These agreements have emerged for geographical and political reasons: nearly half of the world's river basins are shared by two or more countries, and, although they comprise only about 3 per cent of the volume of water on the planet, they provide the vast majority of the supply used in human activity. Nearly 90 per cent of the total freshwater on the planet is locked into ice caps or glaciers, in the atmosphere or soil, or is deep underground.³ Thus, the primary source of the planet's available supply of freshwater is in rivers, lakes and reservoirs. Scientists have estimated that the average amount of global runoff (the amount of water that is available for human use after evaporation and infiltration takes place) is between 39,500 km³ and 42,700 km³ a year, of which only around 9,000 km³ is readily accessible to humans, with an additional 3,500 km³ stored in reservoirs.⁴ Rainfall varies widely. Heavy rainfall in the Amazon Basin and south and southeast Asia compares with lower rainfall in arid and semi-arid states, which receive only 2 per cent of the world's runoff.⁵ Currently, more than 40 per cent of the world's population lives in conditions of water stress,⁶ and, if current consumption patterns continue, this figure is estimated to grow to two-thirds of the world's population by 2025.⁷ In Africa alone, 75 to 250 million people may be exposed to increased water stress as a result of climate change by 2020.⁸ Current threats to freshwater resources are two-fold: increased use, and declining quality as a result of anthropogenic sources of pollution. Future threats include climate change,⁹ which could cause significant changes in rainfall patterns and increase the frequency of extreme weather events, such as droughts;¹⁰ and population growth increasing the worldwide demand for water. Rapid population growth has seen water use triple between 1959 and 2009.¹¹ Of this use, it is estimated that approximately 70 per cent is for agriculture, 20 per cent for industry and energy and the remainder for domestic use.¹²

Industrial and agricultural activities and population growth have increased the demand for water, urgently requiring new management techniques. Options include improved efficiency in use; greater re-use; reallocation of water; and limiting pollution of supplies. For pollution, the direct discharge of municipal and industrial waste into rivers and lakes has been reduced in many developed countries, but pollution from diffuse sources (non-point-source pollution) has proved to be more difficult to control. Non-point-source pollution includes agricultural, industrial and urban runoff, which transports pesticides, nitrates, phosphates and other pollutants

³ World Resources Institute, *World Resources 1992–3*, 160. See also World Water Assessment Programme, *The United Nations World Water Development Report 3: Water in a Changing World* (2009), 29.

⁴ C. Revenga, J. Brunner, N. Henninger, K. Kassem and R. Payne, *Pilot Analysis of Global Ecosystems: Freshwater Systems* (World Resources Institute, 2000), 25.

⁵ *Ibid.*

⁶ *Ibid.*, 8. See also Chapter 10, pp. 499–502, below, on international efforts to combat drought and desertification.

⁷ World Water Assessment Programme, *The United Nations World Water Development Report 3: Water in a Changing World* (2009), 36. The report (*ibid.*, 29) notes: 'The world's population is growing by about 80 million people a year, implying increased freshwater demand of about 64 billion cubic metres a year. An estimated 90% of the 3 billion people who are expected to be added to the population by 2050 will be in developing countries, many in regions where the current population does not have sustainable access to safe drinking water and adequate sanitation.'

⁸ *Ibid.*, 19.

⁹ G. Goldenman, 'Adapting to Climate Change: A Study of International Rivers and Their Legal Arrangements', 17 *Ecology Law Quarterly* 741 (1990); World Water Assessment Programme, *The United Nations World Water Development Report 3: Water in a Changing World* (2009), Chapter 5.

¹⁰ IPCC, *Climate Change 2007: Synthesis Report. Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* (2007), 41, 49.

¹¹ World Water Assessment Programme, *The United Nations World Water Development Report 3: Water in a Changing World* (2009), 101.

¹² *Ibid.*, 99.

into the water supply. This source of pollution of freshwater can be divided into three main types: excess nutrients from sewage and soil erosion; pathogens from sewage; and heavy metals and synthetic organic compounds from industry, mining and agriculture.¹³ These and other issues were addressed by UNCED, with Agenda 21 setting out seven programme areas to protect the quality and supply of freshwater resources,¹⁴ of which the two most relevant to the development of international law related to integrated water resources development and management, and protection of water resources, water quality and aquatic ecosystems.¹⁵ The 2002 World Summit on Sustainable Development (WSSD) adopted a number of specific goals, including commitments to halve, by 2015, the proportion of people who are unable to reach or to afford safe drinking water, and the proportion of people without access to basic sanitation.¹⁶

CUSTOMARY LAW

The rules of international environmental law to protect freshwater resources, including international watercourses, from pollution and over-use, are mainly reflected in piecemeal and *ad hoc* responses to problems with particular rivers, lakes and freshwater ecosystems. The most important of these are described in this chapter, although the contents should not be treated as exhaustive. State practice is reflected in this body of treaty law, in decisions of the ICJ and international arbitral tribunals, in the work of the ILC and private organisations, such as the ILA and the IDI, and in national legislation. These generally address the *use* of freshwater and its contamination by *pollution*. Notwithstanding such practice, in the mid-1980s it was authoritatively claimed that ‘there are no rules of global application and, in particular, there is no rule of customary international law prohibiting pollution of international rivers’.¹⁷ If the view was accurate when expressed, it certainly no longer holds good today. Activities which may be harmful to international rivers and other freshwaters are subject to the general principles and rules identified in Chapter 6, including Principle 21 of the Stockholm Declaration and Principle 2 of the Rio Declaration, as well as environmental impact assessment and other procedural requirements associated with the duty to co-operate, which reflect customary law.¹⁸

As early as 1929, the Permanent Court of International Justice (PCIJ) had held that the utilisation of international rivers, including their flow, was subject to international law: the Court identified the ‘community of interests in a navigable river [which] becomes the basis of a common legal right, the essential features of which are the perfect equality of all riparian states in the use of the whole course of the river and the exclusion of any preferential privilege

¹³ C. Revenga, J. Brunner, N. Henninger, K. Kassem and R. Payne, *Pilot Analysis of Global Ecosystems: Freshwater Systems* (World Resources Institute, 2000), 33 (the pollutants include sediments, nutrients, organic materials, disease-causing agents, heavy metals, toxic chemicals, acids, chlorides and increased temperatures).

¹⁴ Agenda 21, Chapter 18, ‘Protection of the Quality and Supply of Freshwater Resources: Application of Integrated Approaches to the Development, Management and Use of Water Resources’.

¹⁵ The other programme areas related to: assessment of water resources; drinking water supply and sanitation; water and sustainable urban development; water and sustainable food production; and the impact of climate change on water resources.

¹⁶ WSSD Plan of Implementation, paras. 24–8.

¹⁷ J. Sette-Camara, ‘Pollution of International Rivers’, 186 *Receuil des Cours* 117–218 at 198 (1984).

¹⁸ See Chapter 6, pp. 191–5 and 204, above; relied upon by Hungary in the *Gabčíkovo-Nagymaros Project* case at the ICJ; see pp. 313–319, below; also relied upon by Argentina in the *Pulp Mills* case at the ICJ; see pp. 330–3, below.

of any one riparian in relation to others'.¹⁹ Some seventy years later, the International Court of Justice (ICJ) revisited the paragraph and extended its application to non-navigational uses:

Modern development of international law has strengthened this principle for non-navigational uses of international watercourses as well, as evidenced by the adoption of the Convention of 21 May 1997 on the Law of the Non-Navigational Uses of International Watercourses by the United Nations General Assembly. The Court considers that Czechoslovakia, by unilaterally assuming control of a shared resource, and thereby depriving Hungary of its right to an equitable and reasonable share of the natural resources of the Danube – with the continuing effects of the diversion of these waters on the ecology of the riparian area of the Szigetköz – failed to respect the proportionality which is required by international law.²⁰

The extended principle reflects an approach that has received wide support from states. It indicates that water resources which are the subject of a 'common legal right', including rivers or lakes or groundwaters, may not be used by states in such a manner as to prevent or otherwise limit other 'riparian' states from making full use of their equitable and reasonable entitlements in relation to that shared resource. Although international law does not prohibit all pollution, it is clear that the quality of freshwaters should not be altered in such a way as to result in significant or substantial damage to the point that the resource may no longer be used, or that its potential for use is materially diminished.²¹

The view that the rights of states in the use of shared rivers are not unlimited is now well established and reflected in customary law. As early as 1933, the Conference of American States declared that the exploitation of international rivers should not injure the rights of the neighbouring states and should be subject to a process of notification and agreement, stating that 'no state may, without the consent of the other riparian state, introduce into water courses of an international character, for the industrial or agricultural exploitation of their waters, any alteration which may prove injurious to the margin of the other interested state'.²² States are subject to a customary obligation to negotiate, consult and co-operate to reach an equitable solution to the problems posed by activities that may affect international rivers providing a shared natural resource, including water pollution and excessive use. This view is reflected in treaties, including some very early ones,²³ and non-binding instruments.²⁴ It is also reflected in the World Bank's Operational Policy 7.50 on Projects on International Waterways, which reflects the Bank's recognition that 'the co-operation and goodwill of riparians is essential for the efficient use and protection of the

¹⁹ *Case Concerning the Territorial Jurisdiction of the International Commission of the River Oder*, Judgment No. 16, PCIJ (1929) Ser. A No. 23, 27. The language was similar to that of the ICJ in the *Fisheries Jurisdiction* case, nearly fifty years later: see Chapter 9, pp. 402–3, below.

²⁰ (1997) ICJ Reports 7, para. 85. See also the Separate Opinion of Judge Kooijmans in the *Kasikili/Sedudu Island* case (*Botswana v. Namibia*) (1999) ICJ Reports 1045, paras. 31–7.

²¹ On the level of pollution which may be permitted, see Australia's answer to a question from Sir Humphrey Waldock in the *Nuclear Tests* cases, Chapter 7, pp. 241–2, above.

²² Declaration on the Industrial and Agricultural Use of the International Rivers, Adopted by the Seventh International Conference of American States, Montevideo, 1933, in Whiteman, 3 *Digest of International Law* 936.

²³ See e.g. Convention Relative to the Development of Hydraulic Power Affecting More Than One State, Geneva, 9 December 1923, 36 LNTS 76; and the 1997 Watercourses Convention, pp. 310–12, below.

²⁴ See pp. 308–10, below; and generally Chapter 6, pp. 213–15, above.

waterway'. To that end, the Bank seeks to ensure that international aspects of a project on an international waterway are dealt with at the earliest possible opportunity, and requires the state receiving financial support formally 'to notify the other riparians of the proposed project and its Project Details'.²⁵ The Bank will not lend if the borrower does not notify or allow the Bank to notify.

Against this background, the law in this area continues to evolve, reflected in an increasing number of judicial pronouncements. The ICJ has confirmed that general international law requires states to undertake an environmental impact assessment (EIA) where there is a risk that a proposed activity may have a significant adverse impact on a shared water resource, although the content of this requirement has not been elaborated.²⁶ And it has indicated that states may also adopt regulatory measures, albeit limited ones, in order to pursue environmental protection, even if this has the effect of restricting the rights of another state over a watercourse.²⁷

Lac Lanoux arbitration

The 'community of interests' approach invoked by the PCIJ in 1929 is reflected in the arbitral award in the *Lac Lanoux* case between France and Spain.²⁸ This concerned a proposal by the French government to authorise the construction of a barrage to channel water through a hydro-electric power plant, diverting approximately 25 per cent of the flow of the Carol River before returning the same amount of water to the river at a point prior to its use by farmers in Spain. The arbitral tribunal held that the proposed French works did not constitute an infringement of Spain's rights under earlier treaties, although the tribunal did suggest that the Spanish claim to an infringement of rights might have been stronger if it had shown, which it had not, that the proposed works would pollute the waters of the River Carol or change the chemical composition, temperature or other characteristics of the waters in such a way as to injure its interests.²⁹ The award considered whether riparian states have any obligation to notify and consult with others who may be potentially affected prior to engaging in activities which may harm a shared river resource. The tribunal held that:

France is entitled to exercise her rights; she cannot ignore Spanish interests. Spain is entitled to demand that her rights be respected and that her interests be taken into consideration.³⁰

However, in finding that France was not in breach of its obligation to take into account Spain's interests in the course of negotiations, the tribunal stated that 'the rule that states may utilise the hydraulic power of international watercourses only on condition of a *prior* agreement between the interested states cannot be established as a custom, even less as a general principle of law'.³¹

²⁵ OP 7.50, June 2001, para. 4. The Bank will ascertain whether the riparians have entered into agreements or arrangements for the international waterway and, following notification, if another riparian raises objections to the proposed project, the Bank may appoint an independent expert to examine the issues (paras. 5 and 6). Para. 7 permits certain limited exceptions.

²⁶ *Pulp Mills case (Argentina v. Uruguay)*, paras. 204–5, pp. 330–3, below.

²⁷ *Case Concerning the Dispute Regarding Navigational and Related Rights (Costa Rica v. Nicaragua)*, pp. 34–6, paras. 85–9. Nicaragua, in adopting measures restricting Costa Rica's navigation rights, was pursuing the legitimate purpose of protecting the environment.

²⁸ 24 ILR 101 (1957). ²⁹ *Ibid.*, 123. ³⁰ *Ibid.*, 140. ³¹ *Ibid.*, 130.

The award indicates the limits imposed by international law on the use of shared natural resources, and on procedural obligations linked to the substantive aspects of environmental protection and conservation. The award heralded provisions now set forth in the regional 1992 UNECE Convention on Watercourses and the potentially global 1997 Watercourses Convention, as well as non-binding rules. It also reflected, however, the limited state of customary law in 1957.

ILA: 1966 Helsinki Rules and beyond

The adoption in 1966 of the ILA's non-binding Helsinki Rules on the Uses of the Waters of International Rivers marked an important further stage in international efforts to manage and protect freshwaters.³² The Helsinki Rules were not the first attempt by international lawyers to consider this question,³³ but reflected a committed effort to identify, in a comprehensive manner, the rights and obligations of states. The Rules govern the use of the waters of an international drainage basin except as otherwise provided by applicable treaty or custom,³⁴ and provide that each basin state is entitled to 'a reasonable and equitable share in the beneficial use' of the waters, in accordance with the relevant factors in each case.³⁵ States are obliged to prevent new forms of water pollution or any increase in the degree of existing pollution which would cause 'substantial injury' in the territory of other basin states, and to take all reasonable measures to abate existing pollution.³⁶ Violation of these obligations creates a responsibility for the injury caused, or requires negotiations to reach an equitable settlement.³⁷ The approach of the Helsinki Rules is generally reflected in the subsequent work of the IDI on pollution of rivers and lakes.³⁸

Since the Helsinki Rules, the ILA has also adopted non-binding Rules on Water Pollution in an International Drainage Basin,³⁹ and Rules on International Groundwaters.⁴⁰ The Groundwaters Rules call on states to prevent or abate the pollution of international groundwaters 'in accordance with international law applicable to existing, new, increased and highly dangerous pollution'.⁴¹ International groundwaters are the 'waters of an aquifer that is intersected by the boundary between two or more states', which are basin states within the meaning of the 1966

³² 20 August 1966, Fifty-Second Report of the International Law Association (1967), 484; 2 IPE 5741. See also ILA, Helsinki Rules on Private Law Remedies for Transboundary Damage in International Watercourses (1996).

³³ See e.g. Institut de Droit International, Resolution on International Regulations Regarding the Use of International Watercourses for Purposes other than Navigation (Preamble), Madrid, 19 April 1911, 11 IPE 5702.

³⁴ Art. I. 'International drainage basin' is described as 'a geographical area extending over two or more States determined by the watershed limits of the system of waters, including surface and underground waters, flowing into a common terminus': Art. II.

³⁵ Arts. III, IV and V(1).

³⁶ Art. X(1). 'Water pollution' is defined as 'any detrimental change resulting from human conduct in the natural composition, content or quality' of waters: Art. IX.

³⁷ Art. XI.

³⁸ Resolution on Pollution of Rivers and Lakes and International Law, Athens, 1979, 58-1 *Annuaire de l'Institut de Droit International* 193 (1979).

³⁹ Montreal, 4 September 1982, Sixtieth Report of the International Law Association (1983), 535.

⁴⁰ Seoul, 30 August 1986, 62 ILA 251 (1987); on the background, see D. Caponera and D. Alhèritière, 'Principles for International Groundwater Law', 18 *Natural Resources Journal* 589 (1978); L. Teclaff and E. Teclaff, 'Transboundary Groundwater Pollution: Survey and Trends in Treaty Law', 19 *Natural Resources Journal* 629 (1979); L. Teclaff and A. Utton, *International Groundwater Law* (1981); M. Papas, 'International Groundwater Protection: An Australian Perspective', 19 *Water Law* 229 (2008).

⁴¹ Art. 3(1).

Helsinki Rules.⁴² In 2004, the ILA adopted the Berlin Rules on Water Resources to update and replace the Helsinki Rules.⁴³ By Article 1, the Rules purport to ‘express international law applicable to the management of the waters of international drainage basins and applicable to all waters, as appropriate’. The Rules are divided into fourteen chapters, and are intended to update and replace the 1966 Rules, but they were not adopted with the unanimous support of all members of the ILA Committee, and four members put in a strong dissent, including the comment that the Berlin Rules ‘mark a radical and unwarranted departure from existing customary law’ and that their adoption ‘would diminish the influence and reputation of the ILA’.⁴⁴ Chapter II deals with principles of management for all waters, including principles on participation, conjunctive management, integrated management and sustainability, and a commitment that states ‘shall take all appropriate measures to prevent or minimize environmental harm’ (Article 9). Chapter III addresses internationally shared waters, and includes rules on participation, co-operation and equitable utilisation, as well as preferences amongst uses and the obligation of basin states to ‘refrain from and prevent acts or omissions within their territory that cause significant harm to another basin State having due regard for the right of each basin State to make equitable and reasonable use of the waters’ (Article 16). Chapter IV reflects a new direction on the rights of persons, including access to water and public participation, and the protection of particular communities. Chapter V provides for the protection of the aquatic environment, including ecological integrity and the precautionary approach, prevention of the introduction of hazardous substances and pollution and the establishment of water quality standards. Chapter VI addresses the details of environmental impact assessment, and Chapter VII deals with extreme situations. Chapter VIII addresses the protection of groundwaters, including aquifers, and Chapter IX deals with navigation. Chapter X provides for the protection of waters and water installations during times of war and armed conflict, and Chapter XI addressed general rules on international co-operation, including exchange of information, notification and consultation, as well as the harmonisation of national laws (Article 62). Chapter XII provides for state responsibility, Chapter XIII provides for legal remedies, and Chapter XIV addresses the settlement of international disputes.

These non-governmental efforts have been followed by non-binding instruments adopted under the auspices of international organisations, including recommendations and guidelines developed by the UN⁴⁵ and UNEP,⁴⁶ the OECD⁴⁷ and the UNECE, as well as a large

⁴² Art. 1. The Rules use the term ‘aquifer’ to include ‘all underground water bearing strata capable of yielding water on a practicable basis, whether these are in other instruments or contexts called by another name such as “groundwater reservoir”, “groundwater catchment area” etc. including the waters in fissured or fractured rock formations and the structures containing deep, so-called “fossil waters”’: *ibid.*

⁴³ Seventy-First Report of the International Law Association (2004), 344.

⁴⁴ ILA Berlin Conference 2004 – Water Resources Committee Report Dissenting Opinion (Slavko Bogdanovic, Charles Bourne, Stefano Burchi, Patricia Wouters), available at www.internationalwaterlaw.org/documents/intldocs/ila_berlin_rules_dissent.html.

⁴⁵ UN Water Conference, Recommendation on Environment and Health, Mar del Plata, 25 March 1977, 26 IPE 166, E/CONF.70/29.

⁴⁶ UNEP, Environmental Guidelines for Watershed Development, UNEP EMG #3 (1982).

⁴⁷ See OECD Council Recommendation, Control of Eutrophication of Waters, 14 November 1974, OECD C(74)220; OECD Council Recommendation, Strategies for Specific Water Pollutants Control, 14 November 1974, OECD C(74)221; OECD Council Recommendation, Water Management Policies and Instruments, 5 April 1978, OECD C(78)4 (Final).

number of conventions and the EU Water Framework Directive, which have sought to take a drainage basin approach.⁴⁸

ILC: 1997 Watercourses Convention⁴⁹

This body of instruments, together with the treaties identified and described subsequently in this chapter, provided the background for the negotiation and adoption of the 1997 Watercourses Convention, which was based on the codification efforts of the ILC as reflected in the draft Articles on the Law of Non-Navigational Uses of International Watercourses.⁵⁰ The 1997 Convention applies to uses of international watercourses and their waters for purposes other than navigation, and encourages watercourse states to enter into watercourse agreements.⁵¹ It establishes a framework of general principles to guide the behaviour of states, and its general approach has been noted with apparent approval by the ICJ.⁵²

The Convention comprises an introductory section, and five operational parts. Part II proposes general principles. The Convention is without prejudice to rights and obligations arising from agreements already in force (Article 3(1)), and permits states to enter into new agreements which 'apply and adjust' its provisions 'to the characteristics and uses of a particular international watercourse' (Article 3(3)). Article 5 of the Convention is of central importance: it provides that watercourse states 'shall . . . utilise an international watercourse in an equitable and reasonable manner', which requires the optimal and sustainable utilisation of the watercourse and its benefits 'consistent with adequate protection of the watercourse'.⁵³ The right to equitable utilisation is balanced by the requirement of Article 7 (together with the obligation to prevent pollution, as required by Article 21), which commits watercourse states to 'take all appropriate measures to prevent the causing of significant harm to other watercourse States'. Where significant harm is nevertheless caused, the responsible state must take all

⁴⁸ L. Teclaff and E. Teclaff, 'Transboundary Toxic Pollution and the Drainage Basin Concept', 25 *Natural Resources Journal* 589 (1985); 'The International Law of the Hydrologic Cycle', 31 *Natural Resources Journal* 213 (1991) (special issue) (1991).

⁴⁹ L. Caflisch, 'La Convention du 27 Mai 1997 sur l'Utilisation des Cours d'Eau Internationaux à des Fins Autre Que la Navigation', 43 *Annuaire Français de Droit International* 751 (1997); C. Bourne, 'The Primacy of the Principle of Equitable Utilization in the 1997 Watercourses Convention', 35 *Canadian Yearbook of International Law* 222 (1997); S. McCaffrey, C. Stephen and M. Sinjela, 'The 1997 United Nations Convention on International Watercourses', 92 *American Journal of International Law* 97 (1998); P. Wouters, 'The Legal Response to International Water Conflicts: The UN Water Convention and Beyond', 42 *German Yearbook of International Law* 293 (1999); A. Tanzi and M. Arcari, *The UN Convention on the Law of International Watercourses* (2000).

⁵⁰ 30 ILM 1575 (1991). The ILC's work began in 1971, following a request from the UN General Assembly. A first reading of a full set of draft Articles was adopted at the ILC's forty-third session in 1991, and a revised set of draft Articles was adopted in 1994. The tension between the interests of upstream and downstream states was tangible during the course of the ILC's efforts, and in the diplomatic negotiations leading to the adoption of the 1997 Convention.

⁵¹ Arts. 1(1), 3 and 4. 'Watercourse' is defined as a 'system of surface and ground waters constituting by virtue of their physical relationship a unitary whole and normally flowing into a common terminus': Art. 2(a). 'International watercourse' means 'a watercourse, parts of which are situated in different States': Art. 2(b).

⁵² See note 91 below.

⁵³ Art. 5. Art. 6 identifies a non-exhaustive list of factors and circumstances which are to be taken into account to ensure an equitable and reasonable utilisation, including: (a) geographic and other factors of a natural character; (b) social and economic needs; (c) population; (d) effects on uses in another watercourse state; (e) existing and potential uses; (f) conservation of water resources; and (g) availability of alternatives. On its customary status, see Separate Opinion of Judge Kooijmans in the *Kasikili/Sedudu* case, note 20 above.

appropriate measures, in consultation with the affected state, to eliminate or mitigate the harm and, 'where appropriate, to discuss the question of compensation'.⁵⁴

Other principles require states to co-operate and regularly exchange data and information,⁵⁵ and deal with the relationship between different kinds of uses of a watercourse.⁵⁶ Part III is concerned with planned measures that may have an effect on an international watercourse. It establishes a phased procedure comprising information exchange and consultation, notification, and a waiting period of six months to allow for a reply to the notification, during which time the notifying state 'shall not implement or permit the implementation of the planned measures without the consent of the notified state'.⁵⁷ The Convention envisages a reply to notification, consultations and negotiations, and procedures to be followed in the absence of a notification or a reply, or where urgent implementation of a particular measure is required.⁵⁸

Part IV deals specifically with the protection, preservation and management of ecosystems, which watercourse states are under an obligation, jointly or individually, to protect and preserve.⁵⁹ Article 21 provides that pollution which may cause 'significant' harm to other watercourse states or their environment is to be prevented, reduced and controlled, and states should consult among themselves to establish lists of substances which should be prohibited, limited, investigated or monitored.⁶⁰ New or alien species which may have detrimental effects on the ecosystem resulting in significant harm to other watercourse states should not be introduced,⁶¹ and watercourse states are required to take all measures necessary to protect and preserve the marine environment, taking into account generally accepted international rules and standards.⁶² Watercourse states are required, at the request of any of them, to enter into consultations concerning the management of an international watercourse, which may include the establishment of a joint management mechanism.⁶³ They must also co-operate, where appropriate, in 'response to needs and opportunities for regulation of the flow of the waters of an international watercourse' through the use of hydraulic works, and within their own territories, and must employ their best efforts to maintain and protect installations, facilities and other works related to an international watercourse.⁶⁴ Part V deals with harmful conditions and emergency situations, and Part VI establishes miscellaneous provisions on, *inter alia*, armed conflict, indirect contacts between watercourse states, confidentiality of certain data, and non-discrimination.⁶⁵ Part VI also contains a dispute settlement provision which directs parties to seek settlement of any dispute concerning the Convention initially by way of negotiation, mediation, conciliation or submission of the dispute to arbitration or to the ICJ with the agreement of both parties.⁶⁶ Under Article 33(10), parties may elect, when ratifying, accepting, approving or acceding to the Convention, or at any time thereafter, to submit a written declaration recognising the jurisdiction of the ICJ or an arbitral tribunal constituted in accordance with the Convention's Annex as 'compulsory *ipso facto* and without special

⁵⁴ Art. 7(1) and (2). ⁵⁵ Art. 9.

⁵⁶ Art. 10. It is stated that, in the absence of agreement or custom to the contrary, 'no use of an international watercourse enjoys inherent priority over other uses': Art. 10(1).

⁵⁷ Arts. 11–14. ⁵⁸ Arts. 15–19. ⁵⁹ Art. 20.

⁶⁰ Art. 21(2) and (3). 'Pollution' is defined broadly as 'any detrimental alteration in the composition or quality of the waters of an international watercourse which results directly or indirectly from human conduct': *ibid.*, Art. 21(1).

⁶¹ Art. 22. ⁶² Art. 23. ⁶³ Art. 24. ⁶⁴ Arts. 25 and 26. ⁶⁵ Arts. 29–32. ⁶⁶ Art. 33(2).

agreement in relation to any party accepting the same obligation'.⁶⁷ Alternatively, if the conditions in Article 33(10) are not met and the dispute is not resolved within six months of the initial request for negotiations, the dispute can be submitted, at the option of either of the parties, to an impartial fact-finding commission.⁶⁸ The parties are to provide the commission with such information as it may require and must permit members of the commission to have access to the state's territory for the purpose of inspecting facilities, plant or equipment, construction works or any natural feature relevant for the purpose of the commission's inquiry.⁶⁹ The commission reports back to the parties and may make recommendations designed to secure 'an equitable solution of the dispute', which the parties are required to consider in good faith.⁷⁰

The Convention marks an important development by stating rules of general application which are capable of global application. It provides an important starting point, and reflects minimum international standards below which states may not fall, indicating the basis upon which states can further their efforts to achieve co-operative arrangements with their neighbours in the use of shared freshwater resources. It remains to be seen how practice and jurisprudence establish the balance between the right to equitable utilisation and the obligation not to cause significant harm, which will necessarily turn on a case-by-case approach.

ILC 2008: Articles on Transboundary Aquifers⁷¹

In 2008, the ILC adopted its draft Articles on the Law of Transboundary Aquifers, drawing largely from the approach of the 1997 Watercourses Convention.⁷² The Articles provide that each aquifer state 'has sovereignty over the portion of a transboundary aquifer or aquifer system located within its territory' and 'shall exercise its sovereignty in accordance with international law and the present draft articles' (Article 3). According to general principles set forth in Part II, such states must use transboundary aquifers or aquifer systems 'according to the principle of equitable and reasonable utilization' (Article 4) and shall 'take all appropriate measures to prevent the causing of significant harm to other aquifer States or other States in whose territory a discharge zone is located' (Article 6). The Articles provide for a general obligation to co-operate (Article 7), exchange of information (Article 8) and bilateral and regional arrangements (Article 9). Part III is concerned with protection, preservation and management, including the protection of ecosystems (Article 10), of recharge and discharge zones (Article 11) and the prevention, reduction and control of pollution (Article 12), and monitoring (Article 13). Part IV deals with other matters, including protection in times of war and armed conflict, emergency situations and national security. The Articles have no provision on the settlement of disputes.

⁶⁷ Art. 33(10). ⁶⁸ Art. 33(4)–(6). ⁶⁹ Art. 33(7). ⁷⁰ Art. 33(8).

⁷¹ S. C. McCaffrey, 'The International Law Commission Adopts Draft Articles on Transboundary Aquifers', 103(2) *American Journal of International Law* 272 (2009); K. Mechlem, 'Moving Ahead in Protecting Freshwater Resources: The International Law Commission's Draft Articles on Transboundary Aquifers', 22(4) *Leiden Journal of International Law* 801 (2009).

⁷² 2006 ILC Report, UN Doc. A/61/10, Chapter VI, 183–245. ILC, 'Report of the International Law Commission on the Work of Its Sixtieth Session', 63 UN GAOR, UN Doc. A/63/10 (2008).

Case Concerning the Gabčíkovo–Nagymaros Project⁷³

Notwithstanding the fact that the ICJ did not apparently have jurisdiction, in October 1992 Hungary filed an application to the ICJ to submit its dispute with Czechoslovakia over the construction of the Gabčíkovo and Nagymaros barrages and the diversion of the Danube River in Slovakia.⁷⁴ In July 1993, following further negotiations, Hungary and Slovakia signed a Special Agreement submitting the matter to the ICJ.

The dispute arose over the 1977 Treaty Providing for the Construction and Joint Operation of the Gabčíkovo–Nagymaros Barrage System, according to which Hungary and Czechoslovakia agreed to build the Dunakiliti dam and reservoir, a barrage system including two hydro-electric power stations (one on Czechoslovak territory at Gabčíkovo, and one on Hungarian territory at Nagymaros), and a 25 km by-pass canal for diverting the Danube from its original course through a system of locks and then back to its original course.⁷⁵ The power generators were originally due to begin operation between 1986 and 1990 but the deadline was subsequently put back to 1994. In 1988, as a result of public pressure, the Hungarian Parliament resolved that ecological interests should take priority over economic considerations and prompted the government to order a re-evaluation of the project. This led to a decision by the Hungarian government in May 1989 to suspend construction on its part of the Gabčíkovo barrage, and work on the Nagymaros barrage.⁷⁶ Following diplomatic exchanges and unsuccessful negotiations between experts appointed by both sides, the Czechoslovak government decided to continue with a ‘provisional solution’ to limit construction works and the unilateral diversion of the Danube to the Slovak territory.⁷⁷ In February 1992, Hungary formally protested against the ‘provisional solution’ and the unilateral diversion. In April 1992, the European Commission accepted a request by the two governments to play a conciliation role and to chair a trilateral committee of experts to find a technically feasible solution. The European Commission asked both sides to refrain from taking steps during the investigation that would prejudice the committee’s findings.⁷⁸ On 19 May 1992, Hungary sought unilaterally to terminate the 1977 Treaty with effect from 25 May 1992.⁷⁹ In October 1992, following the failure to settle the dispute, Hungary filed its Original Application with the ICJ, and later that month Czechoslovakia diverted a significant proportion of the Danube into a by-pass canal.

In July 1993, by Special Agreement the two sides asked the ICJ to consider the legality of certain acts of each state. The Agreement, which asked the ICJ to decide, on the basis of the 1977 Treaty and ‘rules and principles of general international law’, three questions: (1) whether

⁷³ *Case Concerning the Gabčíkovo–Nagymaros Project* (1997) ICJ Reports 7; S. Stec and G. Eckstein, ‘Of Solemn Oaths and Obligations: The Environmental Impact of the ICJ’s Decision in the Case Concerning the Gabčíkovo–Nagymaros Project’, 8 *Yearbook of International Environmental Law* 41 (1997); C. Bourne, ‘The Case Concerning the Gabčíkovo–Nagymaros Project: An Important Milestone in International Water Law’, 8 *Yearbook of International Environmental Law* 3 (1997); A. E. Boyle, ‘The Gabčíkovo–Nagymaros Case: New Law in Old Bottles’, 8 *Yearbook of International Environmental Law* 13 (1997); J. Klabbbers, ‘The Substance of Form: The Case Concerning the Gabčíkovo–Nagymaros Project, Environmental Law, and the Law of Treaties’, 8 *Yearbook of International Environmental Law* 32 (1997).

⁷⁴ See Declaration of Hungary on the Termination of the 1977 Treaty on the Construction and Operation of the Gabčíkovo–Nagymaros Barrage System, 16 May 1992, 32 ILM 1260 (1993); Special Agreement Between Hungary and the Slovak Republic for Submission to the ICJ of the Differences Between Them, 32 ILM 1294 (1993). Although Hungary’s Original Application was superseded by the 1993 Special Agreement, it provides interesting historical evidence of Hungary’s views on the rules of customary law concerning the diversion of an international river.

⁷⁵ Budapest, 16 September 1977, 32 ILM 1247 (1993). ⁷⁶ Paras. 3 and 4.

⁷⁷ Paras. 5–8. ⁷⁸ Para. 12. ⁷⁹ Para. 13.

Hungary was entitled to suspend and subsequently abandon the works on the project; (2) whether the Czech and Slovak Federal Republic was entitled to proceed to and put in operation the 'provisional solution'; and (3) what were the legal effects of the notification on 19 May 1992 of the termination of the 1977 Treaty?⁸⁰ Additionally, the ICJ was asked to determine the legal consequences arising from its judgment on these matters. Under the Special Agreement, the parties also agreed to establish and implement a temporary water management regime, and to request immediate consultation if one party believed that the other party's conduct was endangering its rights, and not to seek protection by asking the ICJ to indicate provisional measures.⁸¹

In the proceedings before the ICJ, Hungary sought to rely on a number of grounds under the law of treaties and general rules of state responsibility to justify its suspension of works and subsequent termination of the 1977 Treaty. To justify its conduct, Hungary relied primarily on a 'state of ecological necessity', contending that the various installations in the Gabčíkovo-Nagymaros system of locks had been designed to enable the Gabčíkovo power plant to operate in peak mode. Water would only have come through the plant twice each day, at times of peak power demand. Operation in peak mode required the vast expanse (60 km²) of the planned reservoir at Dunakiliti, as well as the Nagymaros dam, which was to alleviate the tidal effects and reduce the variation in the water level downstream of Gabčíkovo. Hungary argued that such a system, considered to be more economically profitable than using run-of-the-river plants, carried ecological risks which it considered to be unacceptable. These included the danger of silting up of the side-arms of the Danube, thereby impairing water quality; the risk of eutrophication of surface waters; the reduction of water flow in the Danube itself; and the resulting loss of fluvial fauna and flora.⁸²

As for the dam at Nagymaros, Hungary argued that, if it had been built, the bed of the Danube upstream would have silted up causing deterioration of water quality in this sector. Moreover, the operation of the Gabčíkovo power plant in peak mode would have occasioned significant daily variations in the water level in the reservoir upstream, threatening aquatic habitats. Hungary also contended that the construction and operation of the Nagymaros dam would have caused the erosion of the riverbed downstream, lowering the water level in this section of the river and appreciably diminishing the yield of the bank-filtered wells providing two-thirds of the water supply to the city of Budapest. The filter layer would also have shrunk or perhaps even disappeared, and fine sediments would have been deposited in certain pockets in the river, further contributing to the deterioration of water quality.⁸³

The ICJ considered the question of the existence of a 'state of ecological necessity' in light of the criteria laid down by the ILC in Article 33 of the draft Articles on the International Responsibility of States adopted on first reading, which the parties had agreed were applicable.⁸⁴ Article 33 at the time of the Court's decision was worded as follows:

⁸⁰ See *Case Concerning the Gabčíkovo-Nagymaros Project* (1997) ICJ Reports 7, para. 2.

⁸¹ 1993 Special Agreement, Art. 4; on provisional measures under Art. 41 of the Statute of the ICJ, see Chapter 5, pp. 174–5, above.

⁸² (1997) ICJ Reports 7, para. 40. ⁸³ *Ibid.*

⁸⁴ For the text of the draft Articles adopted on first reading, see ILC, *Yearbook of the International Law Commission* (1996-II), Part 2, 58–65. In 2001, the ILC adopted a final text of the Articles; see Chapter 17, p. 771, below.

1. A state of necessity may not be invoked by a State as a ground for precluding the wrongfulness of an act of that State not in conformity with an international obligation of the State unless:
 - (a) the act was the only means of safeguarding an essential interest of the State against a grave and imminent peril; and
 - (b) the act did not seriously impair an essential interest of the State towards which the obligation existed.
2. In any case, a state of necessity may not be invoked by a State as a ground for precluding wrongfulness:
 - (a) if the international obligation with which the act of the State is not in conformity arises out of a peremptory norm of general international law; or
 - (b) if the international obligation with which the act of the State is not in conformity is laid down by a treaty which, explicitly or implicitly, excludes the possibility of invoking the state of necessity with respect to that obligation; or
 - (c) if the State in question has contributed to the occurrence of the state of necessity.

In the ICJ's view, draft Article 33 established five basic conditions for the existence of a state of necessity, which reflected customary international law:

- (1) the breach of an international obligation must have been occasioned by an 'essential interest' of the state which was the author of the wrongful act;
- (2) that interest must be threatened by a 'grave and imminent peril';
- (3) the act being challenged should be the 'only means' of safeguarding that interest;
- (4) that act should not have 'seriously impaired an essential interest' of the state towards which the obligation existed; and
- (5) the state which was the author of that act should not have 'contributed to the occurrence of the state of necessity'.⁸⁵

The ICJ stated that it had 'no difficulty in acknowledging that the concerns expressed by Hungary for its natural environment in the region affected by the Gabčíkovo-Nagymaros Project related to an "essential interest" of that state, within the meaning given to that expression in [Draft] Article 33'.⁸⁶ However, the ICJ did not consider that the objective existence of a 'peril' had been established, notwithstanding the 'serious uncertainties' raised by Hungary as to the ecological impact of putting in place the Gabčíkovo-Nagymaros barrage system. The ICJ stated that:

The word 'peril' certainly evokes the idea of 'risk'; that is precisely what distinguishes 'peril' from material damage. But a state of necessity could not exist without a 'peril' duly established at the relevant point in time; the mere apprehension of a possible 'peril' could not suffice in that respect. It could moreover hardly be otherwise, when the 'peril' constituting the state of necessity has at the same time to be 'grave' and 'imminent'. 'Imminence' is synonymous with 'immediacy' or 'proximity' and goes far beyond the concept of 'possibility'. As the International Law Commission emphasized in its commentary, the 'extremely grave and imminent' peril must 'have been a threat to the interest at the actual time' (Yearbook of the International Law Commission, 1980, vol. II, Part 2, p. 49, para. 33). That does not exclude, in the view of the Court, that a 'peril' appearing in the long term might be held to be 'imminent' as soon as it is established, at the relevant point in time, that the realization of that peril, however far off it might be, is not thereby any less certain and inevitable.⁸⁷

⁸⁵ *Case Concerning the Gabčíkovo-Nagymaros Project* (1997) ICJ Reports 7, para. 52.

⁸⁶ *Ibid.*, para. 53. ⁸⁷ *Ibid.*, para. 54.

The ICJ's approach to the issue of the existence of an environmental 'peril' seemingly does not apply the precautionary principle.⁸⁸ Without ruling on the merits of the parties' differing views as to the likelihood of environmental damage (advanced in an 'impressive amount of scientific material'), the ICJ found that the perils invoked by Hungary were not sufficiently established in 1989, nor were they 'imminent' since they were long-term in nature and uncertain.⁸⁹ As a consequence of these findings, the ICJ concluded that Hungary's ecological concerns over the project were not sufficient to justify a suspension of works in 1989 on the basis of necessity.⁹⁰

The ICJ then turned to the question of whether the Czech and Slovak Federal Republic was entitled to proceed to the 'provisional solution' following Hungary's suspension of works on the project. Czechoslovakia had submitted that the 'provisional solution' was essentially no more than what Hungary had already agreed to and that the only modifications made were those which had become necessary by virtue of Hungary's decision not to implement its treaty obligations. While the ICJ agreed that Hungary, in concluding the 1977 Treaty, had consented to the damming of the Danube and the diversion of its waters into the by-pass canal, it had done so 'only in the context of a joint operation and a sharing of its benefits'. Thus, although Hungary's refusal to continue with the joint operation constituted a violation of its legal obligations, that did not mean that Hungary forfeited its basic right to an equitable and reasonable sharing of the resources of an international watercourse.⁹¹ Accordingly, the ICJ concluded that Czechoslovakia had committed an internationally wrongful act by putting the provisional solution into operation. Significantly, the ICJ distinguished between preparatory actions and the wrongful act itself in determining the point in time at which the internationally wrongful act crystallised. The ICJ noted that:

between November 1991 and October 1992, Czechoslovakia confined itself to the execution, on its own territory, of the works which were necessary for the implementation of Variant C, but which could have been abandoned if an agreement had been reached between the parties and did not therefore predetermine the final decision to be taken. For as long as the Danube had not been unilaterally dammed, Variant C had not in fact been applied.⁹²

The ICJ went on to consider whether the wrongfulness of Czechoslovakia's actions might be precluded on the ground that it was a lawful countermeasure, adopted in response to Hungary's prior failure to comply with its obligations under the 1977 Treaty. While the ICJ concluded that Czechoslovakia's actions met some of the conditions for lawful countermeasures, they did not satisfy the 'important consideration' that the 'effects of a countermeasure must be commensurate with the injury suffered, taking into account the rights in question'.⁹³ Referring to the decision of the PCIJ in the *River Oder* case⁹⁴ and modern developments evidenced by the recent adoption of the Watercourses Convention, the ICJ stated that:

⁸⁸ Principle 15 of the Rio Declaration; see Chapter 6, p. 218, above.

⁸⁹ *Case Concerning the Gabčíkovo-Nagymaros Project* (1997) ICJ Reports 7, paras. 56 and 57.

⁹⁰ *Ibid.*, para. 57. ⁹¹ *Ibid.*, para. 78. ⁹² *Ibid.*, para. 79. ⁹³ *Ibid.*, para. 85.

⁹⁴ *Case Concerning the Territorial Jurisdiction of the International Commission of the River Oder*, Judgment No. 16, PCIJ (1929) Ser. A No. 23, 27.

Czechoslovakia, by unilaterally assuming control of a shared resource, and thereby depriving Hungary of its right to an equitable and reasonable share of the natural resources of the Danube – with the continuing effects of the diversion of these waters on the ecology of the riparian area of the Szigetkoz – failed to respect the proportionality which is required by international law.⁹⁵

Consequently, the ICJ held that the diversion of the Danube carried out by Czechoslovakia was not a lawful countermeasure because it was not proportionate.

To justify its termination of the 1977 Treaty, Hungary again raised an argument of necessity, together with arguments based on: the impossibility of performance of the Treaty; the occurrence of a fundamental change of circumstances; the material breach of the Treaty by Czechoslovakia; and the development of new norms of international environmental law. These arguments were dismissed by the ICJ, which found that Hungary's purported notification of termination in 1992 did not have the legal effect of terminating the 1977 Treaty and related instruments.⁹⁶ However, the ICJ pointed out that newly developed norms of environmental law were relevant for the implementation of the Treaty and that the Treaty itself made provision for their incorporation, with the agreement of the parties, through various Articles 'requiring the parties, in carrying out their obligations to ensure that the quality of the water in the Danube is not impaired and that nature is protected, to take new environmental norms into consideration when agreeing upon the means to be specified in the Joint Contractual Plan'.⁹⁷ The ICJ remarked that the 'awareness of the vulnerability of the environment and the recognition that environmental risks have to be assessed on a continuous basis have become much stronger in the years since the Treaty's conclusion'.⁹⁸ The ICJ recognised that both parties agreed on the need to take environmental concerns seriously and to take the required precautionary measures, but fundamentally disagreed over the consequences this had for the joint project.⁹⁹ However, the ICJ itself provided no resolution of this issue, instead recommending that 'third-party involvement may be helpful and instrumental in finding a solution, provided each of the parties is flexible in its position'.¹⁰⁰

The ICJ took a similar approach in deciding the appropriate future conduct of the parties in respect of the project. It noted that it was of 'cardinal importance' that it had found that the 1977 Treaty was still in force and governed the relationship between the parties, although it acknowledged that it could not overlook the factual situation – or the practical possibilities or impossibilities to which it gave rise – in deciding on the legal requirements for the future conduct of the parties.¹⁰¹ In light of the course of events, the ICJ considered that decisions on the future implementation of the Gabčíkovo-Nagymaros project were, first and foremost, for the parties themselves.¹⁰² The ICJ stressed that in future negotiations between the parties the project's impact upon, and implications for, the environment, should be a key issue. Evaluation of the environmental risks would need to be undertaken, taking into account current standards.¹⁰³ The ICJ was also mindful of the need for vigilance and prevention in the field of environmental protection 'on account of the often irreversible character of damage to the environment and of the limitations inherent in the very mechanism of reparation of this type of

⁹⁵ *Case Concerning the Gabčíkovo-Nagymaros Project* (1997) ICJ Reports 7, para. 85. ⁹⁶ *Ibid.*, para. 115.

⁹⁷ *Ibid.*, para. 112. ⁹⁸ *Ibid.* ⁹⁹ *Ibid.*, para. 113. ¹⁰⁰ *Ibid.* ¹⁰¹ *Ibid.*, para. 132.

¹⁰² *Ibid.*, paras. 133–7. ¹⁰³ *Ibid.*, para. 140.

damage'.¹⁰⁴ The ICJ referred to the concept of 'sustainable development', remarking that, for the purposes of the present case, this meant that:

the Parties should look afresh at the effects on the environment of the operation of the Gabčíkovo power plant. In particular they must find a satisfactory solution for the volume of water to be released into the old bed of the Danube and into the side-arms on both sides of the river.¹⁰⁵

The ICJ considered that it was not for it to determine the final result of the negotiations between the parties. Instead, the ICJ instructed the parties 'to find an agreed solution that takes account of the objectives of the Treaty, which must be pursued in a joint and integrated way, as well as the norms of international environmental law and the principles of the law of international watercourses'.¹⁰⁶

On the final issue of reparation for the internationally wrongful acts committed by both parties, the ICJ noted that both Hungary and Slovakia were under an obligation to pay compensation to the other.¹⁰⁷ However, the ICJ declined to indicate the quantum of damages payable, instead resolving the issue as follows:

Slovakia is . . . entitled to compensation for the damage suffered by Czechoslovakia as well as by itself as a result of Hungary's decision to suspend and subsequently abandon the works at Nagymaros and Dunakiliti, as those actions caused the postponement of the putting into operation of the Gabčíkovo power plant, and changes in its mode of operation once in service.

Hungary is entitled to compensation for the damage sustained as a result of the diversion of the Danube, since Czechoslovakia, by putting into operation Variant C, and Slovakia, in maintaining it in service, deprived Hungary of its rightful part in the shared water resources, and exploited those resources essentially for their own benefit.

Given the fact, however, that there have been intersecting wrongs by both Parties, the Court wishes to observe that the issue of compensation could satisfactorily be resolved in the framework of an overall settlement if each of the Parties were to renounce or cancel all financial claims and counter-claims.¹⁰⁸

Overall, the ICJ's judgment affirms the importance of environmental considerations in addressing the rights and obligations of riparian states in an international watercourse. In assessing the implications of the judgment, it must be borne in mind that the ICJ was largely concerned with the application of the law as it was in 1989 and in 1992, when the relevant acts occurred. It is perhaps for this reason that the ICJ was reluctant to go too far, for example in recognising or applying a precautionary approach. But the ICJ made an important contribution to the development of international environmental law in this area, recognising the concept of 'ecological necessity' and the need for environmental risks associated with a project to be assessed on a continuous basis, in light of current environmental standards. That said, the ICJ shied away from offering more detailed guidance on broader questions, such as the relationship between

¹⁰⁴ *Ibid.*

¹⁰⁵ *Ibid.*

¹⁰⁶ *Ibid.*, para. 141.

¹⁰⁷ *Ibid.*, para. 152.

¹⁰⁸ *Ibid.*, paras. 152–3.

equitable utilisation and the obligation to prevent environmental damage, and the principles to be applied in valuing environmental damage.

REGIONAL RULES

Apart from the obligations of general and global application, many bilateral and regional agreements establish binding obligations for states.

Europe

The EU has adopted rules on various aspects of water quality (groundwater, drinking water, bathing water),¹⁰⁹ and in 2000 adopted a far-reaching and innovative framework Directive on the protection of inland surface waters, transitional waters, coastal waters and groundwater.¹¹⁰ Additionally, more than forty bilateral treaties are in force between European states that protect the quality and use of freshwaters.¹¹¹ These include pollution prevention or environmental protection agreements for Lake Constance,¹¹² Lake Geneva,¹¹³ Lake Ohrid,¹¹⁴ the River Danube,¹¹⁵ the River Elbe,¹¹⁶ the Mosel,¹¹⁷ the Scheldt,¹¹⁸ the Meuse,¹¹⁹ Luso-Spanish River Basins,¹²⁰ and for

¹⁰⁹ See generally J. Lammers, 'International and European Community Law Aspects of Pollution of International Watercourses', in W. Lang, H. Neuhold and K. Zemanek (eds.), *Environmental Protection and International Law* (1991), 115; R. Macrory, 'European Community Water Law', 20 *Ecology Law Quarterly* 119 (1993); W. Howarth, 'Water Quality and Land Use Regulation under the Water Framework Directive', 23(2) *Pace Environmental Law Review* 351 (2006).

¹¹⁰ Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy. See also P. Chave, *The EU Water Framework Directive: An Introduction* (2001).

¹¹¹ For a partial list, see E. Brown Weiss, P. C. Szasz and D. B. Magraw, *International Environmental Law: Basic Documents and References* (1992), 47–50.

¹¹² Convention on the Protection of Lake Constance Against Pollution, Steckborn, 27 October 1960, in force 10 November 1961, 620 UNTS 191.

¹¹³ Convention Concerning the Protection of the Waters of Lake Geneva Against Pollution, Paris, 16 November 1962, in force 1 November 1963, 922 UNTS 49.

¹¹⁴ Agreement for the Protection and Sustainable Development of Lake Ohrid and Its Watershed, 17 June 2004, available at www.ecolex.org.

¹¹⁵ See Convention on Co-operation for the Protection and Sustainable Use of the Danube River, Sofia, 29 June 1994, in force 22 October 1998. See also Declaration on Co-operation by the Danube States in Matters of Water Management of the Danube, in particular for the Protection of the Waters of the Danube Against Pollution, Bucharest, 13 December 1985, 37 ÖZRV 430 (1987); Agreement on Co-operation on Management of Water Resources in the Danube Basin, Regensburg, 1 December 1987, not yet in force, OJ L90, 5 April 1990, 20.

¹¹⁶ Convention for the International Commission for the Protection of the Elbe, Magdeburg, 8 October 1990, IELMT 990:75.

¹¹⁷ Protocol Concerning the Constitution of an International Commission for the Protection of the Mosel Against Pollution, Paris, 20 December 1961, in force 1 July 1962, 940 UNTS 211.

¹¹⁸ Agreement on the Protection of the River Scheldt, 26 April 1994, in force 1 March 1995, 34 ILM 859 (1995).

¹¹⁹ Agreement on the Protection of the River Meuse, 26 April 1994, in force 1 March 1995, 34 ILM 854 (1995); see Jan M. van Dunnè, *Non-Point Source River Pollution: The Case of the River Meuse* (1996).

¹²⁰ Convention on Co-operation for the Protection and Sustainable Use of the Waters of the Luso-Spanish River Basins, 30 November 1998, in force 17 January 2000; see 'La Convención Luso-Española sobre las Aguas de las Cuenecas Hidrográficas Compartidas: Un Marco de Cooperación para la Protección de las Aguas y para el Desarrollo Sostenible', in A. Fabra and A. Barreira (eds.), *La Aplicación de la Directiva Marco del Agua en España: Retos y Oportunidades* (2000); see also 10 *Yearbook of International Environmental Law* 236–8 (1999); A. Barreira, 'Monitoring and Evaluation of the Portuguese-Spanish Convention Appliance: Public Involvement and Participation', in Luso-American Foundation for Development, *Implementing Transboundary River Conventions* (2002).

the Benelux countries generally.¹²¹ Other regional agreements not directly dealing with freshwater resources also have indirect benefits. The EU's 1988/2001 Large Combustion Directive and the SO₂ Protocols to the 1979 LRTAP Convention, as well as the more recent Protocol to Abate Acidification, Eutrophication and Ground-Level Ozone, were also, to a large extent, the result of efforts to combat the acidification of lakes and other freshwater resources in Europe.¹²²

Rhine

A well-developed regime exists for the River Rhine, which flows through France, Switzerland, the Netherlands and Germany, and its basin that covers 225,000 square kilometres and includes eight countries. The Rhine has been the subject of five environmental protection treaties, apart from earlier agreements on fishing and navigation.¹²³ The 1963 Berne Agreement on the International Commission for the Protection of the Rhine Against Pollution (1963 Berne Pollution Agreement) established an international commission (the Rhine Commission) to research and propose measures to protect the Rhine from pollution, and prepare arrangements for its protection.¹²⁴ It was one of the first international institutions to be granted an environmental mandate.

The 1963 Berne Pollution Agreement was amended in 1976, and at the same time two new treaties were adopted, namely, the 1976 Rhine Chemical Pollution Convention and the 1976 Rhine Chlorides Convention. The 1976 Convention for the Protection of the River Rhine Against Chemical Pollution (1976 Rhine Chemical Pollution Convention) requires parties to eliminate pollution of the surface waters of the Rhine basin by those dangerous substances listed in Annex I and to reduce pollution by those dangerous substances listed in Annex II.¹²⁵ Parties are required, for their own use, to establish national inventories of discharges and to communicate their contents to the Rhine Commission.¹²⁶ The Convention also establishes a scheme of prior authorisation for the discharge of Annex I substances, emissions standards for maximum permissible concentrations and quantities of discharges, and national programmes for the discharge of Annex II substances.¹²⁷ Limit values are proposed by the Rhine Commission, which may also propose measures for the protection of underground waters, on the basis of toxicity, persistence and bioaccumulation, taking into account the 'best technical facilities available'.¹²⁸ The Convention also provides for information exchange, monitoring and emergency situations.¹²⁹ This mechanism failed in November 1986 to ensure that the Swiss authorities notified other parties of the discharge of large quantities of toxic chemicals into the Rhine following a fire at a facility owned by the Sandoz company in Basel, Switzerland. These destroyed living resources in the river ecosystem, including eels, fish and waterfowl, and the

¹²¹ Protocol to Establish a Tripartite Standing Committee on Polluted Waters, Brussels, 8 April 1950, in force 8 April 1950, 66 UNTS 285.

¹²² Chapter 7, pp. 255–7, above.

¹²³ Berne Convention Establishing Uniform Regulations Concerning Fishing in the Rhine Between Constance and Basel, 9 December 1869, 9 IPE 4695.

¹²⁴ Berne, 29 April 1963, in force 1 May 1965, 994 UNTS 3; amended Bonn, 3 December 1976, IELMT 976:91, Art. 2.

¹²⁵ Bonn, 3 December 1976, in force 1 February 1979, 1124 UNTS 375, Art. 1(1). The Rhine is defined in Annex A. See generally A. Kiss, 'The Protection of the Rhine Against Pollution', 25 *Natural Resources Journal* 613 (1985); I. Romy, *Les Pollutions Transfrontières des Eaux: l'Exemple du Rhin* (1990).

¹²⁶ Art. 2 and Annex III. ¹²⁷ Arts. 3, 4 and 6(1)–(3).

¹²⁸ Arts. 5(1), (2) and (5) and 7(2). Once limit values have been adopted, they are included in Annex IV.

¹²⁹ Arts. 10–12.

consequences of the pollution were felt in France, Germany, the Netherlands and at the point of discharge into the North Sea. Groundwater resources were contaminated, and other damage was caused to the fishing industry, to agriculture as a result of contaminated water supplies, and to tourism. In September 1987, Sandoz agreed to pay an indemnity of just under US\$10 million to cover reimbursement of the French government's costs, compensation to individuals and groups, and a programme of analysis, monitoring, restoration and emergency information.¹³⁰

The 1976 Convention for the Protection of the Rhine River Against Pollution by Chlorides (1976 Rhine Chlorides Convention), which was replaced in 2003 by the coming into force of a new Convention, had more specific objectives, aiming to reduce the discharge of chloride ions, and requiring France to construct a plant to reduce discharges from the Alsace potassium mines.¹³¹ The Convention was notable as one of the earliest to address the economic aspects of international environmental obligations, providing for the costs of the works to be borne by the parties. The Convention also provided for the circumstances in which the work should be halted and in which the parties might compensate France for damage that could not be fully compensated by the constructors of the works or by third parties.¹³² In September 1991, the five parties adopted a Protocol to the 1976 Rhine Chlorides Convention to further reduce chlorides in the river and to ensure that the water was restored to a drinkable quality.¹³³ This required France to take additional measures to those required by the 1976 Convention to reduce the inputs of chlorides where the level of chlorides exceeds 200 milligrams per litre in the Rhine at the Netherlands–Germany border, and to provisionally store the chlorides on land.¹³⁴ The Protocol established new obligations in respect of the discharge of chloride ions and replaced Annex II to the 1976 Convention with a new Annex IV.¹³⁵ The Protocol also allocated the costs incurred by the parties in fulfilment of these obligations.¹³⁶

A dispute arose between the Netherlands and France under the 1976 Convention and its 1991 Protocol concerning the amount of money France was required to return to the Netherlands under the Protocol. The Netherlands argued that the calculation should be based on a flat unit rate of France's storage and disposal operations, while France contended that the Netherlands was entitled to the actual costs it had incurred. The dispute was submitted to arbitration under the Protocol, and on 12 March 2004 the tribunal found in favour of the Netherlands' method of assessment.¹³⁷ The tribunal rejected an argument by the Netherlands that the 'polluter pays' principle applied in the case, on the basis that the principle was not reflected in the Protocol and was not part of general international law.¹³⁸

¹³⁰ See A. Kiss and D. Shelton, *International Environmental Law* (1991), 220.

¹³¹ Bonn, 3 December 1976, in force 5 July 1985, 16 ILM 265 (1977); Art. 2(1) and (2) and Annex 1.

¹³² Arts. 4, 5 and 7(1) and (2). ¹³³ Brussels, 25 September 1991, in force 1 November 1994, 994 UNTS 3.

¹³⁴ Art. 1(1) and Annex I. ¹³⁵ Arts. 5 and 6 and Annex IV. ¹³⁶ Art. 4 and Annex III.

¹³⁷ *Case Concerning the Auditing of Accounts Between the Kingdom of the Netherlands and the French Republic Pursuant to the Additional Protocol of 25 September 1991 to the Convention on the Protection of the Rhine Against Pollution by Chlorides of 3 December 1976 (Netherlands v. France)* 25 RIAA 267 (Permanent Court of Arbitration, 2008) (*Rhine Chloride* arbitration). See also L. Boisson de Chazournes, 'The Rhine Chlorides Arbitration Concerning the Auditing of Accounts: Its Contribution to International Law', in *The Rhine Chlorides Arbitration Concerning the Auditing of Accounts* (2008), Chapter 1.

¹³⁸ *Rhine Chloride* arbitration, para. 103.

In 1999, the parties concluded the Convention on the Protection of the Rhine.¹³⁹ Upon its entry into force on 1 January 2003, the Convention repealed the 1963 Berne Pollution Agreement and the 1976 Rhine Chlorides Convention, to reflect an updated approach.¹⁴⁰ The parties undertake to pursue a number of aims, including the sustainable development of the Rhine ecosystem, the production of drinking waters from the Rhine, the improvement of sediment quality, general flood prevention, and the protection and restoration of the North Sea in conjunction with other actions taken to protect it.¹⁴¹ Article 4 sets out a number of guiding principles to be observed in pursuing these aims, including the precautionary principle, the polluter pays principle and the principle of sustainable development. The contracting parties also agree on various specific measures to protect the Rhine, including: prior authorisation of wastewater discharges or general rules laying down emissions limits; gradual reduction of discharges of hazardous substances, with a view to their complete elimination; monitoring of compliance with authorisations, discharges and general rules; periodical examination and adjustment (when substantial improvements in the state of the art permit or when the state of the receiving medium so necessitates) of authorisations and general rules; reduction of the risk of pollution from incidents or accidents; and prior authorisation of technical measures liable to have a serious effect on the ecosystem.¹⁴² The Rhine Commission's powers are strengthened by the Convention, including the power to take binding decisions on measures to be implemented by the contracting parties.¹⁴³

In 1986, following the Sandoz accident, the Rhine states adopted the Rhine Action Programme, which was intended to produce potable water from the river and to improve it sufficiently to allow the return of indigenous aquatic life. This was to be achieved on the basis of a 50 per cent reduction of discharges of thirty priority substances to 1985 levels by 1995. The Action Programme was succeeded by the 2001 Programme on the Sustainable Development of the Rhine, to implement the general aims and principles set forth in Articles 3 and 4 of the 1999 Convention.¹⁴⁴ The Programme defines general protection targets for the next twenty years including restoration of the main stream, permanent compliance with the target values of all substances relevant for the Rhine in water, suspended matter, sediments and organisms, protection of groundwater against the infiltration of polluted Rhine water and protection of Rhine water against polluted groundwater.¹⁴⁵

1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes

The 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes (1992 Watercourses Convention), adopted under the auspices of the UNECE,¹⁴⁶

¹³⁹ Convention on the Protection of the Rhine, Berne, 12 April 1999, OJ L289, 16 November 2000, 30.

¹⁴⁰ Art. 19. ¹⁴¹ Art. 3. ¹⁴² Art. 5(4). ¹⁴³ Arts. 8 and 10.

¹⁴⁴ Conference of the Rhine Ministers, 'Rhine 2020: Programme on the Sustainable Development of the Rhine', Strasbourg, 29 January 2001.

¹⁴⁵ *Ibid.*, Part 2.

¹⁴⁶ Helsinki, 17 March 1992, in force 6 October 1996, 31 ILM 1312 (1992); thirty-eight states are party. See also the earlier related instruments adopted by the UNECE: Declaration of Policy on Water Pollution Control, 29 April 1966, ECE/RES/10(XXI); Decision on Body on Water Resources and Water Pollution Control Problems, 2 May 1968, ECE/DEC/E(XXIII); Decision on International Co-operation on Shared Water Resources, 2 April 1982, ECE/DEC/D(XXXVII); Declaration of Policy on the Rational Use of Water, 14 April 1984, ECE/DEC/C(XXXIX); Decision on Co-operation in the Field of Transboundary Waters, 26 April 1986, ECE/DEC/B(41); Decision on Principles on

reflected a move towards rules of general applicability to all transboundary waters in the territories of the parties, as well as transboundary waters between parties and non-parties.¹⁴⁷ The 1992 Watercourses Convention draws heavily on the 1980 UNECE Declaration of Policy on Prevention and Control of Water Pollution (Including Transboundary Pollution), which called for a range of new approaches to the protective regulation of watercourses, including standardisation of water quality, the use of legal and administrative measures and suitable economic incentives, and the adoption as far as possible of the general principle that ‘the direct or indirect costs attributable to pollution should be borne by the polluter’.¹⁴⁸ Under the 1992 Convention, the parties accept a general obligation to take all appropriate measures to prevent, control and reduce any transboundary impact. They commit to preventing pollution of waters which causes or is likely to cause transboundary impact, to use transboundary waters in an ecologically sound and rational, and reasonable and equitable way, and to ensure conservation and restoration of ecosystems.¹⁴⁹ The Convention encourages the adoption of preventive measures at source, prohibits the transfer of pollution to other parts of the environment, and calls for measures to be guided by the application of the precautionary and polluter pays principles.¹⁵⁰ The Convention does not preclude other bilateral and multilateral agreements and allows parties to adopt and implement more stringent measures than those set out in the Convention.¹⁵¹

In requiring measures for the prevention, control and reduction of transboundary impact, the Convention identifies a range of options, including: the use of low- and non-waste technologies; biological or equivalent treatment of municipal wastewater; and a reduction of nutrient inputs and hazardous substances from industrial, municipal and other sources.¹⁵² These approaches may be elaborated in amendments or protocols to the Convention.¹⁵³ The Convention supports a standard based upon ‘best environmental practices’, guidelines for which are set out in Annex II to the Convention.¹⁵⁴ The Convention calls for: the prior licensing and subsequent monitoring of wastewater discharges (with limits to be based on best available technology for discharges of hazardous substances); stricter requirements (including prohibition) when the ecosystem so requires; environmental impact assessment; and sustainable water resources management including an ecosystems approach.¹⁵⁵

Co-operation in the Field of Transboundary Waters, 10 April 1987, ECE/DEC/I(42); Charter on Groundwater Management, 21 April 1989, ECE/DEC/E(44). See generally A. Tanzi, ‘Regional Integration and the Protection of the Environment: The UNECE Process on Water Law as a Model for the Global Dimension’, in T. Scovazzi (ed.), *The Protection of the Environment in a Context of Regional Economic Integration* (2001), 347.

¹⁴⁷ ‘Transboundary waters’ are defined as ‘any surface or ground waters which mark, cross or are located on boundaries between two or more States’: Art. 1(1).

¹⁴⁸ ECE/DEC/B(XXXV), E/1980/28, 23 April 1980, paras. 4, 5 and 11.

¹⁴⁹ Art. 2(1) and (2). ‘Transboundary impact’ is defined as ‘any significant adverse effect on the environment resulting from a change in the conditions of transboundary waters caused by human activity’: Art. 1(2).

¹⁵⁰ Art. 2(3)–(5). ¹⁵¹ Art. 2(6) and (8). ¹⁵² Art. 3(1)(a), (e), (f) and (g). ¹⁵³ See p. 324, below.

¹⁵⁴ Under Annex II, the measures to be considered in developing ‘best environmental practices’ include: the provision of information to the public and users; codes of practice covering the whole of the product’s life; product labels; recycling, recovery and re-use; economic instruments; and licensing. The choice of particular measures should take into account the environmental hazard of the product (including production, use and disposal), substitute processes or substances, and scale of use.

¹⁵⁵ Art. 3(1)(b), (c), (d), (h) and (i). Annex I defines ‘best available technology’ as ‘the latest stage of development of processes, facilities or methods of operation which indicate the practical suitability of a particular measure for limiting discharges, emissions and waste’. The Annex identifies a range of factors which should be given special consideration, and states that the ‘best available technology’ for a particular process will change with time in the light of technological advances, economic and social factors, and changes in scientific knowledge and understanding.

The Convention signals efforts to regulate directly particular industries and activities, requiring each party to set limits for discharges for specific industries from which hazardous substances derive, based on 'best available technology'.¹⁵⁶ The guidelines in Annex III require parties to develop general water quality objectives and criteria,¹⁵⁷ and to provide for monitoring, research and development, the exchange of information,¹⁵⁸ and international efforts to elaborate rules on responsibility and liability.¹⁵⁹

Part II of the Convention includes provisions for riparian parties, and goes some way towards codifying on a regional basis the rules as established by the treaties and arbitral awards identified earlier. Bilateral and multilateral co-operation is to focus on the development or adaptation of treaties in conformity with the basic principles of the Convention, including the establishment of joint bodies to deal with specified catchment areas.¹⁶⁰ Riparian parties are also encouraged to co-operate through consultations, joint monitoring and assessment, and common research and development.¹⁶¹ Exchange of information includes facilitating the exchange of best available technology and, in the event of a critical situation that may have a transboundary impact, riparian parties must inform each other 'without delay'.¹⁶² The Convention also requires warning and alarm systems and the provision of mutual assistance between parties.¹⁶³ According to the provisions on public information, the parties must make available to the public, at all times and at reasonable cost, relevant information including water quality objectives, permits and their conditions, and the results of monitoring and assessment.¹⁶⁴ The implementation of the Convention will be reviewed by Meetings of the Parties to be held at least every three years, with the assistance of a secretariat provided by UNECE.¹⁶⁵

The parties to the 1992 Convention took further steps to give effect to its general objectives. In 1999, they adopted a Protocol on Water and Health,¹⁶⁶ whose objective is to promote the protection of human health and well-being by improving water management, including protection of water ecosystems.¹⁶⁷ The Protocol commits parties to ensure adequate supplies of wholesome drinking water, adequate sanitation (through collective systems), effective protection of drinking water supplies, safeguards for human health against water-related diseases, and effective monitoring.¹⁶⁸ These measures are to be based on an assessment of any proposed measure in respect of all its implications for human health, water resources and sustainable development, and are to be guided by the precautionary and polluter pays principles.¹⁶⁹ In taking their actions, parties are also to be guided by other principles and approaches, including the need to take preventive action, to ensure intergenerational equity, to adopt actions at the lowest appropriate administrative level, to make use of economic

¹⁵⁶ Art. 3(2). 'Hazardous substances' means substances which are toxic, carcinogenic, mutagenic, teratogenic or bioaccumulative, especially when they are persistent: Art. 1(6).

¹⁵⁷ Art. 3(3).

¹⁵⁸ Arts. 4, 5, 6 and 8. Research and development is to include 'the physical and financial assessment of damage resulting from transboundary impact': Art. 5(h).

¹⁵⁹ Art. 7. See further Chapter 17 below.

¹⁶⁰ Art. 9(1) and (2). The tasks of the joint bodies relate to data collection and assessment, monitoring, inventories, emissions limits, water quality objectives, action programmes, warning and alarm procedures, exchange of information and environmental impact assessments: Art. 9(2).

¹⁶¹ Arts. 10–12. ¹⁶² Arts. 13 and 14. ¹⁶³ Arts. 14 and 15. ¹⁶⁴ Art. 16. ¹⁶⁵ Arts. 17 and 19.

¹⁶⁶ London, 17 June 1999, in force 4 August 2005. ¹⁶⁷ Art. 1.

¹⁶⁸ Art. 2(2). ¹⁶⁹ Arts. 4(4) and 5(a) and (b).

instruments, to ensure access to information and public participation, and to manage water resources in an integrated manner.¹⁷⁰ The Protocol also requires each party to establish and publish national and/or local targets to achieve or maintain a high level of protection against water-related diseases, and to that end to establish appropriate legal and institutional frameworks.¹⁷¹ The Protocol includes provisions on the review and assessment of progress, response systems and public awareness and information,¹⁷² and provisions on international co-operation (including on transboundary waters) and joint and co-ordinated international action.¹⁷³ As with other recent international agreements, provision is also made for reviewing compliance by means of 'non-confrontational, non-judicial and consultative' means.¹⁷⁴ In 2007, the first Meeting of the Parties to the Protocol adopted a compliance procedure, composed of nine independent experts with legal, health and water management backgrounds.¹⁷⁵

In May 2003, the parties to the 1992 Convention (and the 1992 Industrial Accidents Convention) adopted a Protocol on Civil Liability and Compensation for Damages Caused by the Transboundary Effects of Industrial Accidents on Transboundary Waters (2003 Civil Liability Protocol).¹⁷⁶ Largely following liability concepts established by prior conventions on civil liability and principles set forth by the ILC, the 2003 Civil Liability Protocol gives individuals harmed by transboundary impacts of industrial accidents a legal claim for adequate and prompt compensation.¹⁷⁷ The Protocol covers physical damage to property, loss of income, costs of reinstatement and response measures.¹⁷⁸ Two standards of liability are established: 'strict' liability and 'fault-based' liability. Strict liability applies to an operator of a hazardous activity for any damage arising from an accident during the course of that activity.¹⁷⁹ Fault-based liability is available where thresholds of hazardous activity are not reached, limits of liability are exceeded or persons other than the operator are held liable.¹⁸⁰

In 2006, the parties adopted model provisions on transboundary flood management, articulating rights and obligations of states regarding transboundary flood prevention, protection and mitigation.¹⁸¹ First, states have an obligation to take all measures 'to prevent, mitigate and protect against flood risks in transboundary river basins'.¹⁸² Riparian states are also required to inform each other in the event of a critical situation, and to adopt appropriate measures to prevent or mitigate adverse impacts of flooding in other parties' territories.¹⁸³ In addition, the provisions establish an obligation of long-term co-operation among riparian states within a river basin. This includes, *inter alia*, monitoring and data collection and exchange; basin modelling, flood plain and risk mapping; joint or co-ordinated planning for flood prevention, protection, preparedness, awareness-raising, ensuring public information and participation; and access to justice.¹⁸⁴ Parties are also encouraged to incorporate environmental requirements into their flood management strategies, taking measures to

¹⁷⁰ Art. 5.

¹⁷¹ Art. 6. Targets are to include, *inter alia*, quality of drinking water, reduction of diseases, areas to be covered by collective systems, the occurrence of discharges of untreated waters, and the disposal or re-use of sludge.

¹⁷² Arts. 7–10. ¹⁷³ Arts. 11–13.

¹⁷⁴ Art. 15. Art. 20 includes traditional dispute settlement provisions.

¹⁷⁵ ECE/MP.WH/2/Add.3, EUR/06/5069385/1/Add.3, 3 July 2007, Annex to Decision 1/2, *ibid.*, paras. 4–10.

¹⁷⁶ MP.WAT/2003/2-CP.TEIA/2003/4, signed 21 May 2003. It requires sixteen ratifications to come into force.

However, at present the Protocol has been ratified by only one party (Hungary).

¹⁷⁷ Art. 1. See Chapter 17, p. 738, below. ¹⁷⁸ Art. 2(2)(d). ¹⁷⁹ Art. 4. ¹⁸⁰ Art. 5.

¹⁸¹ ECE/MP.WAT/2006/4, 29 August 2006. ¹⁸² Provision 1. ¹⁸³ Provision 2. ¹⁸⁴ Provision 3.

maintain, improve and restore the natural function of the watercourse and water-related ecosystems.¹⁸⁵ Furthermore, the provisions establish an obligation of prior consultation for projects with the potential to increase flood risks.¹⁸⁶

The parties to the 1992 Convention continue to focus on increased participation, implementation and compliance. They have produced guidelines to develop and clarify international obligations and standards related to integrated water resources management (IWRM), including the 2006 Strategies for Monitoring and Assessment of Transboundary Rivers, Lakes and Groundwaters. The parties also created a Task Force on Water and Climate, which has produced Guidance on Adaptation to Climate Change focusing specifically on transboundary waters. In 2010, the parties requested the Legal Board under the Convention to study and prepare measures and procedures for an institutional and procedural mechanism to facilitate and support implementation and compliance. The mechanism should be 'simple, facilitative, non-adversarial and cooperative', and be based on principles of transparency, fairness, expediency and predictability, with a view to providing a platform for dialogue offering impartial advice and mediation.¹⁸⁷

Americas

Since the early part of the twentieth century, the states of North and South America have adopted many bilateral agreements for the protection of freshwater resources. The most comprehensive rules are found in the agreements between Canada and the United States which relate to the protection and use of the Great Lakes, although important instruments are also in force between the United States and Mexico,¹⁸⁸ and between Central and South American countries.¹⁸⁹

1909 Boundary Waters Treaty

The 1909 Washington Treaty Relating to Boundary Waters and Questions Arising Along the Boundary Between the US and Canada (1909 Boundary Waters Treaty) was a pioneering treaty that was adopted to protect water levels and the navigability of the Great Lakes and other boundary waters. It includes one of the earliest treaty provisions on the prevention of pollution, and was the first instrument to establish an international institution with competence for

¹⁸⁵ Provision 4. ¹⁸⁶ Provision 5. ¹⁸⁷ ECE/MP.WAT/29/Add.1, 14 June 2010.

¹⁸⁸ Washington Treaty Relating to the Utilization of the Waters of the Colorado and Tijuana Rivers and of the Rio Grande, 3 February 1944, 3 UNTS 314; Agreement Concerning the Permanent and Definitive Solution to the International Problems of the Salinity of the Colorado River, 30 August 1973, 915 UNTS 203; see S. P. Mumme, 'Innovation and Reform in Transboundary Resource Management: A Critical Look at the International Boundary Water Commission, US and Mexico', 33 *Natural Resources Journal* 93 (1993); 'Symposium: Water Issues in the US-Mexico Borderlands', 40 *Natural Resources Journal* 199 (1999); S. P. Mumme, 'The Liquid Frontier: Water and Sustainable Development on the US-Mexico Border', 48(4) *Journal of the West* 104 (2009); A. Milman and C. A. Scott, 'Beneath the Surface: Intranational Institutions and Management of the United States-Mexico Transboundary Santa Cruz Aquifer', 28 *Environment and Planning C: Government and Policy* 528 (2010).

¹⁸⁹ Treaty on the River Plate Basin, Brasilia, 23 April 1969, in force 14 August 1970, 875 UNTS 3; Treaty Concerning the Rio de la Plata and the Corresponding Maritime Boundary, 19 November 1973, Brasilia, 23 April 1969, in force 14 August 1970, 875 UNTS 3; see J. Trevin and J. Day, 'Risk Perception in International River Basin Management: The Plata Basin Example', 30 *Natural Resources Journal* 87 (1990); L. de Castillo Laborde, 'Legal Regime of the Rio de la Plata', 36 *Natural Resources Journal* 251 (1996).

pollution matters.¹⁹⁰ Article IV of the 1909 Treaty provides that ‘boundary waters and waters flowing across the boundary shall not be polluted on either side to the injury of health or property of the other’; the Treaty does not define the terms ‘pollution’ or ‘injury’. The Treaty established a permanent International Joint Commission comprising six commissioners with three appointed by each party.¹⁹¹ Its functions include approval of governmental applications for works that may affect the level or flows of boundary and other waters, surveillance and monitoring, and dispute settlement provisions (which have not yet been invoked).¹⁹² Under Article IX, the parties can refer to the Commission any question involving the rights or interests of either party along the common frontier, following which the Commission can adopt reports and make recommendations which are advisory. The Commission has considered a number of pollution problems, following references from the parties, resulting in the adoption of publications such as the 1970 report on phosphate and other pollution, which led directly to a 1972 agreement between the United States and Canada.¹⁹³

Gut Dam arbitration

The use of the waters of the Great Lakes by Canada and the US has been the subject of numerous disputes between the two states, and led to the establishment of the Lake Ontario Claims Tribunal in 1965 to adjudicate claims by US nationals against Canada for damage caused to property owned by US nationals by the construction and operation of the Gut Dam¹⁹⁴ on the St Lawrence River between Adams Island in Canadian territory and Les Galops Island in US territory.¹⁹⁵ The dam was intended to stop the flow of water through the channel between the two islands. Between 1904 and 1951, the water level of the St Lawrence River and Lake Ontario increased, principally as a result of the diversion by Canada of water into the Great Lakes to increase hydro-electric power generation, and also because of a reduction in the rate at which the US withdrew water at Chicago. In 1951 and 1952, the water in the St Lawrence River reached unprecedented levels which, after severe storms, caused extensive flooding and erosion damage to the north and south shores of all the Great Lakes, including Lake Ontario. The damage that was caused to US property was argued by the owners to be the result of the construction of the Gut Dam. In 1953, Canada removed the Gut Dam, and following the failure of efforts to reach a friendly settlement the tribunal was established in 1965.

The US claimed a total of US\$653,386 from Canada. In 1968, the US and Canada settled the case for US\$350,000 as full and final satisfaction of all claims of US nationals ‘for damage allegedly caused by Gut Dam’.¹⁹⁶ The settlement followed the earlier findings by the tribunal that Canada was potentially liable to any citizen of the US whose property suffered damage or

¹⁹⁰ 11 January 1909, in force 5 May 1910, TS No. 548, 10 IPE 5158. See S. Toope and J. Brunnèe, ‘Freshwater Regimes: The Mandate of the International Joint Commission’, 15 *Arizona Journal of International and Comparative Law* 273 (1998).

¹⁹¹ Art. VII. ¹⁹² Arts. VIII–X.

¹⁹³ International Joint Commission, *Pollution of Lake Erie, Lake Ontario and the International Section of the St Lawrence River* (1970). See also International Joint Commission, ‘Risks of Oil Pollution in Lake Erie’, 27 October 1969, 8 ILM 1363 (1969).

¹⁹⁴ The details concerning the dispute are set out in the Report of the Agent of the United States, 8 ILM 118 (1968); see also the Agreement establishing the Tribunal, 4 ILM 468 (1965).

¹⁹⁵ The US gave permission for the construction, subject to the condition that Canada would pay compensation if the dam caused damage or detriment to US property owners: Report of the US Agent, 120.

¹⁹⁶ *Ibid.*, 141.

who suffered detriment caused by the construction and operation of Gut Dam (not only property owners on Les Galops Island, as Canada had argued), and that Canada had in diplomatic correspondence, prior to the establishment of the tribunal, recognised its obligation to pay compensation for damage attributable to the Gut Dam.¹⁹⁷ Canada agreed to settle after the tribunal had concluded that its only task was to determine whether the dam had caused the damage for which claims were filed and the quantum of such damages. Although the settlement was stated to be without prejudice to the legal and factual positions maintained by the parties, it is not unreasonable to infer that the episode supports the conclusion that states are subject to limitations on their use of international waters, and that they may be subject to an international claim if such use leads to damage to foreign private property. The case does not provide support either way on the question of whether states are liable for pure environmental damage, since all the claims related to property damage resulting from changes to the environment.

1978 Great Lakes Water Quality Agreement

In 1978, the United States and Canada signed an Agreement on Great Lakes Water Quality (1978 Great Lakes Water Quality Agreement),¹⁹⁸ which has been amended by Protocols in 1983¹⁹⁹ and 1987²⁰⁰ and supersedes the earlier 1972 Agreement.²⁰¹ The 1978 Agreement is designed to 'restore and maintain the chemical, physical, and biological integrity of the waters of the Great Lakes Basin Ecosystem', including by the elimination or reduction to the maximum extent practicable of the discharge of pollutants into the Great Lakes system.²⁰² The 1978 Agreement records that it is the policy of the parties to prohibit or 'virtually eliminate' the discharge of toxic or persistent toxic substances, to provide public financial assistance to construct publicly owned waste treatment works, and to co-ordinate planning processes and best management practices.²⁰³ The 'General Objectives' of the 1978 Agreement are to keep the Great Lakes system unpolluted by a specified range of substances, including those which will form sludge deposits or adversely affect aquatic life or waterfowl, floating materials and toxic or otherwise harmful materials, as well as nutrients that contribute to aquatic life.²⁰⁴ 'More Specific Objectives' are adopted under Article IV and Annex 1: they establish maximum water concentration levels for specific chemicals which are persistent and non-persistent toxic substances, as well as other substances, and objectives for physical material and microbiological and radiological matter. Other specific objectives include the elimination of 'Areas of Concern, Critical Pollutants and Point Source Impact Zones' identified in Annex 2. The 1978 Agreement makes it clear that these objectives represent minimum levels of water quality and do not preclude the parties from adopting more stringent requirements.

¹⁹⁷ *Ibid.*, 138–9.

¹⁹⁸ Ottawa, 22 November 1978, in force 22 November 1978, 30 UST 1383; see T. Vigod, 'Global Environmental Problems: A Legal Perspective on Great Lakes Toxic Pollution', 12 *Syracuse Journal of International Law and Commerce* 185 (1985); G. Francis, 'Binational Co-operation for Great Lakes Water Quality: A Framework for the Groundwater Connection', 65 *Chicago-Kent Law Review* 359 (1989); N. D. Hall, 'Toward a New Horizontal Federalism: Interstate Water Management in the Great Lakes Region', 77 *Colorado Law Review* 405 (2006).

¹⁹⁹ 16 October 1983, in force 16 October 1983, TIAS No. 10798.

²⁰⁰ 18 November 1987, in force 18 November 1987, TIAS No. 11551.

²⁰¹ See 1972 Agreement Between the United States and Canada Concerning Great Lakes Water Quality, Ottawa, 15 April 1972, in force 15 April 1972, 11 ILM 694 (1972).

²⁰² Art. II. The system includes all streams, rivers, lakes and other bodies of water within the drainage basin of the St Lawrence River: *ibid.*, Art. I(h).

²⁰³ *Ibid.* ²⁰⁴ Art. III.

The 1978 Agreement requires the parties to adopt water quality standards and other regulatory requirements that are consistent with the 'General and Specific Objectives', and to develop and implement programmes and other measures to fulfil the objectives of the Agreement.²⁰⁵ To that end, the programmes and measures are to be developed for pollution from municipal and industrial sources, for an inventory of pollution abatement requirements, for eutrophication and for pollution from agricultural and other land use, from shipping and dredging activities, and from onshore and offshore facilities.²⁰⁶ Measures and programmes are also to be developed for contingency plans, for surveillance and monitoring, and for elaborating lists of hazardous substances, the control of persistent toxic substances, and airborne pollution.²⁰⁷ The parties also agree to exchange information between themselves, to consult as appropriate,²⁰⁸ and to meet twice a year to co-ordinate work plans and evaluate progress.

The International Joint Commission assists in implementation of the 1978 Agreement by collating, analysing and disseminating data and information, by tendering advice and recommendations, by providing assistance, and by investigating such matters as the parties may refer to it.²⁰⁹ The powers of the Commission are broad, and include a competence to conduct public hearings and to compel testimony and the production of documents,²¹⁰ to publish reports at its discretion, to verify data provided to it, and to request the provision of information relating to water quality.²¹¹ A Great Lakes Water Quality Board and a Science Advisory Board assist the Commission.²¹²

The 1975 Statute of the River Uruguay

The Statute of the River Uruguay (1975 Statute)²¹³ was signed between Argentina and Uruguay to implement Article 7 of the 1961 treaty that establishes the boundary between the two countries on the River Uruguay. By Article 1 of the 1975 Statute, the parties 'agree . . . to establish the joint machinery necessary for the optimum and rational utilization of the River Uruguay, in strict observance of the rights and obligations arising from treaties and other international agreements in force for each of the Parties'. To this end, the 1975 Statute addresses navigation and works on the river (Chapter II), use of the waters (Chapter IV), exploration and exploitation of bed and subsurface resources (Chapter VIII), conservation, use and development of other natural resources (Chapter IX) and prevention of pollution (Chapter X). To ensure co-operative regulation of the river, the 1975 Statute creates an Administrative Commission of the River Uruguay (CARU), on which both parties enjoy equal representation. CARU is charged with implementation of the 1975 Statute and co-ordinating actions between the parties under the Statute including, *inter alia*, conservation efforts and preventing pollution.²¹⁴ The Statute also sets up a procedural mechanism for projects on the river that are liable to affect navigation, the regime of the river or the quality of its waters.²¹⁵

²⁰⁵ Arts. V and VI. ²⁰⁶ Art. VI(1)(a)–(h) and Annexes 3–8. ²⁰⁷ Art. VI(1)(i)–(m) and Annexes 9–12.

²⁰⁸ Arts. IX and X. ²⁰⁹ Art. VII(1).

²¹⁰ Art. VII(2), under legislation passed pursuant to the Boundary Waters Treaty. ²¹¹ Arts. VII(2), (4) and (5) and IX(1).

²¹² Art. VIII. ²¹³ Statute of the River Uruguay, Salto, 26 February 1975, 1295 UNTS 340.

²¹⁴ Art. 56. ²¹⁵ Arts. 7–12.

The Case Concerning the Pulp Mills on the River Uruguay²¹⁶

A dispute arose under the 1975 Statute when Uruguay authorised two pulp mills on the River Uruguay, one near Fray Bentos, the M'Bopicuá (MBC) mill, and another several kilometres downstream, the Botnia mill, both located close to the Argentine city of Gualeguaychú. Argentina considered that Uruguay was in breach of the 1975 Statute, and referred the matter to CARU. Unable, however, to resolve the dispute before the CARU, in 2006 Argentina referred the dispute to the ICJ in accordance with Article 60 of the 1975 Statute. In its application to the ICJ, Argentina claimed that Uruguay had breached substantive obligations under the 1975 Statute to prevent pollution and prescribe measures in accordance with applicable international standards, and procedural obligations relating to prior notification and co-operation and the obligation to prepare an environmental impact assessment.²¹⁷ Argentina sought declarations that Uruguay should cease to act in breach of its obligations under the 1975 Statute, and provide reparation for injury caused by Uruguay's breach. Argentina also sought injunctive relief from the Court, namely, the suspension of the construction of the pulp mills.²¹⁸ The request was rejected by the Court in July 2006, on the ground that Argentina had not demonstrated that the construction would cause harm to the river such as to meet the requirement of urgency necessary to justify provisional measures.²¹⁹

In September 2006, the construction of the MBC mill was abandoned, leaving just the Botnia mill, which went into operation in 2008, producing a million tons of pulp a year. Uruguay argued that the river was able to assimilate this volume of pollution, being one of the largest rivers in the world. Argentina, on the other hand, argued that its scientific evidence pointed to a different conclusion. As described in Chapter 15, the Court found that Uruguay had violated procedural obligations to inform, notify and negotiate with Argentina; however, since those obligations only extended until the end of the negotiation period provided by Statute, thereafter Uruguay was free to proceed to construction and operation of the mill.²²⁰

As regards the substantive obligations, Argentina argued that by proceeding to authorise the pulp mills Uruguay had violated the substantive obligations of the 1975 Statute, in particular Articles 36 and 41. Article 36 directs the parties to 'co-ordinate, through the [River] Commission, the necessary measures to avoid any change in the ecological balance and to control pests and other harmful factors in the river and the areas affected by it'; Article 41 obliges the parties, *inter alia*, to 'protect and preserve the aquatic environment and, in particular, to prevent its pollution'.²²¹

In addressing the substantive obligations, the Court rejected Argentina's argument that the procedural and substantive obligations laid out in the 1975 Statute were indivisible,²²² noting that, although there was a 'functional' connection between procedural and substantive obligations, the Statute did not 'indicate that a party may fulfil its substantive obligations by

²¹⁶ *Case Concerning Pulp Mills on the River Uruguay (Argentina v. Uruguay)*, Judgment of 20 April 2010, available at www.icj-cij.org/docket/files/135/15877.pdf.

²¹⁷ Application Instituting Proceedings filed in the Registry of the Court on 4 May 2006, *Pulp Mills on the River Uruguay (Argentina v. Uruguay)*, p. 19, para. 24.

²¹⁸ *Demande en Indication de Mesures Conservatoires Présenté par le Gouvernement de la République Argentine*, 4 May 2006.

²¹⁹ *Pulp Mills on the River Uruguay (Argentina v. Uruguay)*, Provisional Measures, Order of 13 July 2006 (2006) ICJ Reports 113.

²²⁰ Judgment, para. 157; Chapter 15, pp. 634–5, below.

²²¹ Art. 40 defines pollution as 'the direct or indirect introduction by man into the aquatic environment of substances or energy which have harmful effects'.

²²² *Ibid.*, para. 71.

complying solely with its procedural obligations, nor that a breach of procedural obligations automatically entails the breach of substantive ones'.²²³ The Court addressed issues of evidence and proof, noting that 'a precautionary approach may be relevant in the interpretation and application of the ... Statute' but did not operate to reverse the burden of proof, which fell on the party making the allegation of violation.²²⁴ The Court ruled that Article 1 merely set out the purposes of the 1975 Statute, and as such informed the interpretation of the substantive obligations but 'does not by itself lay down specific rights and obligations' with regard to the attainment of optimum and rational utilisation, which 'requires a balance between the Parties' rights and needs to use the river for economic and commercial activities on the one hand, and the obligation to protect it from any damage to the environment that may be caused by such activities, on the other'.²²⁵

As regards Article 36, the Court concluded that its purpose was 'to prevent any transboundary pollution liable to change the ecological balance of the river by co-ordinating, through CARU, the adoption of the necessary measures'; in this way it imposed an obligation on both states 'to take positive steps to avoid changes in the ecological balance', including the adoption of a regulatory framework, as had been done through CARU, and in 'the observance as well as enforcement by both Parties of the measures adopted'.²²⁶ This imposed an 'obligation of conduct', and both parties were required 'to exercise due diligence in acting through [CARU] for the necessary measures to preserve the ecological balance of the river': whilst the obligation was of crucial importance to preserve ecological balance, Argentina had not demonstrated that Uruguay had refused to engage in co-ordination within the Commission and there was therefore no breach of Article 36.²²⁷

The Court also found no violation of Article 41. It began with a series of general observations that indicate its approach to the interpretation and application of environmental protection provisions. First, it noted that the provision drew a distinction between the regulatory functions of CARU and the parties' obligation to adopt rules and measures individually to 'protect and preserve the aquatic environment and, in particular, to prevent its pollution'. Second, Article 41 indicated that each parties' own rules must be 'in accordance with applicable international agreements' and 'in keeping, where relevant, with the guidelines and recommendations of international technical bodies'. Third, the Article 41 obligation imposed a duty 'to act with due diligence in respect of all activities which take place under the jurisdiction and control of each party', entailing the adoption of appropriate rules and measures and 'a certain level of vigilance in their enforcement', such as monitoring. Accordingly, a party's responsibility would be engaged only 'if it was shown that it had failed to act diligently' and taken 'all appropriate measures to enforce its relevant regulations on a public or private operator under its jurisdiction'.²²⁸ And, fourth, the Court noted that the scope of the obligation to prevent pollution fell to be determined by reference to the definition of pollution in Article 40 of the 1975 Statute, including the 'harmful effects' that were to be assessed by reference to the CARU Digest that set standards for harmful levels of pollutants, expressing 'the will of the Parties and their interpretation of the provisions of the 1975 Statute'.²²⁹

²²³ *Ibid.*, para. 78. ²²⁴ *Ibid.*, para. 164. ²²⁵ *Ibid.*, paras. 173 and 175. ²²⁶ *Ibid.*, para. 185.

²²⁷ *Ibid.*, paras. 187–9. ²²⁸ *Ibid.*, paras. 195–7.

²²⁹ *Ibid.*, paras. 198–9; the Digest defines 'harmful effects' as 'any alteration of the water quality that prevents or hinders any legitimate use of the water, that causes deleterious effects or harm to living resources, risks to human health, or a threat to water activities including fishing or reduction of recreational activities' (Title I, Chapter I, Section 2, Art. 1(c) of the Digest (E3)).

The Court ruled that Uruguay had not breached its obligations under Article 41, because Argentina had not provided 'conclusive evidence' showing that Uruguay had 'not acted with the requisite degree of due diligence or that the discharges of effluent from the [Botnia] mill have had deleterious effects or caused harm to living resources or to the quality of the water or the ecological balance of the river since it started its operations in November 2007'.²³⁰ In reaching this conclusion, the Court found that Uruguay had acted with due diligence in carrying out an environmental impact assessment,²³¹ rejecting Argentina's argument that no proper assessment of possible sites was carried out prior to the determination of the final site, as well as Argentina's claim that Uruguay had failed to take into account 'the receiving capacity and sensitivity of the waters of the river', and its ability to cope with the level of polluting discharges from the Botnia plant.²³² In particular, Argentina had 'not established' that effluent discharges exceeded limits set by CARU.²³³ The Court also found that Uruguay had consulted appropriately with the affected populations;²³⁴ that there was no evidence to support Argentina's claim that the Botnia mill was 'not BAT-compliant in terms of the discharges of effluent for each tonne of pulp produced';²³⁵ and that the mill's discharges generally met CARU and Uruguayan standards and, where on occasion they did not do so, the Court was not in a position to conclude that Uruguay had violated Article 41(a) 'in the absence of convincing evidence that this [was] not an isolated episode but rather a more enduring problem'.²³⁶ As regards the presence of particular pollutants, the Court rejected all of Argentina's allegations: it was 'unproven' that post-operational averages of dissolved oxygen were below CARU minimum standards;²³⁷ 'so far' Uruguay had complied with its own standard for total phosphorus in effluent discharge (in the absence of any CARU standards);²³⁸ and the fact that levels of concentrations of total phosphorus in the river exceeded the limits established by Uruguayan legislation did not constitute a violation of Article 41(a) 'in view of the river's relatively high total phosphorus content prior to the commissioning of the plant, and taking into account the action being taken by Uruguay by way of compensation';²³⁹ it was not established that a serious algal bloom episode that occurred on 4 February 2009 'was caused by the nutrient discharges from the [Botnia] mill'.²⁴⁰ The Court further concluded that: there was 'insufficient evidence' to attribute to the Botnia mill the allegedly increased level of concentrations of phenolic substances,²⁴¹ Argentina had not 'adduced clear evidence' establishing a link between the presence of nonylphenols and the operation of the Botnia mill;²⁴² there was 'no clear evidence' to link increases in the presence of dioxins and furans in the river to the operation of the Botnia mill;²⁴³ there was not 'sufficient evidence' to show that the mill had caused harm to flora and fauna, and no clear evidence that substances with harmful effects had been introduced into the aquatic environment of the river through the mill's emissions into the air.²⁴⁴

These evidentiary findings were criticised by Judges Simma and Al-Khasawneh in a strongly worded joint dissenting opinion. They concluded that, faced with the results of a deficient method of scientific fact-finding, they were not in a position to agree that Uruguay 'has not breached its substantive obligations under Articles 35, 36 and 41 of the 1975 Statute of the

²³⁰ *Ibid.*, para. 265.

²³³ *Ibid.*, para. 214.

²³⁷ *Ibid.*, para. 239.

²⁴¹ *Ibid.*, para. 254.

²³¹ See Chapter 14, pp. 620–1, below. ²³² Judgment, paras. 210–14.

²³⁴ *Ibid.*, paras. 215–19.

²³⁵ *Ibid.*, para. 225.

²³⁶ *Ibid.*, para. 228.

²³⁸ *Ibid.*, para. 243.

²³⁹ *Ibid.*, para. 247.

²⁴⁰ *Ibid.*, para. 250.

²⁴² *Ibid.*, para. 257.

²⁴³ *Ibid.*, para. 259.

²⁴⁴ *Ibid.*, paras. 262 and 264.

River Uruguay'.²⁴⁵ They concluded that the Court had evaluated the scientific evidence in a manner that was 'flawed methodologically' and that the Court had not done what was necessary 'to arrive at a basis for the application of the law to the facts as scientifically certain as is possible in a judicial proceeding'.²⁴⁶ They considered that on its own the Court was 'not in a position adequately to assess and weigh complex scientific evidence of the type presented by the Parties', and that a court of justice cannot assess, without the assistance of experts, complex and competing scientific claims as to 'whether two or three-dimensional modelling is the best or even appropriate practice in evaluating the hydrodynamics of a river', or 'the effects of the breakdown of nonylphenoethoxylates', or 'the possible chain of causation which can lead to an algal bloom'. On their view, which was shared by Judge Ad Hoc Vinuesa in his dissenting opinion, 'the task of a court of justice is not to give a scientific assessment of what has happened, but to evaluate the claims of parties before it and whether such claims are sufficiently well-founded so as to constitute evidence of a breach of a legal obligation',²⁴⁷ and this required the appointment by the Court of one or more experts under Article 50 of its Rules. This view was not shared by the majority, as reflected in Judge Keith's view, expressed in a separate opinion, that the resolution of the scientific and technical matters in the case was 'relatively straightforward'.²⁴⁸ Also with the majority, Judge Yusuf nevertheless expressed concerns about 'the manner in which the Court decided to handle the abundant factual material presented by the Parties', stating that the Court was not in a position to compare adequately, for example, the hydrodynamic data regarding the flow of the river, because each of the parties collected their data 'from monitoring at different stations, at different depths, and on different dates'.²⁴⁹ According to Judge Yusuf, the Article 50 mechanism would have enabled the Court to deal with only one set of scientific data, rather than try to evaluate the relative merits, relevancy, accuracy and probative value of two sets of conflicting evidence, and would not have deprived the Court of its judicial function: 'Thus, although experts may assist the Court to develop a finer grasp of the scientific and technical details of factual issues arising in the case, it always remains the ultimate responsibility of the judge to decide on the relevance and significance of those facts to the adjudication of the dispute'.²⁵⁰

These views reflect a recognition that the judicial assessment of complex technical and scientific matters of the kind that arise in many international environmental cases will pose significant challenges. Thus, whilst the *Pulp Mills* case may be said to reflect a certain coming of age for environmental arguments before the ICJ, it may also allow states to feel emboldened to avoid co-operative obligations in disputes over the environmental impacts of certain projects for international watercourses, in the sense that the consequences of the violation of procedural obligations will be negligible.

Africa

African states have also adopted a number of important bilateral and regional treaties to protect and manage freshwater resources. Of particular note, because of their comprehensive approach,

²⁴⁵ Joint Dissenting Opinion of Judges Al-Khasawneh and Simma, para. 2. ²⁴⁶ *Ibid.*

²⁴⁷ *Ibid.*, para. 4; Dissenting Opinion of Judge Ad Hoc Vinuesa, para. 95.

²⁴⁸ Separate Opinion of Judge Keith, para. 11. ²⁴⁹ Declaration of Judge Yusuf, para. 3. ²⁵⁰ *Ibid.*, para. 12.

are the regimes established by treaty for the Niger basin and the Zambezi River system.²⁵¹ Other arrangements, for example in relation to the Nile, remain under discussion.²⁵²

Niger basin

Under the 1963 Act Regarding Navigation and Economic Co-operation Between the States of the Niger Basin, the parties undertake to co-operate closely on projects likely to have an appreciable effect on the conditions of the waters and biological characteristics of the fauna and flora of the River Niger and its tributaries, under the auspices of an 'Intergovernmental Organization Concerned with the Exploitation of the River'.²⁵³ This organisation was subsequently renamed the River Niger Commission, under which the riparian states agree to inform the Commission of certain works which they propose to undertake and to abstain from carrying out any works likely to pollute the waters or modify the flora and fauna without adequate notice to and prior consultation with the Commission.²⁵⁴ The Convention Creating the Niger Basin Authority replaced the River Niger Commission with the Niger Basin Authority, which was designed to ensure the integrated development of the Niger Basin.²⁵⁵ The responsibilities of the Authority extend to environmental control and preservation, including the establishment of norms and measures in the alternative uses of the waters, prevention and reduction of pollution, and preservation of human health and genetic resources.²⁵⁶

On 30 April 2008, the parties adopted the Niger River Water Charter, a legally binding instrument.²⁵⁷ The purpose of the Charter is to encourage co-operation based on solidarity and reciprocity for a sustainable, equitable and co-ordinated use of the Niger River hydrographic catchment area.²⁵⁸ The Charter provides guidance on general principles such as equitable and reasonable participation and use, the principle of no harm, precaution and prevention, and the polluter pays principle.²⁵⁹ It obliges parties to preserve the quantity and quality of resources, develop water planning, protection and management policies, and protect the environment.²⁶⁰ It also establishes a Permanent Technical Committee, *inter alia*, to assist the parties in technical matters, and to facilitate dispute resolution. The Charter creates procedural rules on information exchange, notification and consultation for projects that may have significant adverse effects on other basin states,²⁶¹ provides for public participation subject to specific conditions,²⁶² and establishes a system for the amicable resolution of

²⁵¹ See also treaties for the Lake Chad Basin, the Senegal River and the River Gambia.

²⁵² C. Mallat, 'Law and the Nile River: Emerging International Rules and the Shari'a', in P. Howell and J. A. Allen (eds.), *The Nile: Sharing a Scarce Resource* (1994), 365; J. Brunnée and S. Toope, 'The Changing Nile Basin Regime: Does Law Matter?', 43 *Harvard International Law Journal* 105 (2002); P. Kameri-Mbote, 'From Conflict to Cooperation in the Management of Transboundary Waters: The Nile Experience', in M. Berthold (ed.), *Linking Environment and Security – Conflict Prevention and Peace Making in East and Horn of Africa* (2005), 6; T. S. Bulto, 'Between Ambivalence and Necessity: Occlusions on the Path Toward a Basin-Wide Treaty in the Nile Basin', 20(3) *Colorado Journal of International Environmental Law and Policy* 291 (2009) (republished, originally published 2(2) *Mizan Law Review* 201 (2008)); D. Z. Mekonnen, 'The Nile Basin Cooperative Framework Agreement Negotiations and the Adoption of a "Water Security" Paradigm: Flight into Obscurity or a Logical Cul-de-Sac?', 21(2) *European Journal of International Law* 421 (2010).

²⁵³ Act Regarding the Navigation and Economic Co-operation Between the States of the Niger Basin, Niamey, 26 October 1963, in force 1 February 1966, 587 UNTS 9, Arts. 4 and 5.

²⁵⁴ Agreement Concerning the Niger River Commission and the Navigation and Transport on the River Niger, Niamey, 25 November 1964, in force 3 December 1982, 587 UNTS 21, Art. 12.

²⁵⁵ Faranah Convention Creating the Niger Basin Authority, Faranah, 21 November 1980, IELMT 980:86, Art. 3(1).

²⁵⁶ Art. 4(2)(d). ²⁵⁷ The Water Charter of the River Niger Basin, Niamey, Niger, 30 April 2008, not yet in force.

²⁵⁸ Art. 2. ²⁵⁹ Arts. 4–9. ²⁶⁰ Arts. 10–12. ²⁶¹ Arts. 19–24. ²⁶² Arts. 25 and 26.

disputes, first through the Niger Basin Authority, and then through mediation and conciliation through the Permanent Technical Committee. If the dispute were to persist, it would go to the Conciliation Commission of the African Union, and as a last resort, the International Court of Justice.²⁶³

Southern Africa, including the Zambezi River

The 1987 Agreement on the Action Plan for the Environmentally Sound Management of the Common Zambezi River System establishes an ambitious programme for environmentally sound water resources management to strengthen regional co-operation for sustainable development in eight African countries, under the auspices of the Southern African Development Community (SADC) (formerly the Southern African Development Co-ordination Conference, or SADCC).²⁶⁴ The Agreement adopts the Action Plan for the Environmental Management of the Common Zambezi River System (ZACPLAN) set out in Annex I to the Agreement, in the context of the Mar del Plata Action Plan and UNEP's programme on the environmentally sound management of inland water (EMINWA). The ZACPLAN, which is designed to deal with water resource and environmental management problems of the river system in a co-ordinated manner to avoid possible future conflicts, is divided into four component elements comprising environmental assessment, environmental management, environmental legislation, and supporting measures.²⁶⁵ While setting a broad framework for co-operation, the ZACPLAN also identifies programme categories and specific programmes, establishes a workplan and timetable, and institutional and financial arrangements, including the establishment of a Trust Fund.²⁶⁶ The Zambezi Action Plan is implemented by the SADC, an Intergovernmental Monitoring and Co-ordinating Committee, a Co-ordinating Unit, and national focal points.²⁶⁷

In 1995, the SADC states concluded a Protocol on Shared Watercourses in the SADC region, which was revised in August 2000.²⁶⁸ The Protocol's objective is to 'foster closer co-operation for judicious, sustainable and co-ordinated management, protection and utilisation of shared watercourses and advance the SADC agenda of regional integration and poverty alleviation'.²⁶⁹ The states parties recognise the unity and coherence of shared watercourses and that their utilisation should be open to each watercourse state on an equitable and reasonable basis.²⁷⁰ The states parties also undertake to respect existing rules of 'customary or general' international law relating to shared watercourse utilisation and management.²⁷¹

Under the Protocol, parties are required, individually or jointly, to protect and preserve shared watercourse ecosystems.²⁷² States parties must notify other watercourse states of planned measures that may have a 'significant adverse effect' and, if necessary, negotiate the possible effects of planned measures on the condition of a shared watercourse.²⁷³ States parties using a shared watercourse must take all appropriate measures to prevent significant harm to

²⁶³ Chapter IX, Art. 29–31. ²⁶⁴ Harare Agreement, 28 May 1987, in force 28 May 1987, 27 ILM 1109 (1988).

²⁶⁵ Annex I, paras. 28–39. ²⁶⁶ Annex II, paras. 25–7 and Appendix II. ²⁶⁷ Arts. 2 and 3.

²⁶⁸ Protocol on Shared Watercourses in the Southern African Development Community (SADC) Region, Maseru, 16 May 1995, in force 29 September 1998; K. K. Lebotse, 'Southern African Community Protocol on Shared Watercourses: Challenges of Implementation', 12 *Leiden Journal of International Law* 173 (1999); S. Salman, 'Legal Regime for the Use and Protection of International Watercourses in the Southern African Region: Evolution and Context', 41 *Natural Resources Journal* 981 (2001). The Heads of State or Government of the SADC agreed to a Revised Protocol in August 2000, which repealed and replaced the 1995 Protocol when it entered into force on 22 September 2003.

²⁶⁹ Art. 2. ²⁷⁰ Art. 3.1, 3.2 and 3.7. ²⁷¹ Art. 3.3. ²⁷² Art. 4.2(a). ²⁷³ Art. 4.1.

other watercourse states, but, if harm is nevertheless caused, the state causing the harm shall take 'all appropriate measures' to eliminate or mitigate the harm; and, where appropriate, discuss the question of compensation.²⁷⁴ The Protocol establishes several organs responsible for implementation of the Protocol, including a Committee of Water Ministers and a Water Sector Co-ordinating Unit.²⁷⁵

In 2004, the Zambezi River basin countries adopted an Agreement to Establish the Zambezi Watercourse Commission (ZAMCOM).²⁷⁶ The Commission's objectives are to promote equitable and reasonable utilisation of the water resources of the Zambezi watercourse as well as efficient management and sustainable development,²⁷⁷ requiring the river to be managed and utilised in an equitable and reasonable manner.²⁷⁸ It sets out general responsibilities for member states, and commits them to abide by principles of sustainable development and utilisation, prevention of harm, precaution, intergenerational equity, assessment of trans-frontier impacts and co-operation.²⁷⁹ It also provides for a non-compliance procedure, and for dispute resolution under the Tribunal of the SADC or other means as agreed by the parties.²⁸⁰ ZAMCOM is composed of three organs: the Council of Ministers, the Technical Committee and the Secretariat. The role of the Council would be to adopt policies and provide guidance to the parties, and the Technical Committee would be in charge of implementing the policies. The Secretariat would provide technical and administrative services to the Council under the supervision of the Technical Committee.

Asia

The Himalayas, the headwaters of Asia's rivers, provides water to roughly one-fifth of the world's population. Over the past two decades, there have been a number of significant developments in Asia, to supplement the limited number of earlier river treaties.²⁸¹

Mekong River Basin

In 1995, the four lower basin states of the Mekong River Basin signed the Agreement on Co-operation for the Sustainable Development of the Mekong River Basin. This commits Thailand, Vietnam, Laos and Cambodia to co-operate 'in all fields of sustainable development, utilization, management and conservation of the water and related resources of the Mekong River Basin', including irrigation, hydro-power, navigation, flood control, fisheries, timber floating, recreation and tourism, with a view to minimising the harmful effects that might result from natural occurrences and man-made activities.²⁸² The Agreement commits parties to the protection of the environment, the application of the principles of reasonable and equitable utilisation and the prevention and cessation of harmful effects, as well as the application of state responsibility for harmful effects which cause 'substantial damage'.²⁸³ The Agreement established a Mekong River Commission (MRC), now based in Phnom Penh.²⁸⁴

²⁷⁴ Art. 3.10. ²⁷⁵ Art. 5.1.

²⁷⁶ Agreement on the Establishment of the Zambezi Watercourse Commission, 13 July 2004, not yet in force.

²⁷⁷ Art. 5. ²⁷⁸ Arts. 13 and 14. ²⁷⁹ Art. 12. ²⁸⁰ Arts. 20 and 21.

²⁸¹ I. Kasto, *Water Management and Environmental Protection in Asia and the Pacific* (1983).

²⁸² Chiang Rai (Thailand), 5 April 1995, in force 5 April 1995, 34 ILM 864 (1995), Art. 1; G. Bowder and L. Ortolano, 'The Evolution of an International Water Resources Management Regime in the Mekong River Basin', 40 *Natural Resources Journal* 499 (2000).

²⁸³ Arts. 3, 5, 7 and 8. ²⁸⁴ Arts. 11–33.

A large concern looming over the Agreement is that China and Myanmar, the two upper basin states, are not parties. China in particular has been utilising its share of the Mekong for ambitious hydroelectric projects to meet its growing energy needs. Nevertheless, the two countries have been Dialogue Partners with the MRC since 1996, and there are continuing signs of growing co-operation. On 1 April 2002, China signed an agreement with the MRC to provide regular hydrological data and information to the MRC Secretariat during flood seasons. In April 2010, China indicated it was ready to begin providing data and information during dry seasons as well, and there is currently talk of: increasing co-operation in data and information sharing; assessments of opportunities and impacts of proposed upstream and downstream hydropower schemes; increased initiatives for joint environmental management; and enhanced navigation. It is widely hoped that co-operation in management of water resources in the heavily populated Mekong region will continue to grow.

Subcontinental Asia

India became a party to two important bilateral treaties in 1996, notable for their differing approaches. The Bangladesh–India Treaty on sharing the waters of the Ganges River²⁸⁵ and the India–Nepal Treaty on sharing the waters of the Mahakali River²⁸⁶ are intended to bring an end to long-running differences between India and her neighbours over the entitlement to water flows following the construction by India of barrages on the Ganges and Mahakali Rivers.²⁸⁷ The treaties aim to establish long-term water discharge regimes of thirty and seventy-five years, respectively, focusing on the utilisation of waters rather than their conservation. These instruments take only limited account of developments in the international law of watercourses and efforts to promote sustainable development. The two treaties adopt similar approaches, but differ in their scope of application, the extent of their reliance upon general principles governing rights over shared watercourses, and dispute settlement arrangements.

The Bangladesh–India Treaty has as its principal objective the determination of the amount of water to be released by India to Bangladesh at the Farraka Barrage on the Ganges for a period of thirty years (Articles I and XII). It entered into force upon signature and fills the gap left when a 1977 agreement lapsed.²⁸⁸ The difficulty of that task will not be apparent from the text of the Treaty, which makes only implicit reference to the long-running dispute between the two countries following the construction and operation by India of the Farraka Barrage.²⁸⁹ The 1996 Treaty established a new formula for sharing the Ganges waters at Farraka in the dry season (1 January to 31 May), and also provided that below Farraka the waters are not to be reduced further except for ‘reasonable use’ in a limited amount (Article III). Further provision is made for the situation where the flow falls below 50,000 cusecs (Article II(iii)). The sharing arrangements are to be reviewed every five years, and if no agreement can be reached on adjustments India is to release at least 90 per cent of Bangladesh’s share as provided by

²⁸⁵ New Delhi, 12 December 1996, 36 ILM 519 (1997). ²⁸⁶ New Delhi, 12 February 1996, 36 ILM 531 (1997).

²⁸⁷ B. Desai, ‘Sharing of International Water Resources: The Ganga and Mahakali River Treaties’, 3 *Asia Pacific Journal of Environmental Law* 172 (1998); S. Salman and K. Uprety, ‘Hydro-Politics in South Asia: A Comparative Analysis of the Mahakali and the Ganges Treaties’, 39 *Natural Resources Journal* 295 (1999); S. Subedi, ‘Hydro-Diplomacy in South Asia: The Conclusion of the Mahakali and Ganges River Treaties’, 93 *American Journal of International Law* 953 (1999).

²⁸⁸ Bangladesh–India, Agreement on Sharing of the Ganges’ Waters, Dacca, 5 November 1977, 17 ILM 103 (1978).

²⁸⁹ See Nazrul Islam, ‘International Watercourses Law and the Farraka Barrage Dispute’ (unpublished PhD thesis, London University, 2000).

Article II. The Treaty makes reference to a number of guiding principles. It aims to achieve 'optimum utilisation' of the waters of the region, bringing a 'fair and just' solution to the Farraka waters problem but without establishing 'any general principles of law or precedent' (Preamble). It provides for application of the principles of 'equity, fair play and no harm to either party' to emergency situations, future adjustments of the Treaty, and the conclusion of agreements for other rivers (Articles II(iii), X and IX). The Treaty establishes an Indo-Bangladesh Joint Rivers Commission with the more limited mandate of monitoring daily flows, submitting data and implementing arrangements under the Treaty (Articles IV, VI and VII). The Treaty refers disputes to the Indo-Bangladesh Joint Rivers Commission and then the two governments (Article VII). Bangladesh is currently pushing for similar agreements for the Teesta River and other common rivers.

The Mahakali River (known as the Sharda River in India) has formed the border between Nepal and India since 1816, and has been the subject of tension between the two countries since India's occupation of some 50 square kilometres of land at its source following the India-China conflict of 1961. The 1996 Treaty replaces a 1992 agreement which Nepal had rejected as providing inadequate amounts of water and electricity. The 1996 Treaty has four objectives. First, it settles Nepal's entitlement to waters from the existing Sarada Barrage (Article 1). Second, it authorises (without prejudice to Nepal's sovereign rights over that land) India's prior construction of the part of the recently constructed Tanakpur Barrage which occurred on 2.9 hectares of Nepalese territory; in return, Nepal will receive an agreed supply of water, a guaranteed amount of electricity annually, the construction by India of a new electricity transmission line, and additional water and electricity in the event that the flow of the Mahakali River is subsequently augmented by new works (Article 2). Third, it provides framework rules for the construction of an integrated Pancheshwar Multipurpose Project on the boundary along the Mahakali River where the two states have equal rights in the water (to be the largest dam in Asia, with two power stations of equal capacity, the costs and total energy output of which are to be shared, although Nepal agrees to sell some of its electricity to India (Article 3)). Fourth, it commits India to supply irrigation water to Nepal (Article 4). The Treaty also requires all other projects in the Mahakali River – where it is a boundary river – to be designed and implemented on the basis of the 'principles' set forth in the Treaty (Article 6). The Treaty provides for 'equal partnership' in the context of the project's objective of producing 'maximum total net benefit' (Article 3(1)), and makes only limited reference to underlying principles of 'equality, mutual benefit and no harm to either party' (Article 9(1)). Nepal's water requirements are to be given 'prime consideration' (Article 5(1)), and the parties agree not to obstruct or divert the waters so as to adversely affect its natural flow and level except by agreement, provided that local users may take a limited amount (Article 7). The Treaty establishes the Mahakali River Commission, to make recommendations for the conservation and utilisation of the river, evaluation of projects, and examination of differences between the parties concerning interpretation and application of the Treaty (Article 9(3)). Disputes are to go to a tribunal of three arbitrators, the decisions of which are to be final, definitive and binding (Article 11).

Pakistan-India dispute

The Indus River flows for some 1,800 miles through Pakistan and India and has been a source of tension between the two countries ever since partition in 1947. Following mediation facilitated

by the World Bank, in 1960 India and Pakistan concluded the Indus Waters Treaty,²⁹⁰ which aims to apportion equitably water resources of the Indus Basin, giving the 'Eastern Rivers' to India, and the 'Western Rivers' to Pakistan. Subject to certain specified exceptions, the parties are required to refrain from interfering with the rivers apportioned to the other.²⁹¹ This agreement has provided a rare source of co-operation for two countries that remain at odds with each other. However, it is questionable whether the Treaty itself will be enough to solve further conflicts triggered by increasing use and scarcity caused by climate change.

The dispute settlement procedure under the Treaty was invoked for the first time by Pakistan in 2005. The dispute concerned a hydroelectric project being constructed on the Chenab River upstream from the Pakistan border, and the question of whether it complied with the Treaty. The dispute was resolved by a neutral expert, and the dam was eventually completed. At the time of writing, two additional disputes between the parties had arisen. Pakistan has initiated arbitration over India's construction of another hydroelectric plant on the Kishenganga River. Pakistan claims the project will divert water controlled by Pakistan in violation of the Treaty. The latter dispute concerns whether construction of a barrage at the mouth of Wullar Lake is for navigational or irrigation purposes.

Israel–Jordan Peace Treaty

The 1994 Israel–Jordan Peace Treaty is of singular importance for the development of water law in the Middle East.²⁹² Its Article 6 is intended to contribute to a 'comprehensive and lasting settlement of all the water problems' between the two countries. It commits the parties to agree mutually to recognise the rightful allocations of both of them in Jordan River and Yarmouk River waters and in certain groundwaters 'in accordance with agreed acceptable principles, quantity and quality' as provided for in Annex II to the Treaty (Article 6(1)). By Article 6(2), the parties,

recognising the necessity to find a practical, just and agreed solution to their water problems . . . jointly undertake to ensure that the management and development of their water resources do not, in any way, harm the water resources of the other Party.²⁹³

The parties agree to co-operate on alleviating water shortages, recognising that water issues must be dealt with 'in their totality', and commit to develop existing and new water resources, prevent contamination, assist in alleviation, share information and conduct joint research and development.²⁹⁴ Annex II to the Treaty provides for detailed allocations of water quantities, for storage arrangements and the maintenance of water quality and protection against 'any pollution, contamination, harm or unauthorized withdrawals of each other's allocations'.

²⁹⁰ Indus Waters Treaty, Karachi, 19 September 1960, 419 UNTS 126. ²⁹¹ Arts. II(2)–(4) and III(2).

²⁹² 34 ILM 46 (1995); see R. Fathallah, 'Water Disputes in the Middle East: An International Law Analysis of the Israel–Jordan Peace Accord', 12 *Journal of Land Use and Environmental Law* 119 (1996); O. Wiczak, 'An Analysis of the Treaty of Peace Between Israel and Jordan in the Context of International Water Law', 14 *Yearbook of International Environmental Law* 139 (2003); and, more generally, J. A. Allan and C. Mallat (eds.), *Water in the Middle East: Legal, Political and Commercial Implications* (1995). See also Israel–Jordan–PLO Declaration on Co-operation on Water-Related Matters, 13 February 1996, 36 ILM 761 (1997).

²⁹³ Art. 6(2). ²⁹⁴ Art. 6(3).

It also makes provision for the disposal of wastewaters, for the protection and use of groundwaters, and for co-operation, including through the establishment of a Joint Water Committee.

CONCLUSIONS

The management of freshwater presents one of the greatest environmental challenges facing the international community, largely because pollution and overuse have contributed to the unsanitary conditions which contribute to the world's most serious health problems. In this sense, it is also, clearly, a major human rights issue. According to the 2010 report of the WHO/UNICEF Joint Monitoring Programme on Water Supply and Sanitation, at least 884 million people in the world do not have access to safe drinking water and 2.6 billion have no access to improved sanitation, almost all of them in developing countries.²⁹⁵ In those countries, every year an estimated 3 million people, mainly infants and young children, die prematurely from water-related diseases.²⁹⁶ In the face of statistics such as these, international law cannot, in the absence of strong political will and adequate financial resources, be expected to produce immediate results.

What international law seeks to do is to set a framework according to which minimum international standards can be developed and effective, practical measures applied. Apart from the principles and rules of international law to which they are subject, freshwater resources are now the subject of a global framework convention (albeit not in force), together with a growing range of bilateral and regional agreements that specifically address the use of freshwater resources, and their protection from contamination by pollution. These provide the first steps on which further developments might be constructed. Although the main emphasis in the past has been on developing co-operative international arrangements to govern use, in recent years the attention given to conservation has increased markedly, and treaties such as the 1992 Watercourses Convention and the 1997 Watercourses Convention, as well as the ILC's 2008 Articles on Transboundary Aquifers, reflect the widely held view that states are no longer entitled, as a matter of international law, to allow activities to take place which cause significant pollution to shared freshwater resources.

This conclusion nevertheless should not obscure the significant amount of work which remains to be done if international law is to contribute to halting overuse of freshwater and its pollution. There continue to be three priority areas. First, it is clear that rules establishing general standards and obligations, including those established by customary law, will be wholly inadequate. There is a need to develop specific, enforceable international water quality standards, at the local, regional or global levels, which may be of general application and which take account of particular regional or local circumstances: the judgment of the ICJ in the *Pulp Mills* case indicates one way in which agreed standards may assist in resolving disputes. On the basis of these standards, increasingly stringent targets and timetables can be adopted for the elimination of harmful substances, or the conduct of certain activities, for particular rivers, lakes or groundwater resources, or on the basis of a regional approach.

²⁹⁵ WHO and UNICEF, *Progress on Sanitation and Drinking Water: 2010 Update* (2010), 6–7.

²⁹⁶ World Water Assessment Programme, *The United Nations World Water Development Report 3: Water in a Changing World* (2009), 13.

Second, and in a similar fashion to that needed for the protection of oceans and seas, it is evident both from this chapter and from the rest of this book that protecting freshwater resources from pollution and overuse cannot be achieved otherwise than by addressing the root causes of the problem (in particular, agricultural practices and industrial activities). Without effective environmental assessment on a broad scale of these practices and activities, both before and after their authorisation, it is unlikely that freshwater resources can benefit from anything other than cosmetic protection. In this regard, it will be equally important that the findings of such assessments are fully integrated into decision-making processes.

Third, the protection of freshwater resources will not be achieved without effective enforcement mechanisms available to public and private entities, which allow cases of non-compliance to be challenged. This means enhancing such mechanisms at the national and international levels, in combination with detailed and effective principles on access to information and proper environmental impact assessment procedures. In this regard, it is regrettable that the ICJ did not, in its *Pulp Mills* judgment, go further than it did in stressing the possibility of a closer and more symbiotic relationship between procedural and substantive obligations; in particular by giving real meaning and effect to procedural obligations and tying them more closely to the practical attainment of substantive requirements.²⁹⁷

²⁹⁷ On the implications of the approach taken by the Court, see Chapter 14, pp. 620–1, below; and Chapter 15, pp. 634–5, below.

9

Oceans, seas and marine living resources

INTRODUCTION

Oceans cover about 70 per cent of the Earth's surface, accounting for most of the Earth's water and making up more than 97 per cent of the biosphere.¹ The oceans nurture life and shape the planet's weather and climate. They create more than half of our oxygen and provide vital sources of protein, energy and minerals.² As described by some, 'Earth is a marine habitat'.³ The oceans provide food for a billion people, and are also a source of income and livelihood for millions. The FAO estimates that about 540 million people are employed in capture fisheries and in related secondary activities.⁴

But oceans are experiencing serious environmental challenges, many of which have unknown consequences. In 1990, a report by the Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP) on the 'State of the Marine Environment' highlighted coastal pollution as the principal threat to the marine environment.⁵ In 2001, the same group of experts, while recognising that land-based activities continued to be the principal source of pollution, acknowledged that pollution is not the only, or even the most severe, threat to the oceans, and that direct physical damage to ecosystems and habitats and over-exploitation of the resources 'have even greater worldwide effects'. GESAMP considered that the emergence of new issues, such as global warming, 'placed the protection of the seas in a new perspective'.⁶

In 2011, there was no new GESAMP report, but the scientific literature paints a much more complex picture of the state of the oceans than ten years before. Scientists today identify five principal threats – or stressors – to the marine environment: (1) overfishing; (2) habitat loss; (3) pollution (mainly coastal); (4) introduction of invasive species; and (5) climate change.⁷ Overfishing and habitat destruction historically led the ranking of threats to marine life caused

¹ S. Earle, *Sea Change* (1995), xiv.

² International Programme on the State of the Ocean, *Implementing the State of the Oceans Report* (2011), 2.

³ S. Earle, *Sea Change* (1995), xiv, quoting NOAA biologist, Nancy Foster.

⁴ FAO, *The State of World Fisheries and Aquaculture* (2010), Part 1, 6–7.

⁵ GESAMP, *The State of the Marine Environment*, GESAMP Report No. 39 (1990), 1–3.

⁶ GESAMP, *A Sea of Troubles*, GESAMP Report No. 70 (2001), 3.

⁷ C. Nellemann, S. Hain and J. Alder (eds.), *In Dead Water – Merging of Climate Change with Pollution, Over-Harvest, and Infestations in the World's Fishing Grounds* (UNEP, 2008), 26; International Programme on the State of the Ocean, *Implementing the State of the Oceans Report* (2011), 14–19.

by human activities.⁸ In most regions of the world, fisheries peaked at some point between the mid-1980s and the mid-2000s, and since then catch has decreased.⁹ Habitat destruction results from direct removal of habitat, including from damaging fishing practices, such as bottom trawling, but also from the alteration of the environment through activities that change inputs into the oceans or interfere with their natural functioning, including pollution.¹⁰ The largest source of pollution comes from land-based activities and particularly from the release of nutrients into the water, causing eutrophication. Increased microbial activity through the provision of organic matter depletes oxygen in the water column and can lead to the development of dead zones in coastal waters.¹¹ There is also increasing concern about the negative consequences of introducing exotic and invasive species into oceans, which can alter ecosystems or, in vulnerable conditions, even destroy them.¹² The impacts of climate change on the oceans are not fully understood, but there is sufficient evidence to conclude that climate change is altering ocean ecosystems towards conditions not seen for millions of years. So far, the observed impacts include decreased productivity, altered food web dynamics and greater incidence of disease, among others.¹³ One of the most studied phenomena related to climate change is ocean acidification, resulting from the absorption of carbon dioxide, which changes the naturally alkaline pH of the oceans. Greater ocean acidification with rising levels of carbon dioxide emissions is predicted to cause particular damage to coral reefs.¹⁴ Recent research indicates that the cumulative impacts of these and other stresses on oceans could lead to ‘the next globally significant extinction event’ in the marine environment.¹⁵

International regulation has contributed to solving some of the problems facing oceans and marine resources. For example, pollution from certain sources such as vessels and some land-based sources has been reduced. In addition, in the past thirty years states have established numerous international bodies and arrangements with competence over the marine environment, thereby increasing the opportunities for international action, including co-operation. However, progress in international regulation has been offset by new pressures previously undetected, such as new contaminating substances, new or more intense harmful practices or

⁸ Marine Census 2010; GESAMP, *A Sea of Troubles*, GESAMP Report No. 70 (2001), 3.

⁹ UNEP, *Global Synthesis, A Report from the Regional Seas Conventions and Action Plans for the Marine Biodiversity Assessment and Outlook Series* (2010), 9.

¹⁰ International Programme on the State of the Ocean, *Implementing the State of the Oceans Report* (2011), 14.

¹¹ *Ibid.*, 16. See also C. Nellemann and E. Corcoran (eds.), *Our Precious Coasts – Marine Pollution, Climate Change and the Resilience of Coastal Ecosystems* (UNEP, 2006), 15–24; C. Nellemann, S. Hain and J. Alder (eds.), *In Dead Water – Merging of Climate Change with Pollution, Over-Harvest, and Infestations in the World’s Fishing Grounds* (UNEP, 2008), 26; International Programme on the State of the Ocean, *Implementing the State of the Oceans Report* (2011), 42–5.

¹² C. Nellemann, S. Hain and J. Alder (eds.), *In Dead Water – Merging of Climate Change with Pollution, Over-Harvest, and Infestations in the World’s Fishing Grounds* (UNEP, 2008), 26; International Programme on the State of the Ocean, *Implementing the State of the Oceans Report* (2011), 17.

¹³ O. Hoegh-Guldberg and J. F. Bruno, ‘The Impact of Climate Change on the World’s Marine Ecosystems’, 328 *Science* 1523 (2010). See also, for a description of a broader range of potential impacts of climate change on the ocean, C. Nellemann, S. Hain and J. Alder (eds.), *In Dead Water – Merging of Climate Change with Pollution, Over-Harvest, and Infestations in the World’s Fishing Grounds* (UNEP, 2008), 27–41.

¹⁴ O. Hoegh-Guldberg, P. J. Mumby, A. J. Hooten *et al.*, ‘Coral Reefs Under Rapid Climate Change and Ocean Acidification’, 318 *Science* 1737 (2007). See also generally C. Nellemann and E. Corcoran (eds.), *Our Precious Coasts – Marine Pollution, Climate Change and the Resilience of Coastal Ecosystems* (UNEP, 2006); and C. Nellemann, S. Hain and J. Alder (eds.), *In Dead Water – Merging of Climate Change with Pollution, Over-Harvest, and Infestations in the World’s Fishing Grounds* (UNEP, 2008), 35–7.

¹⁵ A. D. Rogers and D. d’A. Laffoley, *International Earth System Expert Workshop on Ocean Stresses and Impacts: Summary Report* (IPSO, 2011).

by moving some problems from one area to another. Furthermore, the combined effect of different ocean 'stressors' referred to above introduces a level of complexity that may require new approaches in the international law of the sea.

The 1982 United Nations Convention on the Law of the Sea (UNCLOS), as the principal instrument of international law in the field, has provided a framework that clarifies the nature of sovereign rights over different portions of the oceans and introduces some of the fundamental principles and duties of ocean conservation. UNCLOS has done so in a rather fragmented and incomplete manner, separating the rules on prevention, reduction and control of marine pollution from the rules to conserve and manage living resources,¹⁶ and not providing coverage to all marine-related issues (most notably to the conservation of marine species and ecosystems, particularly in areas beyond national jurisdiction).¹⁷ In this sense, UNCLOS has not turned out to be 'the constitution of the oceans' initially envisaged. In 1992, even before UNCLOS entered into force, Agenda 21 acknowledged that UNCLOS provided the 'international basis' for the protection and sustainable development of the marine and coastal environment and its resources, but it also recognised that it was necessary to take 'new approaches to marine and coastal area management and development . . . that are integrated in content and are precautionary and anticipatory in ambit'.¹⁸

New approaches have indeed been taken. Regional arrangements have led to notable progress in some areas, particularly around efforts to abate regional seas pollution. Some agreements have resulted in states taking stronger measures than those foreseen by UNCLOS. For example, while UNCLOS did not prohibit dumping at sea, the OSPAR Convention has prohibited this activity. In addition, several regional initiatives have gradually tended towards greater integration in regulation, overcoming some of the initial fragmentation, and taking steps towards ensuring that their activities favour the conservation of marine living resources and habitat protection. In addition, as has occurred in other fields of environmental protection, a number of principles, such as the precautionary principle, the polluter pays principle, the ecosystem approach, access to environmental information and the use of best environmental practices and best techniques, many of them coined at UNCED, have also permeated oceans governance.¹⁹ UNCLOS had not included any of these principles, but provided a framework that has proven to be sufficiently flexible to allow their incorporation in the many treaties and regional measures adopted since 1982. Of these principles, considered to reflect 'modern' oceans governance, the ecosystem approach, discussed further below, may prove to be the most transformative of all in oceans law and policy.²⁰

This chapter provides an overview of the developments in international law that address the principal problems affecting oceans today: pollution, unsustainable fishing practices and habitat destruction. Each of these three main areas of regulation is described separately below. International law on the protection of marine biological diversity does not reflect such a well-defined area of regulation as for marine pollution and the conservation of marine living resources. Rather, it is an emerging body of measures, many of which are soft law in nature, which aim at setting standards related to the protection of species and habitats that are not covered by UNCLOS, and not sufficiently addressed by the Convention on Biological Diversity.²¹

¹⁶ See pp. 396 *et seq.*, below for conservation of marine living resources. ¹⁷ See pp. 434–47, below.

¹⁸ Agenda 21, para. 17.1. ¹⁹ See generally Chapter 6 above.

²⁰ See D. Freestone, 'Principles Applicable to Modern Oceans Governance', 23 *International Journal of Marine and Coastal Law* 385 (2008).

²¹ On the latter Convention, see Chapter 10, pp. 453–64, below.

Ecosystem approach

Support for the implementation of the ecosystem approach in the protection and management of the marine environment has come from the three principal areas of oceans regulation: fisheries management, pollution prevention and species and habitat protection. Although it is present in treaties adopted in the 1980s, such as the Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR),²² greater support for incorporating the ecosystem approach in the management of marine resources developed in the 2000s. The 2001 Reykjavik Declaration on Responsible Fisheries in the Marine Ecosystem supported the application of the ecosystem approach in fisheries management, recognising the interaction between species and also the impact of human activity on ecosystems, including non-fishery activities.²³ A year earlier, the parties to the Convention on Biological Diversity committed to implementing the ecosystem approach.²⁴ Progress was also made at the regional level, in the framework of some of the conventions for the protection of the marine environment against pollution. Of particular relevance was the initiative of the OSPAR and HELCOM Commissions, which jointly adopted in 2003 a statement 'Towards and Ecosystem Approach to the Management of Human Activities'.²⁵ According to this statement, the ecosystem approach is understood as 'the comprehensive integrated management of human activities based on the best available scientific knowledge about the ecosystem and its dynamics'.

This notion of 'integrated management' presents a relatively new paradigm to environmental protection, which incorporates challenges concerning the need both to provide new rules and to change current governance models.²⁶ Regulatory activity in the past decade indicates that states are making an effort to address this greater complexity brought about by ecosystemic interdependence and the interaction of human activity. Steps towards achieving greater integration are shown by efforts to designate marine protected areas by organisations created to abate pollution, such as OSPAR or the IMO;²⁷ by multi-sectoral co-operation within a region, such as the initiatives in the Northeast Atlantic between the OSPAR Commission, the North East Atlantic Fisheries Commission (NEAFC), the International Council for the Exploration of the Sea (ICES) and the International Maritime Organization (IMO);²⁸ or by improving co-ordination between bodies which have similar objectives and are competent over physically related areas or species, such as NEAFC and the Northwest Atlantic Fisheries Organization (NAFO), both with competence over fisheries in the North Atlantic, or between CCAMLR and the Commission for

²² Adopted in 1980, in force 1982. See A. Fabra and V. Gascón, 'The Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR) and the Ecosystem Approach', 23 *International Journal of Marine and Coastal Law* 567 (2008); see Chapter 13, pp. 580–2, below.

²³ FAO Doc. C200/INF/25, Appendix I.

²⁴ According to the parties to the CBD, the ecosystem approach is a 'strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way', and is 'based on the application of appropriate scientific methodologies focused on levels of biological organization, which encompass the essential structure, processes, functions and interactions among organisms and their environment. It recognizes that humans, with their cultural diversity, are an integral component of many ecosystems'. Decision V/6 (2000), Section A. See further, Chapter 10, pp. 453–64, below.

²⁵ First Joint Ministerial Meeting of the Helsinki and OSPAR Commissions, Bremen, 25–26 June 2003. See also, for the Mediterranean, Decision IG 17/6 (2008), by which the contracting parties to the Barcelona Convention decided to implement the ecosystem approach to the management of human activities that may affect the marine environment and adopted a roadmap for that purpose.

²⁶ See Chapter 4, pp. 131–3, above. ²⁷ See pp. 442–7, below (on MPAs).

²⁸ See e.g. Bergen Ministerial Statement, Meeting of the OSPAR Commission, Annex 49, Ref. M6.2.

the Conservation of Southern Bluefin Tuna (CCSBT), with overlapping regimes concerning the management of southern bluefin tuna.²⁹

PROTECTION OF THE MARINE ENVIRONMENT³⁰

Introduction

Measures to protect the marine environment have been principally concerned with the regulation of efforts to combat pollution. Marine pollution results from a variety of sources including land-based sources, oil spills, untreated sewage, siltation, eutrophication, invasive species, and hazardous substances such as persistent organic pollutants (POPs), heavy metals and radioactive substances acidification. In 1990, the Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP) reported that coastal pollution was increasing and more widespread globally than in 1982. The principal cause was land-based activities,

²⁹ See pp. 411 *et seq.*, below.

³⁰ W. Douglas, 'Environmental Problems of the Oceans: The Need for International Controls', 1 *Environment Law* 149 (1971); L. Caflisch, 'International Law and Ocean Pollution: The Present and the Future', 8 *RBDI* 7 (1972); J. Schneider, 'Something Old, Something New: Some Thoughts on Grotius and the Marine Environment', 18 *Virginia Journal of International Law* 147 (1974); J. L. Hargrove (ed.), *Who Protects the Ocean?: Environment and the Development of the Law of the Sea* (1975); E. Mann Borgese and D. Krieger (eds.), *The Tides of Change: Peace, Pollution, and Potential of the Oceans* (1975); R. Johnson (ed.), *Marine Pollution* (1976); A. Kiss, 'La Pollution du Milieu Marin', 38 *ZaöRV* 902 (1978); G. J. Timagenis, *International Control of Marine Pollution* (1980); K. Hakapaa, *Marine Pollution in International Law* (1981); D. M. Johnston (ed.), *The Environmental Law of the Sea*, IUCN, Environmental Policy Paper No. 18 (1981); E. Gold, *Handbook on Marine Pollution* (1985); R. Soni, *Control of Marine Pollution in International Law* (1985); J. van Dyke, D. Zaelke and G. Hewison (eds.), *Freedom of the Seas in the 21st Century: Ocean Governance and Environmental Harmony* (1993); A. Couper and E. Gold (eds.), *The Marine Environment and Sustainable Development* (1993); L. Lucchini and M. Voelckel, *Le Droit de la Mer* (1996); H. Ringbom (ed.), *Competing Norms in the Law of Marine Environmental Protection* (1997); R. Churchill and A. Lowe, *The Law of the Sea* (1999, 3rd edn); J.-P. Beurier, A. Kiss and S. Mahmoudi, *New Technologies and Law of the Marine Environment* (2000); M. Nordquist and J. Norton Moore, *Current Marine Environmental Issues and the International Tribunal for the Law of the Sea* (2001); S. Marr, *The Precautionary Principle in the Law of the Sea – Modern Decision-Making in International Law* (2003); L. A. Kimball, *International Ocean Governance: Using International Law and Organizations to Manage Marine Resources Sustainability* (2003); A. Kirchner (ed.), *International Marine Environmental Law: Institutions, Implementation and Innovations* (2003); D. Caron and H. N. Scheiber (eds.), *Bringing New Law to Ocean Waters* (2004); L. Sohn and J. Noyes, *Cases and Materials on the Law of the Sea* (2004); Jean-Pierre Beurier (ed.), *Droits Maritimes* (2006); D. Freestone, R. Barnes and D. Ong (eds.), *The Law of the Sea, Progress and Prospects* (2006); A. Strati, M. Gavouneli and N. Skourtos (eds.), *Unresolved Issues and New Challenges to the Law of the Sea: Time Before and Time After* (2006); J. Basedow and U. Magnus (eds.), 'Pollution of the Sea – Prevention and Compensation', 10 *Hamburg Studies on Maritime Affairs* (2007); P. A. Verlaan, 'Experimental Activities That Intentionally Perturb the Marine Environment: Implications for the Marine Environmental Protection and Marine Scientific Research Provisions of the 1982 United Nations Convention on the Law of the Sea', 31 *Marine Policy* 210 (2007); D. Anderson, *Modern Law of the Sea: Selected Essays* (2008); R. Rayfuse and R. Warner, 'Securing a Sustainable Future for the Oceans Beyond National Jurisdiction: The Legal Basis for an Integrated Cross-Sectoral Regime for High Seas Governance for the 21st Century', 23 *International Journal of Marine and Coastal Law* 399 (2008); D. Freestone, 'Principles Applicable to Modern Oceans Governance', 23 *International Journal of Marine and Coastal Law* 385 (2008); Y. Tanaka, 'Reflections on Reporting Systems in Treaties Concerning the Protection of the Marine Environment', 40 *Ocean Development and International Law* 146 (2009); R. Warner, *Protecting the Oceans Beyond National Jurisdiction: Strengthening the International Law Framework* (2009); R. Caddell, H. Bang, K. Tinline, H. Wang and E. Morgera, 'Oceans', 20 *Yearbook of International Environmental Law* 289 (2010); Y. Chang, 'International Legal Obligations in Relation to Good Ocean Governance', 9 *Chinese Journal of International Law* 589 (2010); G. Crowhurst and L. Mittenthal, 'Climate Change: Marine Based Emissions', *Environmental Law Monthly* 5 (2010); D. Harris, *Cases and Materials on International Law* (2010, 7th edn), chapter on 'The Law of the Sea'; D. R. Rothwell and T. Stephens, *The International Law of the Sea* (2010); J. Harrison, *Making the Law of the Sea: A Study in the Development of International Law* (2011).

including intensive human settlement of coastal zones, which resulted in destruction of habitats, eutrophication from nutrients and sewage, overfishing and changes in sediment flows due to hydrological changes.³¹ In 2001, the next comprehensive GESAMP report indicated that the situation had not improved. GESAMP confirmed that the state of the world's seas and oceans was deteriorating:³² coastal activity was increasing the amounts of nitrogen and phosphorous entering the marine environment of coastal areas by between 50 and 200 per cent;³³ other sources of pollution included microbial contamination of seafood and beaches from the discharge of untreated human sewage, the fouling of the seas by plastic litter, the progressive build-up of chlorinated hydrocarbons, and the accumulation of tar on beaches from oil spills. GESAMP also alerted the international community to the changes predicted as a result of climate change, particularly ocean warming and ocean acidification.³⁴

General rules concerning the protection of the marine environment from pollution are well developed at the regional and global levels, largely as a result of the treaties and other international acts adopted by states since 1972. More detailed and specific obligations govern dumping at sea and pollution from land-based sources, from seabed activities and from vessels. The rules on enforcement are now also relatively well developed, particularly at the regional level and with regard to some specific activities such as maritime traffic.³⁵ In 2001, the GESAMP report considered that action at the regional level, particularly in the Northeast Atlantic, the Mediterranean and the Baltic, had led to improvements.³⁶ Positive results have been seen in the reduction of pollution from persistent organic pollutants (POPs) (except in the Arctic), in oil discharges and spills and in industrial discharges.³⁷ However, even in regions where solutions to pollution have been found, these successes are offset by other increasing pressures, stemming from new sources of pollution in one area, or by moving the problem to a different area.³⁸

Development of standards of international law³⁹

International rules for the protection of the marine environment are established under regional and global treaties, and other international acts, and the rules of customary law are reflected in these acts and non-binding soft law obligations. Early international efforts addressed

³¹ GESAMP Reports and Studies No. 39 (1990), jointly sponsored by IMO, FAO, UNESCO, WMO, WHO, IAEA, UNEP and the UN. Subsequent studies have found a similar pattern of pollution: see GESAMP, 'A Sea of Troubles', GESAMP Report No. 70 (2001).

³² GESAMP, 'A Sea of Troubles', GESAMP Report No. 70 (2001), 1. ³³ *Ibid.*, 15.

³⁴ Ten years on, the implications of climate change for the oceans are becoming more evident: see O. Hoegh-Guldberg and J. F. Bruno, 'The Impact of Climate Change on the World's Marine Ecosystems', 328 *Science* 1523 (2010); International Programme on the State of the Ocean, *Implementing the State of the Oceans Report* (2011), 14. Another phenomenon which may be a symptom of environmental change is 'coral bleaching', which takes place when coral dies and loses its colour due to the loss of symbiotic algae; it is caused by the water at the sea surface getting warmer. See National Science Foundation, US EPA, NOAA, *Workshop on Coral Bleaching, Coral Reef Ecosystems and Global Change: Report of Proceedings* (1991), 1–7, cited in World Resources Institute, *World Resources 1992–3*, 178.

³⁵ See Chapter 5, on enforcement generally.

³⁶ GESAMP, 'A Sea of Troubles', GESAMP Report No. 70 (2001), 3.

³⁷ C. Nellemann and E. Corcoran (eds.), *Our Precious Coasts – Marine Pollution, Climate Change and the Resilience of Coastal Ecosystems* (UNEP, 2006), 15. Oil discharges and spills have been reduced by 63 per cent compared to the mid-1980s, and tanker accidents have gone down by 75 per cent.

³⁸ UNEP, *Global Synthesis, A Report from the Regional Seas Conventions and Action Plans for the Marine Biodiversity Assessment and Outlook Series* (2010), 9.

³⁹ As to the competence of states to prescribe and enforce rules for the protection of the marine environment, see Chapter 1, pp. 14–15, above; and Chapter 5, p. 137, above.

discharges of oil, and can be traced back to the 1926 Preliminary Conference on Oil Pollution of Navigable Waters, held in Washington.⁴⁰ The first treaty to address oil pollution of the sea was the 1954 International Convention for the Prevention of Pollution of the Sea by Oil (1954 Oil Pollution Convention), based on a draft text from the 1926 Washington conference.⁴¹ The 1954 Oil Pollution Convention was followed by environmental protection provisions in the 1958 High Seas Fishing and Conservation Convention,⁴² the 1958 Convention on the Continental Shelf,⁴³ and the 1958 Convention on the High Seas.⁴⁴

In 1959, the IMCO (now IMO) Assembly assumed responsibility for the 1954 Oil Pollution Convention and many of the UN's functions in relation to oil pollution.⁴⁵ Subsequent international efforts were often triggered by a major oil spill such as the accidents involving the *Torrey Canyon* in 1967, the *Amoco Cadiz* in 1978, the *Exxon Valdez* in 1989 and the *Prestige* in 2002. These and other incidents led to the adoption under IMO auspices of the 1969 Intervention Convention, the 1969 (now 1992) CLC, the 1971 (now 1992) Oil Pollution Fund Convention, and the various amendments to MARPOL 73/78 requiring double hulls on new oil tankers,⁴⁶ and, more recently, first indications that certain states could act unilaterally to limit rights of passage even within their EEZ.⁴⁷ Following the *Torrey Canyon* accident, the UN General Assembly gave increased attention to the protection of the marine environment,⁴⁸ and in 1969 it adopted a resolution entitled 'Promoting Effective Measures for the Prevention and Control of Marine Pollution'.⁴⁹ Marine pollution was an important issue at the Stockholm Conference, and Principle 8 of the 1972 Stockholm Declaration called on states to 'take all possible steps to prevent pollution of the seas by substances that are liable to create hazards to human health, to harm living resources and marine life, to damage amenities or to interfere with other legitimate uses of the sea'.⁵⁰ The Stockholm Conference did not adopt a proposed global convention on ocean dumping as the text had not been completed. The United States had introduced a text in 1971 at the IMO Intergovernmental Working Group on Marine Pollution,⁵¹ but it was not until December 1972 that the global Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (1972 London Convention) was actually adopted.⁵² This followed by several

⁴⁰ *Report of the Preliminary Conference on Oil Pollution of Navigable Waters*, 8–16 June 1926 (US Government Printing Office, 1926).

⁴¹ London, 12 May 1954, in force 26 July 1958, 327 UNTS 3, as amended in 1962, 1969 and 1971.

⁴² Geneva, 29 April 1958, in force 20 March 1966; 559 UNTS 285.

⁴³ Geneva, 29 April 1958, in force 10 June 1964; 499 UNTS 311.

⁴⁴ Geneva, 29 April 1958, in force 30 September 1962; 450 UNTS 82. ⁴⁵ ECOSOC Res. 537A (XVIII) (1959).

⁴⁶ See pp. 382–3, below.

⁴⁷ In November 2002, France, Spain and Portugal indicated that they would undertake unilateral actions to prevent passage through their EEZs of certain old ships without double hulls, following the accident involving the *Prestige*, and France apparently excluded some such ships. The actions have been condemned by shipping bodies as contravening UNCLOS: see 'Shipping Bodies Condemn European Tanker Expulsions', 13 December 2002, www.planetark.org.

⁴⁸ See e.g. UNGA Res. 2414 (XXII) (1968).

⁴⁹ UNGA Res. 2566 (XXIV) (1969). This called on the UN to: prepare reports for the 1972 Stockholm Conference; review harmful substances and wastes which might affect human health and activities in the marine environment and coastal area, and national and international activities for prevention and control of marine pollution; and make suggestions for comprehensive action and improved international co-ordination.

⁵⁰ See generally P. S. Thacher, 'Assessment and Control of Marine Pollution: The Stockholm Recommendations and Their Efficacy', 8 *Stanford Journal of International Studies* 79 (1973).

⁵¹ 10 ILM 1021 (1971).

⁵² London, Mexico City, Moscow and Washington, 29 December 1972, in force 30 August 1975, 1046 UNTS 120; see pp. 366–9, below.

months the adoption of the regional Convention for the Prevention of Marine Pollution by Dumping from Ships and Aircraft (1972 Oslo Dumping Convention).⁵³

In 1973, the International Convention for the Prevention of Pollution from Ships (MARPOL 73) was adopted under IMO auspices,⁵⁴ and in 1976 UNEP established its Regional Seas Programme, which has led to over forty regional treaties.⁵⁵ In 1982, the international community finally adopted the United Nations Convention on the Law of Sea (UNCLOS), addressing pollution of the marine environment comprehensively with a view to establishing rules and standards of global application. During 1992, a 'second generation' of regional environmental treaties was introduced with the adoption of the 1992 Convention on the Protection of the Baltic (1992 Baltic Sea Convention)⁵⁶ (to supersede the 1974 Baltic Convention) and the 1992 Convention for the Protection of the Marine Environment of the North-East Atlantic (1992 OSPAR Convention) (to supersede the 1972 Oslo Dumping Convention and the 1974 Paris Convention). Both of the 1992 instruments adopt a more comprehensive approach by addressing marine pollution from all sources, and introduce new principles, substantive rules and institutional arrangements. This approach is now reflected in other regional instruments developed in the framework of the Regional Seas Programme of UNEP.

Marine environment protection rules fit into two broad categories: global rules (of which the 1982 UNCLOS is the most comprehensive, and the 1972 London Convention and MARPOL 73/78 the most specific) and regional rules. The second category includes treaties under the UNEP Regional Seas Programme, and those which are *ad hoc* regional and sub-regional arrangements, such as OSPAR or the special rules established for the Antarctic.⁵⁷

UNCLOS⁵⁸

The 1982 UNCLOS aims to establish 'a legal order for the seas and oceans which will facilitate international communication, and will promote the peaceful uses of the seas and oceans, the equitable and efficient utilisation of their resources, the conservation of their living resources, and the study, protection and preservation of the marine environment'.⁵⁹ It is one of the most far-reaching and influential of global environmental agreements, and is now widely

⁵³ Oslo, 15 February 1972, in force 7 April 1974, 932 UNTS 3; see p. 348, above. ⁵⁴ See p. 381, below.

⁵⁵ See pp. 352–65, below.

⁵⁶ Helsinki, 9 April 1992, in force 17 January 2000; IMO Doc. LDC.2/Circ.303, 10 August 1992.

⁵⁷ See Chapter 13, pp. 578–91, below.

⁵⁸ D. P. O'Connell, *The International Law of the Sea* (ed. I. Shearer, 2 vols., 1982 and 1984); P. Allott, 'Power Sharing in the Law of the Sea', 77 *American Journal of International Law* 1 (1983); B. Boczek, 'Global and Regional Approaches to the Protection and Preservation of the Marine Environment', 16 *Case Western Reserve Journal of International Law* 39 (1984); K. Ramakrishna, 'Environmental Concerns and the New Law of the Sea', 16 *Journal of Maritime Law and Commerce* 1 (1985); A. E. Boyle, 'Marine Pollution under the Law of the Sea Convention', 79 *American Journal of International Law* 347 (1985); R. Platzoder, *Third United Nations Conference on the Law of the Sea: Documents* (15 vols., 1982–); J. Sebenius, *Negotiating the Law of the Sea* (1984); M. H. Nordquist, S. Rosenne, A. Yancov and N. Grandy (eds.), *United Nations Convention on the Law of the Sea 1982: A Commentary*, vol. IV, *Articles 192 to 278, Final Act, Annex VI* (1991); UN Office for Ocean Affairs and the Law of the Sea, *The Law of the Sea: Protection and Preservation of the Marine Environment: Repertory of International Agreements Relating to Section 5 and 6 of Part XII of the United Nations Convention on the Law of the Sea* (1990); O. Schachter, 'The Value of the 1982 UN Convention on the Law of the Sea: Preserving Our Freedoms and Protecting the Environment', 23 *Ocean Development and International Law* 55 (1992); J. Charney, 'The Marine Environment and the 1982 UNCLOS', 28 *International Lawyer* 879 (1994); R. Churchill and A. V. Lowe, *The Law of the Sea* (1999, 3rd edn); N. Klein, *Dispute Settlement in the UN Convention on the Law of the Sea* (2005).

⁵⁹ Preamble.

supported, with 161 parties. Although UNCLOS only entered into force in 1994, more than ten years after it was signed, it has influenced the development of regional rules for the protection of the marine environment, as well as broader international environmental law. Its provisions on the protection and preservation of the marine environment are considered by many states to reflect generally applicable principles or rules of customary law, as evidenced by the reference in the Preamble to the 1992 OSPAR Convention that recalls the relevant provisions of customary law reflected in Part XII of UNCLOS. Agenda 21 endorsed the view that the provisions of UNCLOS on protection and preservation of the marine environment reflect international law.⁶⁰ The legal force the principles established in UNCLOS as customary obligations is further supported by the widespread state practice pursuant to treaty and national rules which address particular sources of marine pollution as set out in Part XII.

One of the main objectives UNCLOS requires states parties to pursue is the prevention, reduction and control of marine pollution. For the purpose of this objective, UNCLOS establishes rules on information, scientific research, monitoring, environmental assessment, enforcement (including developing rules in relation to enforcement by coastal states and port states)⁶¹ and liability.⁶² Part XII of UNCLOS specifically addresses the 'protection and preservation of the marine environment', although principles and rules on environmental protection may also be found throughout the Convention: among the various provisions, UNCLOS authorises coastal states to adopt certain laws relating to innocent and transit passage through territorial seas, straits and archipelagic sea lanes for the preservation of the environment of the coastal state and the prevention, reduction and control of pollution,⁶³ and it provides for coastal state jurisdiction (in accordance with the Convention) with regard to protection and preservation of the marine environment of the EEZ.⁶⁴ Part XII comprises forty-six Articles, divided into eleven Sections, which elaborate upon the general provisions of Section 1, which includes the primary obligation of all states 'to protect and preserve the marine environment'.⁶⁵ Drawing upon the language of Principle 21 of the Stockholm Declaration, UNCLOS declares that 'states have the sovereign right to exploit their natural resources pursuant to their environmental policies and in accordance with their duty to protect and preserve the marine environment'.⁶⁶

⁶⁰ Agenda 21, paras. 17.1 and 17.22; this view was stated to be without prejudice to the position 'of any state with respect to signature, ratification or accession to the Convention' or the 'position of states which view the Convention as having a unified character'.

⁶¹ See Chapter 5, pp. 175–7, above, and the literature there cited. ⁶² See Chapter 17, pp. 729–33, below.

⁶³ Arts. 21(1)(f), 42(1)(b) and 54.

⁶⁴ Art. 56(1)(b)(iii); in exercising their rights, coastal states are to 'have due regard to the rights and duties of other States and shall act in a manner compatible with the provisions of the Convention': Art. 56(2). The rights of other states include freedoms of navigation in the EEZ (Art. 58(1)). Following the sinking of the *Prestige* involving an oil spill off the west coast of Spain on 19 November 2002, the EU adopted in 2003 a Regulation, which banned the transport to or from ports of the member states of heavy grades of oil in single-hull oil tankers. This measure was followed by the adoption by the IMO in December 2003 of an accelerated schedule to phase out single-hull tankers, which after 5 April 2005 banned the carriage of heavy grade oil in single-hull tankers. See Regulation (EC) No. 1726/2003 of 22 July 2003, amending Regulation (EC) No. 417/2002 on the accelerated phasing-in of double-hull or equivalent design requirements for single-hull oil tankers, OJ L249, 1 October 2003, and pp. 382–3, below, on MARPOL regulations concerning double hulls.

⁶⁵ Art. 192. ⁶⁶ Art. 193.

This general obligation is further elaborated, and a distinction is drawn between the duty to protect the environment and the responsibility not to cause damage by pollution to other states and their environment. Under Article 194(1), the duty to protect the environment requires states to take all the measures consistent with UNCLOS that are necessary to prevent, reduce and control pollution of the marine environment from any source, using the best practicable means at their disposal and in accordance with their capabilities. This introduces the element of differentiated responsibility based upon economic and other resources available, which subsequently emerged as a major theme at UNCED. Article 1(4) of UNCLOS defines pollution of the marine environment, on the basis of an earlier GESAMP definition, as:

the introduction by man, directly or indirectly, of substances or energy into the marine environment, including estuaries, which results or is likely to result in such deleterious effects as harm to living resources and marine life, hazards to human health, hindrance to marine activities, including fishing and other legitimate use of the sea, impairment of quality for uses of sea water and reduction of amenities.⁶⁷

This definition has since been relied upon in other agreements. It includes both acts that result in, and those that are 'likely to' result in, harmful effects.⁶⁸ UNCLOS thus distinguishes between 'pollution' and 'damage'. Under Article 194(2), states are required not to cause damage by pollution, being directed to:

take all measures necessary to ensure that activities under their jurisdiction or control are so conducted as not to cause damage by pollution to other states and their environment, and that pollution arising from incidents or activities under their jurisdiction or control does not spread beyond the areas where they exercise sovereign rights in accordance with the Convention.

Article 194(3) further elaborates the obligation to prevent pollution damage by addressing particular sources of pollution: from land-based activities; from seabed activities; from activities in the 'Area'; from dumping; from vessels; and from or through the atmosphere.⁶⁹ Article 194(5) requires special protection for rare or fragile ecosystems as well as the habitat of depleted, threatened or endangered species and other forms of marine life. States parties must not transfer damage or hazards, or transform one type of pollution into another, and must limit the use of technologies or the introduction of alien or new species which may cause significant and harmful changes to the marine environment.⁷⁰

These general obligations serve as the basis for more detailed standards. They are supplemented by procedural obligations to give effect to the requirements of global and regional cooperation set forth in Article 197 and, in respect of semi-enclosed seas (Article 123). Techniques for implementing the substantive rules and standards include: notifying imminent or actual damage; developing pollution contingency plans and scientific research;⁷¹ providing technical

⁶⁷ Art. 1(4); see generally M. Tomczak, 'The Definition of Marine Pollution: A Comparison of Definitions Used by International Conventions', 8 *Marine Policy* 311 (1984).

⁶⁸ See p. 358, below. ⁶⁹ Arts. 194(3) and 207–212. ⁷⁰ Arts. 195–196. ⁷¹ Arts. 198–200.

assistance, particularly to developing countries;⁷² and the monitoring and carrying out of environmental assessments of certain activities.⁷³ UNCLOS also establishes new rules on enforcement,⁷⁴ ice-covered areas,⁷⁵ responsibility and liability,⁷⁶ and sovereign immunity,⁷⁷ and provides for the relationship between UNCLOS and other conventions for the protection and preservation of the marine environment.⁷⁸

The contribution of UNCLOS to the progressive development of international environmental law at the general level cannot be overstated. The freedom of states to pollute the marine environment is no longer unconstrained and the obligation to develop specific rules to give effect to the general obligations of UNCLOS is reinforced. By bringing together elements which had previously been scattered among different agreements, these general provisions of UNCLOS establish a framework for the further development of rules on substantive matters at the global and regional levels.

Regional arrangements

In its articulation of a comprehensive legal order for the oceans, UNCLOS establishes the need for states to co-operate also on a regional basis for the protection and preservation of the marine environment.⁷⁹ In so doing, it acknowledges that ocean governance requires complex structures, which may be usefully developed at a regional level. Regional initiatives for marine protection were already in existence before the adoption of UNCLOS in 1982, with UNEP's Regional Seas Programme, and continued in the 1990s, with the adoption of conventions outside the framework of the UN, such as the regimes for the Northeast Atlantic and the Baltic Sea. Regional agreements have gradually incorporated the environmental principles that emerged at the UNCED and at WSSD, shifting away from the emphasis in UNCLOS on pollution prevention and favouring an integrated approach to marine protection.⁸⁰

Below we provide an overview of the principal regional arrangements, which include those concluded within the framework of UNEP's Regional Seas Programme, encompassing thirteen independent regimes, and the framework conventions for the Northeast Atlantic, the Baltic Sea and the Caspian Sea. Regional agreements that address specific sources of pollution are also discussed below, together with other international treaties on the matter. Special rules for the Antarctic and the Arctic are discussed in Chapter 13.

UNEP Regional Seas Programme⁸¹

UNCLOS was preceded by the emergence of the UNEP Regional Seas Programme, an ambitious attempt at developing treaties and soft rules and standards at the regional level, taking account of the different needs and capabilities of the various regions. The Regional

⁷² Arts. 202 and 203. ⁷³ Arts. 204–206. On 'environmental impact assessment', see generally Chapter 16 below.

⁷⁴ Arts. 213–233; and Chapter 5, pp. 175–7, above. ⁷⁵ Art. 234; see Chapter 13, p. 592, below.

⁷⁶ Art. 235; Chapter 17, pp. 729–33, below. ⁷⁷ Art. 236.

⁷⁸ Art. 237; on the relationship between UNCLOS and other conventions, see Chapter 4, pp. 105–7, above.

⁷⁹ Art. 197 requires states to co-operate regionally in 'formulating and elaborating international rules, standards and recommended practices and procedures consistent with the Convention'.

⁸⁰ A. Boyle, 'Further Development of the 1982 Convention on the Law of the Sea: Mechanisms for Change', in D. Freestone, R. Barnes and D. Ong (eds.), *The Law of the Sea, Progress and Prospects* (2006), 52.

⁸¹ L. M. Alexander, 'Regional Arrangements in the Oceans', 71 *American Journal of International Law* 84 (1977); C. Okidi, *Regional Control of Ocean Pollution: Legal and Institutional Problems and Prospects* (1978); J. De Yturriaga, 'Regional

Seas Programme followed the 1972 Stockholm Conference and the creation of UNEP. In 1974, the FAO General Fisheries Council for the Mediterranean had sponsored guidelines for a framework convention on the protection of the marine environment against pollution in the Mediterranean.⁸² This led to the adoption in February 1975, under the auspices of UNEP, of the Mediterranean Action Plan,⁸³ which has since become a model for other regions. The Plan comprised five basic components: environmental assessment, environmental management, institutional arrangements, financial arrangements, and regional legal instruments. It was followed by the 1976 Barcelona Convention for the Protection of the Mediterranean Sea Against Pollution (1976 Barcelona Convention) and two Protocols.⁸⁴ In November 1976, UNEP convened its first 'Task Force on Legal Instruments for Regional Seas';⁸⁵ and in 1978 the UNEP Governing Council endorsed a Regional Seas Programme.⁸⁶

The UNEP Regional Seas Programme extends to thirteen regional areas.⁸⁷ Each of these has its own Action Plan⁸⁸ and ten regions are the subject of binding international agreements. The only regions without a framework convention are the Northwest Pacific, the South Asian Seas and the East Asian Seas. Six of the programmes are directly administered by UNEP,⁸⁹ and the other seven by independent bodies.⁹⁰ In total, the UNEP Regional Seas Programme comprises more than forty framework Conventions and Protocols, with others under negotiation. The ten Regional Seas Programmes, with their respective framework conventions and protocols, comprise the following:

Conventions on the Protection of the Marine Environment', 162 *Recueil des Cours* 319 (1979); D. Alhéritière, 'Marine Pollution Control Regulation: Regional Approaches', 6 *Marine Policy* 162 (1982); P. Hayward, 'Environmental Protection: Regional Approaches', 8 *Marine Policy* 106 (1984); A. Boyle, 'Regional Pollution Agreements and the Law of the Sea Convention', in W. E. Butler (ed.), *The Law of the Sea and International Shipping* (1985), 315; P. Sand, *Marine Environment Law in the United Nations Environment Programme* (1988); P. Verlaan and A. Khan, 'Paying to Protect the Commons: Lessons from the Regional Seas Programme', 31 *Ocean and Coastal Management* 83 (1996); E. Franckx, 'Regional Marine Environment Protection Regimes in the Context of UNCLOS', 13 *International Journal of Marine and Coastal Law* 307 (1998); T. Treves, 'Regional Approaches to the Protection of the Marine Environment', in J. Norton Moore and M. Nordquist (eds.), *The Stockholm Declaration and Law of the Marine Environment* (2003); L. D. Mee, 'The Role of UNEP and UNDP in Multilateral Environmental Agreements', 5 *International Environmental Agreements: Politics, Law and Economics* 227 (2005). See generally www.unep.org/regionalseas.

⁸² *Protection of the Marine Environment Against Pollution in the Mediterranean*, FAO Fisheries Report No. 148 (1974), Annex I.

⁸³ UNEP/WG.2/5INF.3, reprinted in 14 ILM 481 (1975).

⁸⁴ Protocol for the Prevention of Pollution of the Mediterranean Sea by Dumping from Ships and Aircraft (1976 Barcelona Dumping Protocol); and Protocol for Co-operation in Combating Pollution of the Mediterranean Sea by Oil and Other Harmful Substances in Cases of Emergency (1976 Barcelona Emergency Protocol). See pp. 370–2, below.

⁸⁵ See P. H. Sand, 'Drafting of Regional Legal Instruments for Marine Environment Protection: The Case of the Mediterranean', UNEP/Doc. TFLIRS/Inf.4 Nairobi (1976).

⁸⁶ UNEP Governing Council Decision 6/2 (1978) and Programme Doc. UNEP/GC.6/7 (1978), 139–66.

⁸⁷ The term 'region' has no precise meaning, and as used in the Regional Seas Programme has been applied to different types of region including those comprising stretches of coastal waters, archipelagos and semi-enclosed seas.

⁸⁸ Mediterranean (1975, revised in 1995); ROPME Sea Area (1978); Wider Caribbean (1981); East Asian (1981); South-East Pacific (1981); Red Sea and Gulf of Aden (1982, revised in 1995); South Pacific (1982, revised in 2000); Western Africa (1981); Eastern Africa (1982); North-West Pacific (1994); South Asian Seas (1995); Black Sea (1996, revised in 2009); and North-East Pacific (2002).

⁸⁹ Caribbean Region; East Asian Seas; Eastern Africa Region; Mediterranean Region; North-West Pacific Region; and Western Africa Region.

⁹⁰ Black Sea Region; North-East Pacific Region; Red Sea and Gulf of Aden; ROPME Sea Area; South Asian Seas; South-East Pacific Region; and Pacific Region.

*Mediterranean Region*⁹¹

- 1976 Barcelona Convention⁹²
- 1976 Protocol for the Prevention of Pollution of the Mediterranean Sea by Dumping from Ships and Aircraft (Barcelona Dumping Protocol)⁹³
- 1976 Barcelona Emergency Protocol⁹⁴
- 1980 Athens Protocol for the Protection of the Mediterranean Sea Against Pollution from Land-Based Sources (1980 Athens LBS Protocol)⁹⁵
- 1982 Geneva Protocol Concerning Mediterranean Specially Protected Areas (1982 Geneva SPA Protocol)⁹⁶
- 1994 Protocol for the Protection of the Mediterranean Sea Against Pollution Resulting from Exploration and Exploitation of the Continental Shelf and the Seabed and Its Subsoil (1994 Madrid Offshore Protocol)⁹⁷
- 1996 Protocol on the Prevention of Pollution of the Mediterranean Sea by Transboundary Movements of Hazardous Wastes and Their Disposal (1996 Izmir Hazardous Wastes Protocol)⁹⁸
- 2008 Protocol on Integrated Coastal Zone Management in the Mediterranean⁹⁹

⁹¹ D. De Hoyos, 'The United Nations Environment Programme: The Mediterranean Conferences', 17 *Harvard International Law Journal* 639 (1976); B. Boxer, 'Mediterranean Pollution: Problem and Response', 10 *Ocean Development and International Law* 315 (1982); P. Haas, *Saving the Mediterranean: The Politics of International Environmental Co-operation* (1990); E. Raftopoulos, *The Barcelona Convention and Its Protocols* (1993); A. Vallega, 'Geographical Coverage and Effectiveness of the UNEP Convention on the Mediterranean', 31 *Ocean and Coastal Management* 199 (1996); S.-Y. Chung, 'Is the Mediterranean Regional Co-operation Model Applicable to Northeast Asia?', 11 *Georgetown International Environmental Law Review* 363 (1999); T. Scovazzi (ed.), *Marine Specially Protected Areas: The General Aspects of the Mediterranean Regional System* (1999); T. Scovazzi, 'The Transboundary Movement of Hazardous Waste in the Mediterranean Regional Context', 19 *UCLA Journal of Environmental Law and Policy* 231 (2001); S. Chung, 'Is the Convention-Protocol Approach Appropriate for Addressing Regional Marine Pollution?: The Barcelona Convention System Revisited', 13 *Penn State Environmental Law Review* 85 (2004); P. Deupmann, *The Barcelona System: An Overview* (2007); M. Gavouneli, 'Mediterranean Challenges: Between Old Problems and New Solutions', 23 *International Journal of Marine and Coastal Law* 477 (2008); UNEP Regional Seas Programme, *Marine Biodiversity Assessment and Outlook Series* (2010), 37. See also www.unepmap.org.

⁹² Barcelona, 16 February 1976, in force 12 February 1978, 15 ILM 290 (1976). Replaced by the Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean, in force 9 July 2004, UN Doc. UNEP(OCA)/MED IG.6/7; twenty-one states and the EU are party.

⁹³ Barcelona, 16 February 1976, in force 12 February 1978, 15 ILM 300 (1976); twenty-one states and the EU are party. Revised in Barcelona, 9–10 June 1995, as the Protocol for the Prevention and Elimination of Pollution of the Mediterranean Sea by Dumping from Ships and Aircraft or Incineration at Sea, not yet in force.

⁹⁴ Barcelona, 16 February 1976, in force 12 February 1978, 15 ILM 306 (1976); twenty-one states and the EU are party. Revised in Valetta on 25 January 2002 by the Protocol Concerning Cooperation in Preventing Pollution from Ships and, in Cases of Emergency, Combating Pollution of the Mediterranean Sea (Prevention and Emergency Protocol), in force 17 March 2004.

⁹⁵ Athens, 17 May 1980, in force 17 June 1983, 19 ILM 869 (1980); twenty-one states and the EU are party. Amended in Syracuse, Italy, 6–7 March 1996, as the Protocol for the Protection of the Mediterranean Sea Against Pollution from Land-Based Sources and Activities, 7 *Yearbook of International Environmental Law* 678 (1996), in force 11 May 2008.

⁹⁶ Geneva, 3 April 1982, in force 23 March 1986, IELMT 982:26; twenty-one states and the EU are party. Revised in Barcelona, 9–10 June 1995, as the Protocol Concerning Specially Protected Areas and Biological Diversity in the Mediterranean (SPA and Biodiversity Protocol), in force 12 December 1999, OJ L322, 14 December 1999, 3.

⁹⁷ Madrid, 14 October 1994, in force 24 March 2011, available at www.ecolex.org/server2.php/libcat/docs/TRE/Multilateral/En/TRE000543.txt; three states are party.

⁹⁸ Izmir, 1 October 1996, in force 19 January 2008, UN Doc. UNEP (OCA)/MED/IG.9/4 Annexes (1996); five states are party.

⁹⁹ Madrid, 21 January 2008, in force 24 March 2011.

*ROPME Sea Area (Arabian Gulf)*¹⁰⁰

- 1978 Kuwait Regional Convention for Co-operation on Protection of the Marine Environment from Pollution (1978 Kuwait Convention)¹⁰¹
- 1978 Kuwait Protocol Concerning Co-operation in Combating Pollution by Oil and Other Harmful Substances in Cases of Emergency (1978 Kuwait Emergency Protocol)¹⁰²
- 1989 Kuwait Protocol Concerning Marine Pollution Resulting from Exploration and Exploitation of the Continental Shelf (1989 Kuwait Exploration Protocol)¹⁰³
- 1990 Kuwait Protocol Concerning Pollution from Land-Based Sources (1990 Kuwait LBS Protocol)¹⁰⁴
- 1998 Protocol on the Control of Marine Transboundary Movements and Disposal of Hazardous Wastes (1998 Hazardous Wastes Protocol)¹⁰⁵

*Western Africa Region*¹⁰⁶

- 1981 Abidjan Convention for Co-operation in the Protection and Development of the Marine and Coastal Environment of the West and Central African Region (1981 Abidjan Convention)¹⁰⁷
- 1981 Abidjan Protocol Concerning Co-operation in Combating Pollution in Cases of Emergency (1981 Abidjan Emergency Protocol)¹⁰⁸

*South-East Pacific Region*¹⁰⁹

- 1981 Lima Convention for the Protection of the Marine Environment and Coastal Areas of the South-East Pacific (1981 Lima Convention)¹¹⁰
- 1981 Lima Agreement on Regional Co-operation in Combating Pollution of the South-East Pacific by Hydrocarbons or Other Harmful Substances in Cases of Emergency (1981 Lima

¹⁰⁰ S. S. Saqat, 'The Kuwait Convention for Co-operation on the Protection from Pollution of the Marine Environment of the Arabian Gulf Area', 34 REDI 149 (1978); S. Amin, 'The Gulf States and the Control of Marine Pollution: Regional Arrangements and National Legislation', *Lloyd's Maritime and Commercial Law Quarterly* 104 (February 1982); S. Amin, *Marine Pollution in International and Middle Eastern Law* (1986); N. Yar Khan, 'Multiple Stressors and Ecosystem-Based Management in the Gulf', 10 *Aquatic Ecosystem Health and Management* 259 (2007); F. N. Amvrossios, C. Bagtzoglou and J. Iranmahboob, 'Coastal Management in the Persian Gulf Region within the Framework of the ROPME Programme of Action', 51 *Ocean and Coastal Management* 556 (2008); A. H. Abu-Zinada, H. Barth, F. Krupp, B. Böer and T. Z. Al Abdessalaam (eds.), *Protecting the Gulf's Marine Ecosystems from Pollution* (2008); UNEP Regional Seas Programme, *Marine Biodiversity Assessment and Outlook Series* (2010), 50; P. F. Sale, D. A. Feary, J. A. Burt *et al.*, 'The Growing Need for Sustainable Ecological Management of Marine Communities of the Persian Gulf', 40 *AMBIO: A Journal of the Human Environment* 4 (2011).

¹⁰¹ Kuwait, 24 April 1978, in force 1 July 1979, 1140 UNTS 133; eight states are party.

¹⁰² Kuwait, 24 April 1978, in force 1 July 1979, 17 ILM 526 (1978); eight states are party.

¹⁰³ Kuwait, 29 March 1989, in force 17 February 1990; eight states are party.

¹⁰⁴ Kuwait, 20 February 1990, not in force. ¹⁰⁵ Kuwait, adopted in 1998, not yet in force.

¹⁰⁶ D. Alh riti re, 'Convention Sur le Milieu Marin de l'Afrique de l'Ouest et du Centre', 7 *Environmental Policy and Law* 61 (1981); A. N. Assomboni and M. Prieur, *Marine and Coastal Environmental Law in West Africa: Five French Countries Case* (2006); UNEP Regional Seas Programme, *Marine Biodiversity Assessment and Outlook Series* (2010), 16.

¹⁰⁷ Abidjan, 23 March 1981, in force 5 August 1984, 20 ILM 746 (1981); ten states are party.

¹⁰⁸ Abidjan, 23 March 1981, in force 5 August 1984, 20 ILM 756 (1981); ten states are party. The Draft Protocol concerning Cooperation in the Protection and Development of the Marine and Coastal Environment from Land-Based Sources and Activities (LBSA) in the Western, Central and Southern African Region was to be submitted for internal review and approval by countries at the conference of plenipotentiaries to be organised by the end of 2011.

¹⁰⁹ E. Ferrero Costa, 'Pacific Resources and Ocean Law: A Latin American Perspective', 16 *Ecology Law Quarterly* 245 (1989).

¹¹⁰ Lima, 12 November 1981, in force 19 May 1986, IELMT 981:85; five states are party.

Emergency Agreement)¹¹¹ (as supplemented by the 1983 Quito Supplementary Protocol to the 1981 Lima Agreement (1983 Quito Protocol))¹¹²

- 1983 Quito Protocol for the Protection of the South-East Pacific Against Pollution from Land-Based Sources (1983 Quito LBS Protocol)¹¹³
- 1989 Paipa Protocol for the Conservation and Management of Protected Marine and Coastal Areas of the South-East Pacific (1989 Paipa SPA Protocol)¹¹⁴
- 1989 Paipa Protocol for the Protection of the South-East Pacific Against Radioactive Contamination (1989 Paipa Radioactive Contamination Protocol)¹¹⁵
- 1992 Protocol on the Programme for the Regional Study on the El Niño Phenomenon (ERFEN) in the South-East Pacific (1992 El Niño Protocol)¹¹⁶

*Red Sea and Gulf of Aden*¹¹⁷

- 1982 Jeddah Regional Convention for the Conservation of the Red Sea and Gulf of Aden Environment (1982 Jeddah Convention)¹¹⁸
- 1982 Jeddah Protocol Concerning Regional Co-operation in Combating Pollution by Oil and Other Harmful Substances in Cases of Emergency (1982 Jeddah Emergency Protocol)¹¹⁹

*Caribbean Region*¹²⁰

- 1983 Cartagena Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region (1983 Cartagena Convention)¹²¹
- 1983 Cartagena Protocol Concerning Co-operation in Combating Oil Spills (1983 Cartagena Oil Spills Protocol)¹²²
- 1990 Kingston Protocol Concerning Specially Protected Areas and Wildlife in the Wider Caribbean Region (1990 Kingston SPA Protocol)¹²³

¹¹¹ Lima, 12 November 1981, in force 14 July 1986, IELMT 981:85; five states are party.

¹¹² Quito, 22 July 1983, in force 20 May 1987, IELMT 983:55; five states are party.

¹¹³ Quito, 22 July 1983, in force 23 September 1986, IELMT 983:54; five states are party.

¹¹⁴ Paipa, 21 September 1989, in force 1994, IELMT 989:71.

¹¹⁵ Paipa, 21 September 1989, in force 1995, IELMT 989:70. ¹¹⁶ Adopted in 1992, not yet in force.

¹¹⁷ M. A. Mekouar, 'La Convention de Jeddah du 14 Février 1982 pour la Protection de l'Environnement de la Mer Rouge et du Golfe d'Aden', 8 RJE 81 (1983); W. Gladstone, 'Towards Conservation of Globally Significant Ecosystem: The Red Sea and Gulf of Aden', 18 *Aquatic Conservation: Marine and Freshwater Ecosystems* 1 (2008); UNEP Regional Seas Programme, *Marine Biodiversity Assessment and Outlook Series* (2010), 48.

¹¹⁸ Jeddah, 14 February 1982, in force 20 August 1985, 9 *Environmental Policy and Law* 56 (1982); six states and Palestine are party.

¹¹⁹ Jeddah, 14 February 1982, in force 20 August 1985, IELMT 982:14; six states and Palestine are party.

¹²⁰ G. Bundschuh, 'Transfrontier Pollution: Convention for the Protection and Development of the Marine Environment of the Wider Caribbean: Agreement Involving Collective Response to Marine Pollution Incidents and Long Range Environmental Planning', 14 *Georgetown Journal of International and Comparative Law* 201 (1984); W. Anderson, *The Law of Caribbean Marine Pollution* (1997); W. Anderson, *The Law of Caribbean Marine Pollution* (1997); B. C. Sheehy, 'Does International Marine Environment Law Work? An Examination of the Cartagena Convention for the Wider Caribbean Region', 12 *Georgetown International Environmental Review* 441 (2004); B. Lausche, 'Wider Caribbean Region – A Pivotal Time to Strengthen Regional Instruments for Biodiversity Conservation', 23 *International Journal of Marine and Coastal Law* 499 (2008); UNEP Regional Seas Programme, *Marine Biodiversity Assessment and Outlook Series* (2010), 25.

¹²¹ Cartagena, 24 March 1983, in force 11 October 1986, 22 ILM 221 (1983); twenty-one states are party.

¹²² Cartagena, 24 March 1983, in force 11 October 1986, 22 ILM 240 (1983); twenty-two states are party.

¹²³ Kingston, 18 January 1990, in force 18 June 2000, 1 *Yearbook of International Environmental Law* 441 (1990); nine states are party.

- 1999 Protocol on the Prevention, Reduction and Control of Land-Based Sources and Activities (1999 LBS Protocol)¹²⁴

*Eastern Africa Region*¹²⁵

- 1985 Nairobi Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region (1985 Nairobi Convention)¹²⁶
- 1985 Nairobi Protocol Concerning Protected Areas and Wild Fauna and Flora (1985 Nairobi Fauna and Flora Protocol)¹²⁷
- 1985 Nairobi Protocol Concerning Co-operation in Combating Marine Pollution in Cases of Emergency (1985 Nairobi Emergency Protocol)¹²⁸
- 2010 Protocol for the Protection of the Marine and Coastal Environment of the Western Indian Ocean from Land-Based Sources and Activities¹²⁹

*Pacific Region*¹³⁰

- 1986 Noumea Convention for the Protection of the Natural Resources and Environment of the South Pacific Region (1986 Noumea Convention)¹³¹
- 1986 Noumea Protocol Concerning Co-operation in Combating Pollution Emergencies (1986 Noumea Pollution Emergencies Protocol)¹³²
- 1986 Noumea Protocol for the Prevention of Pollution of the South Pacific Region by Dumping (1986 Noumea Dumping Protocol)¹³³

*Black Sea Region*¹³⁴

- 1992 Convention on the Protection of the Black Sea Against Pollution and its three Protocols on land-based sources of marine pollution, emergency situations for oil pollution and other harmful substances, and dumping¹³⁵

¹²⁴ Oranjestad, Aruba, 6 October 1999, Annex to Final Act of the Conference of Plenipotentiaries to Adopt the Protocol Concerning Pollution from Land-Based Sources and Activities to the Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region, not yet in force.

¹²⁵ C. Okidi, 'Nairobi Convention: Conservation and Development Imperatives', 15 *Environmental Policy and Law* 43 (1985); M. Pathmarajah and N. Meith, 'A Regional Approach to Marine Environmental Problems in East Africa and the Indian Ocean', 5 *Ocean Yearbook* 162 (1985).

¹²⁶ Nairobi, 21 June 1985, in force 1996, IELMT 985:46; four states are party. Amended in Nairobi, Kenya, 31 March 2010, as the Amended Nairobi Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region, UN Doc. UNEP(DEPI)/EAF/CPP.6/10/Suppl., not yet in force.

¹²⁷ Nairobi, 21 June 1985, not in force, IELMT 985:47. ¹²⁸ Nairobi, 21 June 1985, not in force, IELMT 985:48.

¹²⁹ Nairobi, 31 March 2010, UN Doc. UNEP(DEPI)/EAF/CPP.6/11/Suppl., not in force.

¹³⁰ B. Cicin-Sain and R. Knecht, 'The Emergence of a Regional Ocean Regime in the South Pacific', 16 *Ecology Law Quarterly* 171 (1989); S. Riesenfeld, 'Pacific Ocean Resources: The New Regionalism and the Global System', 16 *Ecology Law Quarterly* 355 (1989); L. Osmundsen, 'Paradise Preserved? The Contribution of the SPREP Convention to the Environmental Welfare of the South Pacific', 19 *Ecology Law Quarterly* 727 (1992); M. Simon, 'The South Pacific Regional Environmental Programme's (SPREP) Aptitude in Managing Marine Pollution in the South Pacific', 18 *Australian and New Zealand Maritime Law Journal* 107 (2004); UNEP Regional Seas Programme, Marine Biodiversity Assessment and Outlook Series (2010), 54.

¹³¹ Noumea, 25 November 1986, in force 18 August 1990, 26 ILM 38 (1987); twelve states are party. This Convention was relied upon by New Zealand in its 1995 application to the ICJ on the legality of French nuclear testing; see Chapter 6, p. 199, above.

¹³² Noumea, 25 November 1986, in force 18 August 1990, IELMT 986:878; twelve states are party.

¹³³ Noumea, 25 November 1986, in force, 18 August 1990, IELMT 986:87A; eleven states are party.

¹³⁴ E. Doussis, 'Environmental Protection of the Black Sea: A Legal Perspective', 6 *Southeast European and Black Sea Studies* 355 (2006); N. Oral, 'Integrated Coastal Zone Management and Marine Spatial Planning for Hydrocarbon Activities in the Black Sea', 23 *International Journal of Marine and Coastal Law* 453 (2008); UNEP Regional Seas Programme, Marine Biodiversity Assessment and Outlook Series (2010), 23.

¹³⁵ Bucharest, 21 April 1992, in force 15 January 1994, 32 ILM 1101 (1993); six states are party.

- 2002 Black Sea Biodiversity and Landscape Conservation Protocol¹³⁶
- 2009 Protocol on the Protection of the Marine Environment of the Black Sea from Land-Based Sources and Activities¹³⁷

*Northeast Pacific Region*¹³⁸

- 2002 Convention on the Protection and Sustainable Development of the Marine and Coastal Environment of the North-East Pacific¹³⁹

The ten regional seas framework conventions follow a similar approach for co-operation between parties. They include basic substantive and procedural obligations, institutional arrangements, and mechanisms for the adoption of protocols and annexes. Each convention defines its geographic scope of application, and provides for its relationship with other international conventions and rules of international law. Except for the 1983 Cartagena Convention, which includes no definition, each convention defines 'pollution' similarly to Article 2(a) of the 1976 Barcelona Convention, according to which pollution is:

the introduction by man, directly or indirectly, of substances or energy into the marine environment, including estuaries, which results, or is likely to result, in such deleterious effects as harm to living resources and marine life, hazards to human health, hindrance to marine activities, including fishing and other legitimate uses of the sea, impairment of quality for use of seawater and reduction of amenities.¹⁴⁰

General obligations

Each framework convention includes general obligations to take, individually or jointly, appropriate measures to prevent, abate and combat pollution to protect and enhance the marine environment, and to formulate and adopt protocols on agreed measures, procedures and standards. These commitments are general in nature, and it is doubtful whether they could create enforceable obligations in specific situations except in the most egregious cases. The framework conventions establish further obligations to combat pollution from different sources, including dumping from ships and aircraft, from vessels, from exploration and exploitation of the territorial sea and/or continental shelf and/or seabed, and from land-based sources, as well as to co-operate in dealing with pollution emergencies.¹⁴¹ A number of the conventions also establish measures against pollution from transboundary movements of hazardous wastes and their disposal, and from atmospheric sources. Other provisions to be found in some of the

¹³⁶ Sofia, 14 June 2002, not in force, available at www.blacksea-commission.org; four states are party.

¹³⁷ Sofia, 7 April 2009, not in force, available at www.blacksea-commission.org.

¹³⁸ UNEP Regional Seas Programme, *Marine Biodiversity Assessment and Outlook Series* (2010), 42.

¹³⁹ Antigua, 18 February 2002, not in force, available at www.ecolex.org/server2.php/libcat/docs/TRE/Multilateral/En/TRE001350.txt.

¹⁴⁰ 1976 Barcelona Convention, Art. 2(a) (as revised in 1995); 1978 Kuwait Convention, Art. I(a); 1981 Abidjan Convention, Art. 2(1) (adding 'coastal zones, and related inland waters' to the 'marine environment'); 1981 Lima Convention, Art. 2(a); 1982 Jeddah Convention, Art. 1(3); 1985 Nairobi Convention, Art. 2(b); 1986 Noumea Convention, Art. 2(f).

¹⁴¹ 1976 Barcelona Convention (as revised in 1995), Arts. 4–11; 1978 Kuwait Convention, Arts. III–IX; 1981 Abidjan Convention, Arts. 4–9 and 12; 1981 Lima Convention, Arts. 3–6; 1982 Jeddah Convention, Arts. III–IX; 1983 Cartagena Convention, Arts. 3–11; 1985 Nairobi Convention, Arts. 3–12; 1986 Noumea Convention, Arts. 4–9 and 15.

framework conventions include: action to prevent coastal erosion,¹⁴² and prevention of environmental damage from engineering activities.¹⁴³ The 1986 Noumea Convention includes detailed obligations on the disposal of wastes, environmental assessment, storage of toxic and hazardous wastes, and contamination from nuclear tests.¹⁴⁴ Although all framework conventions emphasise the prevention of marine pollution, most of them also contain at least one provision establishing the need for the conservation of marine habitats and species. Some require the establishment of specially protected areas;¹⁴⁵ or in more recent agreements the conservation of biological diversity,¹⁴⁶ or the protection of marine living resources.¹⁴⁷ A number of regimes have established specific protocols on habitat and biodiversity conservation. The two most recent treaties, the revised 1995 Barcelona Convention and the 2002 Antigua Convention, incorporate important principles such as the precautionary principle, the polluter pays principle, and the notion of integrated coastal management. The Antigua Convention also adopts the ecosystem approach in fisheries management measures.¹⁴⁸

Procedural obligations

Apart from the general commitments, the framework conventions establish procedural obligations to implement substantive obligations. Legal techniques which find support in the framework conventions include: monitoring; scientific and technological co-operation; technical assistance; exchange of information; public access to information and participation; and reporting requirements.¹⁴⁹ Starting in the late 1970s, the majority of the conventions began to require parties to carry out environmental impact assessments.¹⁵⁰ Although the obligations are general, they provide a starting point for co-operation and the elaboration of more detailed commitments in subsequent protocols or other treaties.

Institutional arrangements

Each framework convention also creates basic institutional structures for the administration of the Convention and Plan for each region. The importance of these arrangements should not be understated since they establish, often for the first time, regional institutions for environmental protection. The institutions usually comprise regular Meetings of the Parties and a secretariat. The meetings are charged with reviewing implementation and may generally adopt, review and amend annexes to the convention and protocols, make recommendations, and undertake any additional action that may be required for the achievement

¹⁴² 1981 Abidjan Convention, Art. 10; 1981 Lima Convention, Art. 5; 1986 Noumea Convention, Art. 13.

¹⁴³ 1985 Nairobi Convention, Art. 12. ¹⁴⁴ Arts. 10–12.

¹⁴⁵ 1981 Abidjan Convention, Art. 11; 1985 Nairobi Convention, Art. 10; 1986 Noumea Convention, Art. 14; 2002 Antigua Convention, Art. 10.5 and 10.2(h).

¹⁴⁶ 1976 Barcelona Convention (as revised in 1995), Art. 10. ¹⁴⁷ 1992 Bucharest Convention, Art. XIII.

¹⁴⁸ 1976 Barcelona Convention (as revised in 1995), Art. 4; 2002 Antigua Convention, Arts. 5 and 10.

¹⁴⁹ 1976 Barcelona Convention (as revised in 1995), Arts. 12, 13 and 15; 1978 Kuwait Convention, Arts. X–XII and XXIII; 1981 Abidjan Convention, Arts. 13, 14 and 22; 1981 Lima Convention, Arts. 7–10 and 14; 1982 Jeddah Convention, Arts. X–XII and XXII; 1983 Cartagena Convention, Arts. 12, 13 and 22; 1985 Nairobi Convention, Arts. 13, 14 and 23; 1986 Noumea Convention, Arts. 16–19.

¹⁵⁰ 1976 Barcelona Convention (revised in 1995), Art. 4.3; 1978 Kuwait Convention, Art. XI; 1981 Abidjan Convention, Art. 13; 1981 Lima Convention, Art. 8; 1983 Cartagena Convention, Art. 12; 1985 Nairobi Convention, Art. 13; 1986 Noumea Convention, Art. 16; 2002 Antigua Convention, Arts. 6(c), 10.2(b) and 10.3.

of the purposes of the convention and protocols.¹⁵¹ Secretariat functions are carried out by UNEP¹⁵² or by regional intergovernmental organisations.¹⁵³

Northeast Atlantic (1992 OSPAR Convention) and the North Sea¹⁵⁴

The principal instruments regulating the North Sea and the Northeast Atlantic are the Convention for the Protection of the Marine Environment of the North-East Atlantic (1992 OSPAR Convention)¹⁵⁵ (replacing the 1972 Oslo Dumping Convention¹⁵⁶ and the 1974 Paris Convention)¹⁵⁷ and the 1983 Agreement for Co-operation in Dealing with Pollution of the North Sea by Oil and Other Harmful Substances (Bonn Agreement).¹⁵⁸ The 1992 OSPAR Convention adopts a more comprehensive and integrated approach to the protection of the North Sea and the Northeast Atlantic than its predecessor conventions.

The 1992 OSPAR Convention represents a new approach to the protection of the marine environment by seeking to regulate all sources of marine pollution in a single instrument. From its entry into force in March 1998, it replaced the two earlier conventions, providing a comprehensive and simplified approach. Its provisions reflect many of the principles that emerged during the UNCED process, and it transformed many of the Oslo and Paris Commissions' recommendations into treaty obligations. The five OSPAR Convention Annexes adopt commitments on pollution

¹⁵¹ 1976 Barcelona Convention (revised in 1995), Art. 17; 1981 Abidjan Convention, Arts. 16 and 17; 1981 Lima Convention, Arts. 12 and 13; 1983 Cartagena Convention, Arts. 15 and 16; 1985 Nairobi Convention, Arts. 16 and 17; 1986 Noumea Convention, Arts. 21 and 22.

¹⁵² 1976 Barcelona Convention (revised in 1995), Art. 17; 1981 Abidjan Convention, Art. 16(1); 1983 Cartagena Convention, Art. 15; 1985 Nairobi Convention, Art. 16.

¹⁵³ 1978 Kuwait Convention, Art. XVI (Regional Organization for the Protection of the Marine Environment); 1981 Lima Convention, Art. 13 (Permanent Commission of the South Pacific); 1982 Jeddah Convention, Art. XVI (Regional Organization for the Conservation of the Red Sea and the Gulf of Aden Environment); 1986 Noumea Convention, Arts. 2(g) and 21 (the South Pacific Commission; in 1991, the secretariat functions were delegated on a temporary basis to the South Pacific Regional Environment Programme).

¹⁵⁴ S. Saetevik, *Environmental Co-operation Between North Sea States: Success or Failure?* (1988); D. Freestone and T. Ijlstra (eds.), 'The North Sea: Perspectives on Regional Environmental Co-operation', 5 *International Journal of Estuarine and Coastal Law* (1990) (special issue); D. Freestone and T. Ijlstra (eds.), *The North Sea: Basic Legal Documents on Regional Environmental Co-operation* (1991); E. Hey, 'The Precautionary Approach: Implications of the Revision of the Oslo and Paris Conventions', 15 *Marine Policy* 1441 (1991); M. Pallemerts, 'The North Sea Ministerial Declarations from Bremen to The Hague: Does the Process Generate Any Substance?', 7 *International Journal of Estuarine and Coastal Law* 1 (1992); E. Hey, T. Ijlstra and A. Nollkaemper, 'The 1992 Paris Convention for the Protection of the Marine Environment of the North-East Atlantic: A Critical Analysis', 8 *International Journal of Marine and Coastal Law* 1 (1993); J. Hilf, 'The Convention for the Protection of the Marine Environment of the North-East Atlantic: New Approaches to an Old Problem', 55 *ZaöRV* 580 (1995); C. Plasman, 'The State of the Marine Environment of the North Sea', 13 *International Journal of Marine and Coastal Law* 325 (1998); A. Nollkaemper, 'The Distinction Between Non-Legal Norms and Legal Norms in International Affairs: An Analysis with Reference to the North Sea', 13 *International Journal of Marine and Coastal Law* 355 (1998); L. de la Fayette, 'The OSPAR Convention Comes into Force: Continuity and Progress', 14 *International Journal of Marine and Coastal Law* 247 (1999); D. Johnson, 'Environmental Indicators: Their Utility in Meeting the OSPAR Convention's Regulatory Needs', 65 *ICES Journal of Marine Science* 1387 (2008). See also www.ospar.org.

¹⁵⁵ Paris, 22 September 1992, in force 25 March 1998, 32 ILM 1228 (1993). The Convention's contracting parties are Belgium, Denmark, the EU, Finland, France, Germany, Iceland, Ireland, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

¹⁵⁶ Oslo, 15 February 1972, in force 7 April 1974, 932 UNTS 3; amended by Protocol of 2 March 1983, in force 1 September 1989.

¹⁵⁷ Paris, 4 June 1974, in force 5 October 1976, 13 ILM 352 (1974).

¹⁵⁸ Bonn, 13 September 1983, in force 1 September 1989, available at www.bonnagreement.org. See p. 394, below.

from land-based sources, dumping and incineration, on offshore sources, on the assessment of the quality of the marine environment and on the protection and conservation of the ecosystems and biological diversity of the 'maritime area'.¹⁵⁹ The Convention applies to the maritime area of the Northeast Atlantic and Arctic Oceans, including the North Sea, comprising internal waters and territorial seas, as well as applying to high seas and the seabed and subsoil.¹⁶⁰

Significant legal developments adopted by the Convention include the following: an expanded use of Annexes; a commitment to 'sustainable management' (rather than sustainable development); the incorporation of the precautionary principle and the polluter pays principle,¹⁶¹ and the concepts of best available techniques and best available practice and clean technology;¹⁶² and the creation of a new Commission with powers to take legally binding decisions and participate in compliance.¹⁶³ The Convention also incorporates, for the first time in an international treaty, a commitment to increased public participation through the right of access to information and participation of non-governmental organizations. In the *MOX Plant (OSPAR)* case, Ireland instituted arbitration proceedings against the United Kingdom on the basis of OSPAR's right of access to information.¹⁶⁴

The Preamble to the Convention emphasises environmental protection as an end in itself, signalling a move away from anthropocentrism and a recognition of the importance of the marine environment and the flora and fauna it supports. In defining the 'sustainable management' of the maritime area, it endorses 'sustainability' as an emerging international legal concept.¹⁶⁵ The Convention adopts a comprehensive 'ecosystem' approach to the control and prevention of pollution. Pollution is to be eliminated (rather than 'prevented, reduced and controlled'), and degraded areas should be restored 'so as to safeguard human health and to conserve marine ecosystems and, when practicable, restore marine areas which have been adversely affected'.¹⁶⁶

The parties commit themselves to adopt programmes and measures and to harmonise policies and strategies which will contain time-limits and take full account of the latest technological developments and practices designed to 'prevent and eliminate pollution fully', although each may adopt more stringent measures.¹⁶⁷ The Convention promotes scientific and technical research, assessment of the quality of the environment and the settlement of disputes. Parties undertake to publish regular joint assessments of the quality of the marine environment, including the effectiveness of measures taken and planned on the basis of monitoring, modelling, remote sensing and progressive risk assessment strategies.¹⁶⁸

The OSPAR Commission, comprising a representative from each party, was established to: supervise the implementation of the Convention; review the condition of the maritime area and the effectiveness of measures adopted and priorities; and draw up programmes and measures, including economic instruments.¹⁶⁹ Apart from receiving reports from the parties, the

¹⁵⁹ Arts. 3–7. ¹⁶⁰ It does not apply to the Baltic or Mediterranean Seas.

¹⁶¹ Art. 2(2)(a) and (b); Chapter 6, pp. 217–33, above.

¹⁶² Art. 2(3)(b). 'Clean technology' is not defined; but see the 1991 Bamako Convention, at Chapter 12, pp. 571–2, below.

¹⁶³ Art. 10. ¹⁶⁴ Arts. 9 and 32; Chapter 8, p. 316, below.

¹⁶⁵ Chapter 6, pp. 206–17, above. 'Sustainable management' is defined in the Convention as 'the management of human activities in such a manner that the marine ecosystem will continue to sustain the legitimate uses of the sea and will continue to meet the needs of present and future generations': Preamble.

¹⁶⁶ Art. 2(1)(a). ¹⁶⁷ Art. 2(1)(b), (3)(a) and (5).

¹⁶⁸ Art. 6 and Annex IV, Art. 2. 'Monitoring' is defined as 'the repeated measurement of: (a) the quality of the marine environment and each of its compartments, that is, water, sediments and biota; (b) activities or natural and anthropogenic inputs which may affect the quality of the marine environment; (c) the effects of such activities and inputs': Annex IV, Art. 1(1).

¹⁶⁹ Art. 10.

Commission may, at the request of a party, consider transboundary pollution that is likely to prejudice the interests of a party and make recommendations to reach a solution.¹⁷⁰ It will also be required to assess compliance and call for steps to bring about full compliance, including measures to assist a party to carry out its obligations.¹⁷¹ These new powers imply extended functions for the permanent secretariat.¹⁷²

Building on previous strategic and action plans, the OSPAR Commission at its 2010 meeting adopted a Strategy for the Protection of the Marine Environment of the North-East Atlantic 2010–2020.¹⁷³ This Strategy takes into consideration the Quality Status Report, an evaluation of the quality status of the Northeast Atlantic based on ten years of monitoring, which indicates that there are a number of earlier marine protection objectives which have not been achieved.¹⁷⁴ The new Strategy places the ecosystem approach at the core of OSPAR's objectives and fosters international co-operation with regional organisations, such as the EU, and other relevant international instruments and organisations competent in a wide range of fields, including biodiversity conservation, fisheries and marine transportation. The Strategy maintains its previous priority objectives: protection and conservation of ecosystems and biological diversity; hazardous substances; radioactive substances; and eutrophication; and adds the regulation of offshore oil and gas activities.

Baltic Sea: the 1992 Helsinki Convention¹⁷⁵

The geography and marine ecology of the Baltic Sea has contributed to its environmental degradation resulting from unchecked industrialisation. It is a relatively closed sea with only limited inflows of water past the Danish and Swedish coasts, further aggravated by the fact that much of it is covered by ice in the winter months. The 1974 Convention on the Protection of the Marine Environment of the Baltic Sea Area (1974 Baltic Convention)¹⁷⁶ failed to fulfil its aims, and did not prevent massive pollution of the Baltic Sea leading to more than 100,000 square kilometres being described as 'totally dead'.¹⁷⁷ The 1974 regime was superseded by the 1992

¹⁷⁰ Arts. 21(2) and 22. ¹⁷¹ Art. 23. ¹⁷² Art. 12.

¹⁷³ Strategy of the OSPAR Commission for the Protection of the Marine Environment of the North-East Atlantic 2010–2020, OSPAR Agreement 2010–3, Bergen: 20–24 September 2010.

¹⁷⁴ OSPAR Commission, Quality Status Report (2010), at <http://qsr2010.ospar.org/en/index.html>.

¹⁷⁵ B. Johnson, 'The Baltic Conventions', 25 *International and Comparative Law Quarterly* 1 (1976); B. Boczek, 'International Protection of the Baltic Sea Environment Against Pollution: A Study in Marine Regionalism', 72 *American Journal of International Law* 782 (1978); M. Fitzmaurice, *The International Legal Aspects of the Environmental Protection of the Baltic Sea* (1992); M. Fitzmaurice, 'The 1992 Convention on the Baltic Sea Environment', 2 *Review of European Community and International Environmental Law* 24 (1993); U. K. Jenisch, 'The Baltic Sea: The Legal Regime and Instruments for Co-operation', 11 *International Journal of Marine and Coastal Law* 47 (1996); R. Platzoder and P. Verlaan, *The Baltic Sea: New Developments in National Policies and International Co-operation* (1997); M. Fitzmaurice, 'The Helsinki Conventions 1974 and 1992', 13 *International Journal of Marine and Coastal Law* 379 (1998); J. Ebbesson, 'A Critical Assessment of the 1992 Baltic Sea Convention', 43 *German Yearbook of International Law* 38 (2000); E. A. Kirk and H. M. Silfverberg, 'Harmonisation in the Baltic Sea Region', 21 *International Journal of Marine and Coastal Law* 235 (2006); H. Backer, J. M. Leppanen, A. C. Brusendorff *et al.*, 'HELCOM Baltic Sea Action Plan – A Regional Programme of Measures for the Marine Environment Based on the Ecosystem Approach', 60 *Marine Pollution Bulletin* 642 (2010). See also www.helcom.fi.

¹⁷⁶ Helsinki, 22 March 1974, in force 3 May 1980, 13 *ILM* 546 (1974). For amendments adopted by the Helsinki Commission in 1983, 1987, 1989 and 1990, see OJ C222, 18 August 1993, 15.

¹⁷⁷ *Financial Times*, 14 July 1993, 14: dangerous concentrations include nitrogen and phosphorus, sewage effluents, toxic substances (PCBs, DDT, chlorine, mercury, lead and cadmium) and chemical weapons dumped after the Second World War.

Convention on the Protection of the Marine Environment of the Baltic Sea Area (1992 Helsinki Convention),¹⁷⁸ which enlarges the Convention area by including internal waters.

The 1992 Convention amends the six Annexes to the 1974 Convention and adds a new Annex VII on the prevention of pollution from offshore activities.¹⁷⁹ The 1992 Convention includes new definitions and provisions on: fundamental principles and obligations; notification and consultation; environmental impact assessment; nature conservation and biodiversity; reporting and exchange of information; and public information. Under the 1992 Convention, parties must, individually or jointly, take measures to 'prevent and eliminate pollution in order to promote the ecological restoration of the Baltic Sea Area and the preservation of its ecological balance'.¹⁸⁰ They must apply the precautionary principle and the polluter pays principle, promote the use of best environmental practice and best available technology, and use best endeavours to ensure that implementation of the Convention does not cause trans-boundary pollution in areas beyond the Baltic Sea or lead to other 'unacceptable environmental strains'.¹⁸¹ The Convention applies to the water body and the seabed, including each party's territorial sea and internal waters, but not to ships and aircraft used for the time being only on governmental, non-commercial service.¹⁸²

These general commitments and principles are supplemented by specific obligations. The parties are required to prevent and eliminate pollution by harmful substances from all sources under Annex I, which sets out general principles, and identifies banned substances and pesticides.¹⁸³ Pollution from land-based sources is to be prevented and eliminated in accordance with Annex III,¹⁸⁴ and pollution from ships is subject to the measures required by Annex IV.¹⁸⁵ Incineration is prohibited, as is dumping, subject to exemptions for dredged material and safety.¹⁸⁶ The exploration and exploitation of the seabed and its subsoil are also regulated.¹⁸⁷

The administering body for the Convention is the Baltic Marine Environment Protection Commission (HELCOM), set up under the 1974 Convention, which has met annually since the 1974 Convention entered into force. HELCOM's functions include observing the implementation of the Convention, making recommendations on measures, including amendments to the Convention and its Annexes, and defining pollution control criteria and objectives for the reduction of pollution, and objectives concerning measures.¹⁸⁸ Decisions of the Commission, including recommendations, are taken by unanimity unless provided otherwise in the Convention.¹⁸⁹

¹⁷⁸ Helsinki, 9 April 1992, in force 17 January 2000, LDC.2/Circ.303, 10 August 1992; ten states are party.

¹⁷⁹ The current list of Annexes under the 1992 Convention is: Annex I, Harmful Substances; Annex II, Criteria for the Use of Best Environmental Practice and Best Available Technology; Annex III, Criteria and Measures Concerning the Prevention of Pollution from Land-Based Sources; Annex IV, Prevention of Pollution from Ships; Annex V, Exemptions from the General Prohibition of Dumping of Waste and Other Matter in the Baltic Sea Area; Annex VI, Prevention of Pollution from Offshore Activities; Annex VII, Response to Pollution Incidents.

¹⁸⁰ Art. 3(1).

¹⁸¹ Art. 3(2)–(4) and (6). Annex II establishes Criteria for the Use of Best Environmental Practice and Best Available Technology.

¹⁸² Art. 4. ¹⁸³ Art. 5; Annex I.

¹⁸⁴ Art. 6. Annex III contains three Regulations relating to: general provisions; specific requirements governing, *inter alia*, municipal water sewage, industrial plant water management, and industrial waters; and principles for issuing permits.

¹⁸⁵ Art. 8. Annex IV contains Regulations on co-operation, assistance in investigations, and definitions, and requires parties to apply the provisions of the Annexes to MARPOL 73/78, subject to the Regulation on sewage.

¹⁸⁶ Arts. 10 and 11 and Annex V. ¹⁸⁷ Art. 12 and Annex VI. ¹⁸⁸ 1992 Baltic Convention, Art. 20.

¹⁸⁹ *Ibid.*, Art. 19(5).

For the purposes of its implementation, the Convention requires notification to the Commission, and consultations between parties, whenever an environmental impact assessment of a proposed activity that is likely to cause a significant adverse impact on the marine environment is required by international law or supranational regulations.¹⁹⁰ It also requires notification and consultation on pollution incidents, co-operation in combating marine pollution, and general reporting requirements to the Commission.¹⁹¹ Parties to the Convention need to make available to the public information on the condition of the Baltic Sea, measures taken or planned, permits issued, sampling results, and water quality objectives, even if some restrictions apply on the basis of confidentiality rules.¹⁹² It requires the parties to 'conserve natural habitats and biological diversity and to protect ecological processes' to ensure the sustainable use of natural resources.¹⁹³

In 2007, the Commission adopted the HELCOM Baltic Sea Action Plan, which determines the actions necessary to 'achieve a Baltic Sea in good environmental status' by 2021.¹⁹⁴ The Action Plan incorporates the ecosystem approach – not present in the 1992 Convention¹⁹⁵ – and is based on ecological objectives. It focuses on four priority areas: eutrophication, hazardous substances, maritime safety and biodiversity and nature protection.

Caspian Sea: the 2003 Tehran Convention¹⁹⁶

The Caspian Sea is the largest land-locked body of water on Earth. It is under severe stress from industrial and agricultural pollution, toxic and radioactive wastes, and leaks from oil extraction and refining. It is also threatened by illegal fishing of sturgeon, and the over-exploitation of other marine resources. After nearly a decade of negotiations, Azerbaijan, Iran, Kazakhstan, Russia and Turkmenistan adopted in November 2003, under the umbrella of UNEP's Caspian Environment Programme, the Framework Convention for the Protection of the Marine Environment of the Caspian Sea (2003 Tehran Convention), which entered into force in 2006.¹⁹⁷

The 2003 Tehran Convention is designed as a framework convention that lays down the general requirements and institutional mechanisms for (1) the prevention, reduction and control of pollution; and (2) the protection of the marine environment. To combat pollution, it addresses land-based sources, seabed activities, vessels, dumping and other activities such as land reclamation and coastal dredging. The Convention establishes the general obligation to protect, preserve and restore the marine environment.¹⁹⁸ However, this obligation is qualified by the phrase 'in the course of satisfying human needs' and, with regard to marine species, the requirement to maintain or restore populations is to levels that can produce the maximum sustainable yield.¹⁹⁹ Parties shall take all appropriate measures on the basis of the best scientific

¹⁹⁰ *Ibid.*, Arts. 7(1) and (2). ¹⁹¹ *Ibid.*, Arts. 13, 14 and 16. ¹⁹² *Ibid.*, Arts. 17 and 18. ¹⁹³ *Ibid.*, Art. 15.

¹⁹⁴ Adopted on 15 November 2007 in Krakow, Poland, by the HELCOM Extraordinary Ministerial Meeting, available at www.helcom.fi/BSAP/ActionPlan/en_GB/ActionPlan.

¹⁹⁵ The ecosystem approach was incorporated into the Baltic Sea regime in 2003. See First Joint Ministerial Meeting of the Helsinki and OSPAR Commissions, Bremen, 25–26 June 2003, Statement on the Ecosystem Approach to the Management of Human Activities, www.helcom.fi/stc/files/BremenDocs/JointEcosystemApproach.pdf.

¹⁹⁶ C. Romano, 'The Caspian and International Law: Like Oil and Water?', in W. Ascher and N. Mirovitskaya (eds.), *The Caspian Sea: A Quest for Environmental Security* (2000), 145; B. Janusz, 'The Framework Convention for the Protection of the Marine Environment of the Caspian Sea', 4 *Chinese Journal of International Law* 257 (2005); J. Nouri, A. R. Karbassi and S. Mirkia, 'Environmental Management of Coastal Regions in the Caspian Sea', 5 *International Journal of Environmental Science and Technology* 43 (2008). See also www.tehranconvention.org.

¹⁹⁷ Tehran, 4 November 2003, in force 12 August 2006, available at www.tehranconvention.org.

¹⁹⁸ Art. 4.

¹⁹⁹ Art. 14.

evidence available to prevent over-exploitation and protect endemic, rare and endangered species or habitats. The Convention is also concerned with developing coastal zone management and alleviating the implications of the sea level fluctuations of the Caspian Sea.²⁰⁰

The Convention foresees the establishment of specific obligations through additional protocols. UNEP's Regional Office for Europe has facilitated the development of protocols on the Conservation of Biological Diversity; the Protection of the Caspian Sea Against Pollution from Land-Based Sources and Activities; Environmental Impact Assessment in a Trans-Boundary Context; and Regional Preparedness, Response and Co-operation in Combating Oil Pollution Incidents. The former two protocols are unlikely to be adopted until the fourth meeting of the Conference of the Parties in 2012, but the latter two may be adopted earlier, at the third meeting in 2011.²⁰¹

The 2003 Tehran Convention incorporates the principles found in most recent regional agreements for marine conservation, including the precautionary principle, the polluter pays principle and the principle of access to information.²⁰² The Convention also establishes provisions on EIA and on environmental monitoring and research.²⁰³ It directly draws from UNEP's Regional Seas treaties in its establishment of co-operation obligations and in its provisions for dispute settlement.

Pollution by dumping²⁰⁴

Pollution by dumping, which accounts for approximately 10 per cent of pollution of the marine environment, is addressed by two international agreements of global application, as well as by the majority of regional agreements. Of these instruments, the 1982 UNCLOS establishes broad

²⁰⁰ Arts. 15 and 16. ²⁰¹ The text of the draft protocols is available at www.tehranconvention.org.

²⁰² Art. 5. ²⁰³ Arts. 17, 19 and 20.

²⁰⁴ R. N. Duncan, 'The 1972 Convention on the Prevention of Marine Pollution by Dumping of Wastes at Sea', 5 *Journal of Maritime Law and Commerce* 299 (1974); J. A. Rogers, 'Ocean Dumping', 7 *Environmental Law* 1 (1976); K. W. Goering, 'Mediterranean Protocol on Land-Based Sources: Regional Response to a Pressing Transnational Problem', 13 *Cornell International Law Journal* 269 (1980); G. Winter, 'The Implementation of the Oslo Convention for the Prevention of Marine Pollution by Dumping from Ships and Aircraft', 3 *Zeitschrift für Umweltpolitik* 707 (1980); P. Bliss-Guest, 'The Protocol Against Pollution from Land-Based Sources: A Turning Point in the Rising Tide of Pollution', 17 *Stanford Journal of International Law* 261 (1981); C. E. Curtis, 'Legality of Seabed Disposal of High-Level Radioactive Waste under the London Dumping Convention', 14 *Ocean Development and International Law* 383 (1985); M. A. Zeppetello, 'National and International Regulation of Ocean Dumping: The Mandate to Terminate Marine Disposal of Contaminated Sewage Sludge', 12 *Ecology Law Quarterly* 619 (1985); L. Kramer, 'Le Déversement des Déchets en Mers et le Droit Communautaire', 318 *Revue de Marché Commun* 36 (1988); E. McCann, 'Terminating Ocean Dumping of Municipal Sewage Sludge: A Political Solution to an Environmental Problem', 9 *Temple Environmental Law and Technology Journal* 69 (1990); D. Susman, 'Regulation of Ocean Dumping by the European Economic Community', 18 *Ecology Law Quarterly* 559 (1991); E. Hey, 'Hard Law, Soft Law, Emerging International Law and Ocean Disposal Options for Nuclear Waste', 40 *Netherlands International Law Review* 405 (1993); R. J. Baird, 'Ocean Dumping – An Overview of the International and Domestic Regulatory System', 15 *Environmental and Planning Law Journal* 174 (June 1998); L. de la Fayette, 'The London Convention 1972: Preparing for the Future', 13 *International Journal of Marine and Coastal Law* 515 (1998); E. A. Kirk, 'OSPAR Decision 98/3 and the Dumping of Offshore Installations', 48 *International and Comparative Law Quarterly* 458 (1999); Z. Ozcayir, 'The 1996 Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter 1972', 12 *Journal of International Maritime Law* 73 (2006); M. J. Mace, C. Hendriks and R. Coenraads, 'Regulatory Challenges to the Implementation of Carbon Capture and Geological Storage Within the European Union under EU and International Law', 1 *International Journal of Greenhouse Gas Control* 253 (2007); D. Freestone and R. Rayfuse, 'Ocean Iron Fertilization and International Law', 364 *Marine Ecology Progress Series* 227 (2008); P. Verlaan, 'Current Legal Developments: London Convention and London Protocol', 26 *International Journal of Marine and Coastal Law* 185 (2011). See also www.imo.org/OurWork/Environment/SpecialProgrammesAndInitiatives/Pages/London-Convention-and-Protocol.aspx.

principles, and detailed regulations are set out at the global level by the 1972 London Convention and its 1996 Protocol.

UNCLOS: general principles

UNCLOS requires states to adopt laws and regulations to prevent, reduce and control dumping, which laws may not be less effective than global rules and standards, and to establish global and regional rules, standards and recommended practices and procedures.²⁰⁵ In general, dumping in accordance with such laws and regulations must not be carried out without the permission of the relevant state authority, and dumping within the territorial sea and the EEZ or on the continental shelf must not be carried out without the express prior approval of the coastal state after due consideration of the matter with states which may be adversely affected.²⁰⁶

1972 London Convention and 1996 Protocol

The 1972 London Convention (known as the London Dumping Convention until 1992) is an instrument of global application to all marine waters other than internal waters, which has attracted the support of nearly ninety parties, more than half of which are developing countries.²⁰⁷ In the early 1990s, parties undertook a review of the Convention, which concluded with the adoption of the 1996 Protocol to the London Convention.²⁰⁸ The Protocol, which has been ratified by about forty states, supersedes the Convention between those parties to the Protocol that are also parties to the Convention.²⁰⁹ The Convention remains in force, and thus the Convention and the Protocol are parallel regimes, with different parties to each agreement. Although the Protocol entered into force in 2006, even after this date some states chose to become party to the Convention and not to the Protocol. This is the case, for example, for the United Kingdom, which joined the Convention in 2008.²¹⁰ Overall, the Protocol is more restrictive of dumping practices than the Convention.²¹¹

*1972 London Convention*²¹²

The objective of the 1972 London Convention is to ‘prevent the pollution of the sea by the dumping of waste and other matter that is liable to create hazards to human health, to harm living resources and marine life, to damage amenities or to interfere with other legitimate uses of the sea’, and to encourage the development of regional agreements.²¹³ Dumping is defined by Article III of the Convention as:

1. any deliberate disposal at sea of wastes or other matter from vessels, aircraft, platforms or other man-made structures at sea; or
2. any deliberate disposal at sea of vessels, aircraft, platforms or other man-made structures at sea.

²⁰⁵ Art. 210(1), (4) and (6). ‘Dumping’ is defined similarly to the 1972 London Convention: Art. 1(1)(5).

²⁰⁶ Art. 210(3) and (5).

²⁰⁷ London, 29 December 1972, in force 30 August 1975, 1046 UNTS 120, 11 ILM 1294 (1972). Art. III(3).

²⁰⁸ London, 7 November 1996, in force 24 March 2006, amended 2 November 2006, 36 ILM 1 (1997). ²⁰⁹ Art. 23.

²¹⁰ The United Kingdom is a signatory to the 1996 Protocol. See IMO, Status of Multilateral Conventions and Instruments in Respect of Which the International Maritime Organization or Its Secretary General Performs Depositary or Other Functions, 31 May 2011.

²¹¹ On the 1972 London Convention and the 1996 Protocol, see generally www.londonprotocol.imo.org.

²¹² For further information on the 1972 London Convention, see the second edition of this text, at pp. 416–22 thereof.

²¹³ Arts. I and VIII. On regional agreements, see pp. 370–2, below.

This does not include incidental disposal of waste.²¹⁴ Under Article III, ‘wastes or other matters’ are broadly defined as ‘material and substance of any kind, form or description’.

Central to the 1972 London Convention are the rules that prohibit or regulate the dumping of waste. Three categories of wastes are established, each of which is subject to specific obligations. The dumping of highly hazardous waste substances listed in Annex I (the ‘black list’) is prohibited, except in emergency situations and after consultation with countries likely to be affected, and with the IMO.²¹⁵ The prohibition does not apply to some Annex I substances.²¹⁶ The dumping of Annex II ‘special care’ substances and wastes (the ‘grey list’) requires a prior ‘special’ permit.²¹⁷ The dumping of all other wastes requires a prior ‘general’ permit.²¹⁸ Exceptions to the rules of the London Convention concerning dumping are provided for in relation to the safety of human life and vessels, and emergency situations where unacceptable risk is posed to human health and no other solution is possible.²¹⁹ The Convention does not apply to vessels and aircraft entitled to sovereign immunity under international law, although each party must ensure that they act consistently with the Convention.²²⁰

‘Special’ and ‘general’ permits are granted by national authorities, for matter intended for dumping which is loaded in its territory, or loaded by a vessel or aircraft registered in its territory, or flying its flag when the loading occurs in the territory of a non-party.²²¹ The grant of ‘special’ and ‘general’ permits must comply with certain criteria,²²² and national authorities must keep detailed records of all matter permitted to be dumped, and monitor the condition of the seas. Parties must report this and other information to the IMO.²²³ This system should allow

²¹⁴ Art. III(1)(a) and (b). Dumping does not include ‘the disposal at sea of wastes or other matter incidental to, or derived from, the normal operations of man-made structures and their equipment at sea, other than wastes or other matter transported by or to man-made structures at sea operating for the purpose of disposal of such matter or related to offshore activities arising from the exploitation, exploration or processing of seabed mineral resources’. Cf. the definitions in the 1972 Oslo Dumping Convention, p. 370 and the 1992 OSPAR Convention, pp. 370–1, below.

²¹⁵ Art. IV(1)(a). Annex I, as amended in 1978, 1980 and 1993, includes organohalogen compounds, mercury and its compounds, cadmium and its compounds, persistent plastics and other persistent synthetic materials, crude oil and its waste and petroleum products, high-level radioactive wastes or matter, and materials produced for biological and chemical warfare. See also Guidelines for Allocation of Substances to the Annexes to the London Convention, Resolution LDC.31(11) (LDC 11/14, Annex 3).

²¹⁶ Annex I, para. 8 (substances which are rapidly rendered harmless by physical, chemical or biological processes in the sea, provided that they do not make edible marine organisms unpalatable or endanger human health or that of domestic animals). See Resolution LDC 24(10), Guidelines for the Implementation of Paragraphs 8 and 9 of Annex I to the London Dumping Convention (LDC 10/15, Annex 3); Annex I, para. 10 (trace contaminants). See Regulations for the Control of the Incineration of Wastes and other Matter at Sea, Addendum to Annex I. Para. 10 and the Addendum were adopted as amendments by the third Consultative Meeting of the Contracting Parties in 1978.

²¹⁷ Art. IV(1)(b). Annex II, as amended in 1978 and 1980, includes wastes containing significant amounts of hazardous substances (e.g. arsenic, lead, copper, fluorides, pesticides not covered by Annex I, etc.), large quantities of acids and alkalis, bulky wastes, radioactive wastes not in Annex I, and certain other non-toxic substances.

²¹⁸ Art. IV(1)(c).

²¹⁹ Art. V. See Interim Procedures and Criteria for Determining Emergency Situations (LDC V/12, Annex 5).

²²⁰ Art. VII(4). ²²¹ Art. VI(1)(a) and (b) and (2).

²²² Art. VI(3) and Annex III, as amended in 1989. Resolution LDC 32(11), Amendments to the Guidelines for the Application of Annex III (LDC 11/14, Annex 4).

²²³ Art. VI(1)(c) and (d). On notification of permits, see Procedure for the Notification of Permits Issued for the Dumping of Wastes and Other Matter at Sea (LDC 12/16, Annex 2). In compliance with Art. VII, parties have developed a Dumping Incident Information Form.

the international community to determine what is being dumped, but in practice reporting requirements are not complied with fully.²²⁴

The 1972 London Convention also requires collaboration between parties on training, research and monitoring and methods for disposal and treatment of waste, to develop procedures to assess liability and the settlement of disputes, and the promotion of measures to protect the marine environment against pollution from specific sources (such as hydrocarbons and radioactive pollutants).²²⁵ The Convention is administered by Consultative Meetings of the Parties, which are responsible for keeping under review the implementation of the Convention, amending it and the Annexes, ensuring the availability of relevant scientific and technical information, receiving the parties' reports, and developing and adopting procedures and criteria for determining exceptional and emergency situations.²²⁶ Consultative Meetings are held annually in London at the IMO, and secretariat functions are provided by the IMO, which was designated in 1975 as the competent organisation.²²⁷

At their Consultative Meetings, parties have adopted a number of amendments to the Annexes and to the Convention, the latter on dispute settlement. These amendments incorporated previous resolutions concerning prohibitions on dumping industrial wastes, radioactive wastes and other radioactive matter, as well as the prohibition on incineration at sea of industrial wastes and of sewage sludge.²²⁸ The Consultative Meetings have established several subsidiary bodies, including a Scientific Group on Dumping and an Ad Hoc Legal Group of Experts.²²⁹

1996 Protocol

The 1996 Protocol is the culmination of the process of reforms initiated in the framework of the 1972 Convention. It provides a more restrictive approach to the regulation of dumping, by generally prohibiting all forms of dumping, except for some listed substances. The 1972 Convention had the reverse approach, by permitting dumping at sea, with the exception of some prohibited substances.²³⁰ The Protocol also has a broader geographical scope, regulating aspects related to storage of wastes in the seabed, as well as offshore installations.²³¹ It sets a

²²⁴ See e.g. 'Status of Compliance with the Notification and Reporting Requirements under Article VI(4) of the London Convention 1972', IMO Doc. LC 27/INF.2, 25 July 2005.

²²⁵ Arts. IX, X, XI and XII.

²²⁶ Art. XIV. See Resolution LDC 10(v), Procedures for Preparation and Consideration of Amendments to Annexes to the London Dumping Convention (LDC V/12, Annex 3).

²²⁷ Art. XIV(2).

²²⁸ Addendum to Annex I to the Convention: 'Regulations for the Control of Incineration of Wastes and Other Matter at Sea', adopted by the third Consultative Meeting of Contracting Parties in 1978 in conjunction with para. 10 of Annex I, in force on 11 March 1979; Amendments to the Convention adopted by the third Consultative Meeting of Contracting Parties in 1978 concerning procedures for the settlement of disputes, not yet in force; Amendment to Annex I, para. 5, concerning petroleum products, adopted in 1980 by the fifth Consultative Meeting of Contracting Parties, in force on 11 March 1981; Amendments to Annex III (on the scientific basis for assessing wastes) adopted in principle by the tenth Consultative Meeting of Contracting Parties in 1986 (Res. LDC.26(10), confirmed by Res. LDC.37(12) in 1989), in force on 19 May 1990. See also Amendments adopted by the sixteenth Consultative Meeting of Contracting Parties: Res. LC.49(16) adopted on 12 November 1993: Amendments to the Annexes to the London Convention 1972 concerning phasing out sea disposal of industrial wastes; Resolution LC.50(16) adopted on 12 November 1993: Amendment to Annex I to the London Convention 1972 concerning the prohibition of incineration at sea of industrial wastes and sewage sludge; Resolution LC.51(16) adopted on 12 November 1993: Amendments to the Annexes to the London Convention 1972 concerning the prohibition of dumping of radioactive wastes and other radioactive matter, all in force on 20 February 1994.

²²⁹ *2 Yearbook of International Environmental Law* 148–9 (1991), LDC 14/INF.34. ²³⁰ Art. 4.

²³¹ Application to internal waters is voluntary: Art. 7(2).

broader objective than the Convention, by aiming to ‘protect and preserve the marine environment from all sources of pollution’. To this end, parties are required to take effective measures to prevent, reduce and, where practicable, eliminate marine pollution caused by dumping or incineration at sea.²³²

The Protocol incorporates the polluter pays principle and the ‘precautionary approach’ with respect to environmental protection from dumping of wastes or other matter.²³³ As part of its ‘reverse list’ approach, Annex 1 to the Protocol only permits dumping, with a permit, of the following substances: dredged material; sewage sludge; fish waste, or material resulting from industrial fish processing operations; vessels and platforms or other man-made structures at sea; inert, inorganic geological material; organic material of natural origin; bulky items and similarly harmless materials; and carbon dioxide streams from carbon dioxide capture processes for sequestration.²³⁴ The Protocol expressly prohibits incineration of wastes at sea, which had already been prohibited under the 1972 Convention through amendments in 1991 and 1993;²³⁵ and the export of wastes or other matter to other countries for dumping or incineration at sea.²³⁶ In a move designed to facilitate the deployment of carbon capture and storage technologies for the mitigation of climate change, amendments made to the Protocol in 2006 allow the storage of carbon dioxide under the seabed from 10 February 2007.²³⁷ The amendments add ‘CO₂ streams from CO₂ capture processes for sequestration’ to Annex I (which lists substances whose dumping is permitted). However, CO₂ streams may only be considered for dumping if: disposal is into a sub-seabed geological formation; they consist overwhelmingly of carbon dioxide; and no wastes or other matter are added for the purpose of disposing of them.²³⁸

On the other hand, dumping in the context of iron ocean fertilisation practices – advocated by some as a climate change mitigation measure – has not been accepted under the London Convention and the 1996 Protocol. In 2008, parties to these agreements decided, taking into consideration the precautionary approach, against allowing activities whose principal intention is stimulating primary productivity in the oceans.²³⁹ Parties admit ocean fertilisation for legitimate scientific research, and in 2010 established an assessment framework in which to assess scientific research proposals involving ocean fertilisation.²⁴⁰

The Protocol includes extended technical co-operation and assistance provisions,²⁴¹ as well as a commitment to develop procedures for assessing and promoting compliance with the Protocol.²⁴² In 2007, the meeting of the contracting parties to the Protocol adopted a set of compliance procedures and mechanisms and established the London Protocol Compliance Group, a new subsidiary body.²⁴³

²³² Art. 2. ²³³ Art. 3(1). ²³⁴ Annex 1. ²³⁵ Art. 5. ²³⁶ Art. 6.

²³⁷ See further Chapter 12, pp. 563–4, below.

²³⁸ The second meeting of contracting parties in November 2007 adopted ‘Specific Guidelines for Assessment of Carbon Dioxide Streams for Disposal into Sub-seabed Geological Formations’.

²³⁹ Res. LC-LP.1(2008) on the regulation of ocean fertilisation, 31 October 2008.

²⁴⁰ Res. LC-LP.2(2010) on the assessment framework for scientific research involving ocean fertilisation, 14 October 2010.

²⁴¹ Art. 13. ²⁴² Art. 11.

²⁴³ ‘Compliance Procedures and Mechanisms Pursuant to Article 11 of the 1996 Protocol to the London Convention 1972’, 9 November 2007.

Regional agreements

Nearly all regional agreements for marine conservation contain general provisions to prevent marine pollution caused by dumping. A number of them have developed specific protocols or Annexes on the matter. This is the case for the 1992 OSPAR Convention and the UNEP Regional Seas Programme's 1976 Barcelona Dumping Protocol, 1986 Noumea Dumping Protocol and 1992 Protocol on the Protection of the Black Sea Marine Environment Against Pollution by Dumping.

1992 OSPAR Convention

The 1992 OSPAR Convention, which entered into force in 1998, replaced the 1972 Convention for the Prevention of Marine Pollution by Dumping from Ships and Aircraft (Oslo Dumping Convention).²⁴⁴ The Oslo Dumping Convention was the first regional agreement to regulate and prohibit dumping at sea, and, through its Commission (OSCOM), states adopted, between 1974 and 1998, a large number of resolutions and recommendations. Of particular note are those relating to the export of wastes for disposal at sea²⁴⁵ and establishing guidelines for the disposal of offshore installations.²⁴⁶ In 1989, OSCOM agreed to cease dumping of industrial wastes in the North Sea by 31 December 1989 and in other Convention waters by 31 December 1995, with some exceptions.²⁴⁷ In 1990, the parties agreed to phase out the dumping of sewage sludge by the end of 1998,²⁴⁸ and to terminate all incineration at sea by 31 December 1991.²⁴⁹

The 1992 OSPAR Convention incorporates many of the earlier treaty's resolutions and decisions into treaty obligations. Under Annex II to the 1992 Convention, the parties must prevent and eliminate pollution by dumping or incineration of wastes or other matter,²⁵⁰ and pollution from the abandonment of vessels or aircraft as a result of accidents.²⁵¹ The OSPAR Convention adopts an expanded definition of dumping as:

- (i) any deliberate disposal in the maritime area of wastes or other matter
 - (1) from vessels or aircraft;
 - (2) from offshore installations;
- (ii) any deliberate disposal in the maritime area of
 - (1) vessels or aircraft;
 - (2) offshore installations and offshore pipelines.²⁵²

Like the 1996 Protocol to the London Convention, the 1992 OSPAR Convention reverses the traditional approach to defining waste: 'wastes or other matter' includes everything except

²⁴⁴ Oslo, 15 February 1972, in force 7 April 1974, 932 UNTS 3; amended by Protocol of 2 March 1983, in force 1 September 1989. See further the second edition of this text, at pp. 409 *et seq.* thereof.

²⁴⁵ OSCOM Recommendation 88/1 (1988).

²⁴⁶ OSCOM, Guidelines for the Disposal of Offshore Installations at Sea, The Hague, 12 June 1991.

²⁴⁷ OSCOM Decision 89/1 (1989); and Report on Justification for the Issue of Permits for the Dumping of Industrial Wastes at Sea (OSCOM, 1989).

²⁴⁸ OSCOM Decision 90/1 (1990). ²⁴⁹ OSCOM Decision 90/2 (1990). ²⁵⁰ Art. 4 and Annex II.

²⁵¹ Annex II, Art. 8.

²⁵² Art. 1(f). See also the exclusions from the definition, including disposal under MARPOL 73/78 or other applicable international law, placement of matter for a purpose other than mere disposal, and for the purposes of Annex III the 'leaving wholly or partly in place of a disused offshore installation or disused offshore pipeline, provided that any such operation takes place in accordance with any relevant provision of the Convention and with other relevant international law': Art. 1(g).

human remains, offshore installations, offshore pipelines and unprocessed fish and offal discarded from vessels.²⁵³

Annex II prohibits the incineration and dumping of all wastes or other matter, except for those expressly excluded by the Annex.²⁵⁴ It permits, subject to authorisation or regulation, the dumping of dredged material, certain inert material of natural origin, and fish waste from industrial fish processing operations.²⁵⁵ In 2007, the OSPAR Commission adopted a decision that allows the storage of CO₂ streams in geological formations, prior to authorisation or regulation.²⁵⁶ However, authorisation will not be granted for the dumping of vessels or aircraft containing substances that result or are likely to result in harm or interference with other legitimate uses of the sea.²⁵⁷ The OSPAR Convention further prohibits the 'placement' of matter in the maritime area for a purpose other than that for which it was originally designed without authorisation or regulation.²⁵⁸ Annex II also prohibits the dumping of low- and intermediate-level radioactive substances, including wastes.²⁵⁹

UNEP Regional Seas Protocols

Three UNEP Regional Seas Protocols require parties to prevent dumping from ships and aircraft: the 1976 Protocol for the Prevention of Pollution in the Mediterranean Sea by Dumping from Ships and Aircraft (1976 Barcelona Dumping Protocol); the 1986 Protocol Concerning Cooperation in Combating Pollution Emergencies in the South Pacific Region (1986 Noumea Dumping Protocol); and the 1992 Protocol on the Protection of the Black Sea Marine Environment Against Pollution by Dumping (1992 Black Sea Dumping Protocol). Each applies to the same geographic area as defined by their respective framework Conventions. They use the same definitions as the 1972 London Convention²⁶⁰ and similarly provide for three categories of substances: except in emergency or exceptional cases, those listed in Annex I cannot be dumped; Annex II substances can only be dumped after a 'special' permit has been granted by the competent national authorities; and the dumping of all other wastes requires a prior 'general' permit from the competent national authorities.²⁶¹ The Protocols require the reporting of incidents or conditions giving rise to suspicion that dumping is taking place.²⁶² Special and general permits must be issued for wastes loaded in the territory of the party or by a

²⁵³ Art. 1(o).

²⁵⁴ Annex II, Arts. 2 and 3(1). The Annex does not apply to the deliberate disposal of wastes or other matter from offshore installations or the disposal of offshore installations and offshore pipelines: Art. 1. Art. 7 provides further exceptions on the grounds of, *inter alia*, *force majeure*, stress and safety. Art. 10(3) provides that the Annex does not 'abridge the sovereign immunity to which certain vessels are entitled under international law'.

²⁵⁵ Annex II, Arts. 3(2) and 4(1). Authorisations and regulation must be in accordance with the criteria, guidelines and procedures adopted by the Commission under Art. 6 of Annex II: *ibid.*, Art. 4(1)(b).

²⁵⁶ OSPAR Decision 2007/2 on the Storage of Carbon Dioxide Streams in Geological Formations, in force 15 January 2008.

²⁵⁷ Annex II, Art. 4(2). ²⁵⁸ Annex II, Art. 5.

²⁵⁹ Annex II, Art. 3(3)(a), (b) and (c). The United Kingdom and France, desiring to retain the option of dumping these radioactive substances, negotiated an exception to the rule which left the way open for them to resume dumping after 1 January 2008. On 9 February 1999, the OSPAR Commission adopted Decision 98/2 on Dumping of Radioactive Waste, as a result of which the exceptions granted to the United Kingdom and France ceased to have effect.

²⁶⁰ 1976 Barcelona Convention, Art. 3(2), (3) and (4); 1986 Noumea Convention, Art. 2(b) and (c); 1992 Black Sea Convention, Art. II(3).

²⁶¹ 1976 Barcelona Protocol, Arts. 4, 5, 6, 8 and 9; 1986 Noumea Dumping Protocol, Arts. 4, 5, 6, 9 and 10 (radioactive waste dumping is prohibited by the 1986 Noumea Convention); 1992 Black Sea Dumping Protocol, Arts. 2, 3 and 4.

²⁶² 1976 Barcelona Protocol, Art. 12; 1986 Noumea Dumping Protocol, Art. 14; 1992 Black Sea Dumping Protocol, Art. 9.

ship or aircraft registered in its territory or flying its flag when the loading occurs in the territory of a non-party, after taking account of the factors set out in their respective Annex III.²⁶³ Meetings of the Parties to the Protocols ensure review of the implementation of the Protocols, the review and amendment of the Annexes, and the consideration of the records of permits issued.²⁶⁴ Amendments to the Annexes to the Protocols require a three-fourths majority vote of the parties.²⁶⁵

Other regional agreements

Prohibitions on dumping have also been adopted in relation to the Antarctic region.²⁶⁶ The 1985 Rarotonga South Pacific Nuclear Free Zone Treaty prohibits the dumping of radioactive waste and radioactive matter at sea anywhere within the South Pacific Nuclear Free Zone.²⁶⁷

Pollution from land-based sources including through the atmosphere²⁶⁸

Pollution of the marine environment from land-based sources is the principal source of ocean pollution, which arises from two general sources. First, it arises from substances and energy

²⁶³ 1976 Barcelona Protocol, Arts. 7 and 10(2); 1986 Noumea Dumping Protocol, Arts. 7 and 11(2) (in addition, Art. 8 and Annex IV provide for specific criteria for the allocation of substances to the Annexes); 1992 Black Sea Dumping Protocol, Arts. 7 and 8.

²⁶⁴ 1976 Barcelona Protocol, Art. 14; 1986 Noumea Dumping Protocol, Art. 16; 1992 Black Sea Convention, Art. XIX.

²⁶⁵ 1976 Barcelona Protocol, Art. 14(3); 1986 Noumea Dumping Protocol, Art. 16(3); 1992 Black Sea Convention, Art. XX.

²⁶⁶ Chapter 13, p. 588, below.

²⁶⁷ Rarotonga, 6 August 1985, in force 11 December 1986, 24 ILM 1142 (1985); twelve states are party. See Chapter 12, p. 563, below.

²⁶⁸ R. Busby, 'The Convention for the Prevention of Marine Pollution from Land-Based Sources: An Effective Method for Arbitrating International Effluent Pollution Disputes', 5 *California Western International Law Journal* 350 (1975); S. Burchi, 'International Legal Aspects of Pollution of the Sea from Rivers', 3 *Italian Yearbook of International Law* 115 (1977); J. E. Hickey, 'Custom and Land-Based Pollution of the High Seas', 15 *San Diego Law Review* 409 (1978); B. Kwiatkowska, 'Marine Pollution from Land-Based Sources: Current Problems and Prospects', 14 *Ocean Development and International Law* 315 (1984); P. S. Passman, 'Japanese Hazardous Waste Policy: Signalling the Need for Global and Regional Measures to Control Land-Based Sources of Pollution', 26 *Virginia Journal of International Law* 921 (1986); P. Szell, 'The Montreal Guidelines for the Protection of the Marine Environment Against Pollution from Land-Based Sources', 37 *International Digest of Health Legislation* 391 (1986); D. Baur and S. Iudicello, 'Stemming the Tide of Marine Debris Pollution: Putting Domestic and International Control Authorities to Work', 17 *Ecology Law Quarterly* 71 (1990); R. M. M'Gonigle, "'Developing Sustainability" and the Emerging Norms of International Environmental Law: The Case of Land-Based Marine Pollution', 128 *Canadian Yearbook of International Law* 169 (1990); M. Berman, 'Protection of the Marine Environment from Land-Based Activities', in UNEP, *UNEP's New Way Forward: Environmental Law and Sustainable Development* (1995); A. Nollkaemper, 'Balancing the Protection of Marine Ecosystems with Economic Benefits from Land-Based Activities', 27 *Ocean Development and International Law* 153 (1996); D. A. Ring, 'Sustainability Dynamics: Land-Based Marine Pollution and Development Priorities in the Island States of the Commonwealth Caribbean', 22 *Columbia Journal of Environmental Law* 65 (1997); M. Pallemerts, 'The North Sea and Baltic Sea Land-Based Sources Regimes: Reducing Toxics or Rehashing Rhetoric?', 13 *International Journal of Marine and Coastal Law* 421 (1998); T. Mensah, 'The International Legal Regime for the Protection and Preservation of the Marine Environment from Land Based Sources', in A. Boyle and D. Freestone (eds.), *International Law and Sustainable Development* (1999), 297; D. Hassan, *Protecting the Marine Environment from Land-Based Sources of Pollution: Towards Effective International Cooperation* (2006); D. M. Ong, 'Protecting the Marine Environment from Land-Based Sources of Pollution: Towards Effective International Co-operation', 22 *International Journal of Marine and Coastal Law* 340 (2007); E. Kirk, 'Noncompliance and the Development of Regimes Addressing Marine Pollution from Land-Based Activities', 39 *Ocean Development and International Law* 235 (2008); D. L. VanderZwaag and A. Powers, 'The Protection of the Marine Environment from Land-Based Pollution and Activities: Gauging the Tides of Global and Regional Governance', 23 *International Journal of Marine and Coastal Law* 423 (2008).

entering the marine environment by run-off from land, rivers, pipelines and other outfall structures, which accounts for some 44 per cent of all marine pollution.²⁶⁹ Second, it arises from or through the atmosphere, generated principally from land-based activities but also from ships and aircraft, which accounts for some 33 per cent of marine pollution. According to a 2006 report of UNEP's Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA), progress in dealing with the different sources of land-based pollution has been uneven:

There are three areas where good progress has been made (Persistent Organic Pollutants, Radioactive Substances, Oils (Hydrocarbons)), two areas where results were mixed (Heavy Metals and Sediment Mobilization) and yet a third group where conditions have worsened (Sewage, Nutrients, Marine Litter, Physical Alteration and Destruction of Habitats).²⁷⁰

The importance of land-based sources was emphasised in Agenda 21 and in the WSSD Plan of Implementation.²⁷¹ Relevant rules are to be found in: the 1982 UNCLOS (establishing one of the causes of action for Ireland's claim against the United Kingdom in respect of the MOX plant), the 1992 OSPAR Convention; four UNEP Regional Seas Protocols; the 1992 Baltic Convention;²⁷² and the Caspian Sea Convention.²⁷³ The 1995 GPA also provides for the development of national measures, and facilitates a comprehensive, multi-sectoral approach to the issue of pollution from land-based sources. Other treaties and international agreements to limit atmospheric pollution, as identified in Chapter 7 above, also indirectly protect the marine environment from land-based sources of pollution.

UNCLOS

Article 207 of UNCLOS requires states to 'prevent, reduce and control pollution of the marine environment from land-based sources, including rivers, estuaries, pipelines and outfall structures'. States must take into account: internationally agreed rules, standards and recommended practices and procedures; characteristic regional features; the economic capacity of developing countries and their need for economic development; and the need 'to minimise, to the fullest extent possible, the release of toxic, harmful or noxious substances, especially those which are persistent, into the marine environment'.²⁷⁴ In the context of the wide support for these principles in regional and global agreements and instruments, as set out below, the principles of Article 207 now reflect rules of customary international law. It should be recalled that these provisions are general in character, their detailed obligations being informed by the content of applicable and relevant international rules, whether global or regional.

²⁶⁹ On the relationship between watercourse laws and the protection of oceans, see A. E. Boyle, 'The Law of the Sea and International Watercourses: An Emerging Cycle', 14 *Marine Policy* 151 (1990).

²⁷⁰ L. Jetic, A. Matte-Baker and M. Schomaker, 'The State of the Marine Environment – Trends and Processes', UNEP/GPA Coordination Office (2006). On the GPA, see pp. 374–5, below.

²⁷¹ Agenda 21, Chapter 17, paras. 17.24–17.29; WSSD Plan of Implementation, para. 33. See p. 398, below.

²⁷² Art. 6. ²⁷³ Art. 7. ²⁷⁴ Art. 207(1), (4) and (5).

1995 Global Programme of Action²⁷⁵

The 1995 Global Programme of Action (GPA), and an accompanying Declaration,²⁷⁶ were adopted by 108 states and the EU at a conference held in Washington from 23 October to 3 November 1995. The GPA drew upon relevant provisions of Chapters 17, 33 and 34 of Agenda 21 and the Rio Declaration on Environment and Development, as well as the 1985 Montreal Guidelines on the Protection of the Environment Against Pollution from Land-Based Sources (1985 Montreal LBS Guidelines).²⁷⁷

The GPA, which is administered by a UNEP-led GPA Co-ordination Office, provides the framework for the realisation of the commitments agreed to by states in the Washington Declaration. It aims at 'preventing the degradation of the marine environment from land-based activities by facilitating the realization of the duty of States to preserve and protect the marine environment', and is designed to assist states 'in taking actions individually or jointly within their respective policies, priorities and resources, which will lead to the prevention, reduction, control and/or elimination of the degradation of the marine environment, as well as to its recovery from the impacts of land-based activities'.²⁷⁸ The GPA recommends actions at the state, regional and international level to address the problem of marine pollution from land-based activities. At the national level, these recommendations relate to the identification and assessment of problems, the establishment of priorities for action, setting management objectives for priority problems, identifying, evaluating and selecting strategies and measures to achieve objectives and developing criteria to assess the effectiveness of strategies and measures.²⁷⁹ At the regional level, states are encouraged to strengthen, and where necessary create, regional co-operative arrangements and joint actions to support effective national action, strategies and programmes.²⁸⁰ Internationally, the GPA seeks to develop institutional arrangements, and facilitate capacity-building and the mobilisation of financial resources.²⁸¹ The GPA also calls upon the Executive Director of UNEP, in close partnership with other international organisations, to prepare a proposal setting forth a specific plan for addressing the global nature of the problems related to the inadequate management and treatment of wastewater. The GPA records agreement on the need for international action to develop a global, legally binding instrument dealing with persistent organic pollutants.²⁸² The final chapter of the GPA provides specific guidance to states and regional organisations concerning recommended objectives and actions for addressing particular sources of land-based pollution, namely, sewage, persistent organic pollutants, radioactive substances, heavy metals, oils (hydrocarbons), nutrients, sediment, litter, and habitat destruction and alteration.²⁸³

²⁷⁵ See www.gpa.unep.org.

²⁷⁶ Washington, 1 November 1995. In the Declaration, participating states declared their commitment to protect and preserve the marine environment from the impacts of land-based activities – specifically those resulting from sewage, persistent organic pollutants, radioactive substances, heavy metals, oils, nutrients, sediment mobilisation, litter, and physical alteration and destruction of habitat. Contracting states pledged to undertake various activities to further this common goal, including: the development or review of national action programmes; taking forward action to implement national programmes; co-operating to build capacities and mobilise resources for the development and implementation of such programmes; taking immediate preventive and remedial action, wherever possible; promoting access to cleaner technologies, knowledge and expertise; co-operating on a regional basis to co-ordinate efforts for maximum efficiency and to facilitate action at the national level; encouraging and/or making available external financing; giving priority to the treatment and management of wastewater and industrial effluents; and acting to develop a global, legally binding instrument dealing with persistent organic pollutants.

²⁷⁷ 24 May 1985, UNEP/GC/DEC/13/1811. ²⁷⁸ 5 December 1995, UNEP(OCA)/LBA/IG.2/7, 7.

²⁷⁹ *Ibid.*, Chapter II. ²⁸⁰ *Ibid.*, Chapter III. ²⁸¹ *Ibid.*, Chapter IV. ²⁸² *Ibid.*, paras. 86 and 88.

²⁸³ *Ibid.*, Chapter V.

At its first review meeting in 2001, ninety-eight states adopted the Montreal Declaration on the Protection of the Marine Environment from Land-Based Activities.²⁸⁴ In line with UNEP's Marine and Coastal Strategy (2010), the GPA seeks to focus its efforts for 2007–11 on wastewater, nutrient management, marine litter and physical alteration and habitat destruction.

Regional agreements

Pollution from land-based sources is covered by all regional agreements. A number have developed specific protocols or annexes on the matter. The OSPAR Convention, building on its predecessor, the 1974 Paris Convention, has a specific annex dealing with land-based sources of marine pollution. Four UNEP Regional Seas Protocols address land-based pollution: the 1980 Athens LBS Protocol (amended in 1996), the 1983 Quito LBS Protocol, the 1990 Kuwait LBS Protocol and the 1992 Black Sea LBS Protocol.

1992 OSPAR Convention

The 1992 OSPAR Convention has as one of its central objectives the prevention and elimination of pollution from land-based sources, including accidents.²⁸⁵ It replaces the 1974 Convention for the Prevention of Marine Pollution from Land-Based Sources (1974 Paris Convention).²⁸⁶ The 1974 Paris Convention covered pollution caused through watercourses, from the coast, from man-made structures and, after the 1986 amendment of the Convention, also from emissions into the atmosphere from land or from man-made structures. Its parties committed to 'eliminate' or to 'limit strictly' pollution from land-based sources by substances listed, respectively, in Part I or Part II of Annex A. The Convention was administered by PARCOM, a commission composed of representatives of each party, which met annually to supervise implementation and to draw up new programmes and measures. Gradually, parties agreed to take stronger measures against certain sources of pollution, such as polychlorinated biphenyls (PCBs),²⁸⁷ and to address new substances, most notably radioactive pollution.²⁸⁸ They also addressed the principle of precautionary action²⁸⁹ and the use of best available technology.²⁹⁰ In 1987, PARCOM decided that the Convention did not need to be amended to provide expressly for environmental impact assessment, and, following the debate concerning the THORP nuclear fuel reprocessing facility at Sellafield, in England, determined that it had the authority to agree to measures on environmental impact assessment regarding projects involving the discharge of substances.²⁹¹

²⁸⁴ UNEP/GPA/IGR.1/9. ²⁸⁵ Art. 3; and Annex I, Art. 1(3).

²⁸⁶ Paris, 4 June 1974, in force 5 October 1976, Preamble; amended 26 March 1986 to allow the EU to become a party, OJ L24, 27 January 1987, 49.

²⁸⁷ PARCOM Decision 90/4 (1990) established the phasing-out and destruction of all identifiable polychlorinated biphenyls (PCBs) between 1995 and 2010. Substantial reductions have occurred, although some discharges continue to take place and the data are too patchy for an adequate assessment. See OSPAR, Quality Status Report 2010.

²⁸⁸ PARCOM Recommendation 88/4 (1988); PARCOM Recommendation 88/5 (1988); and PARCOM Recommendation 90/2 (1990) on Reporting on Progress in Applying the Best Available Technology on Radioactive Discharges from All Nuclear Industries. PARCOM Recommendation 91/4 (1991) consolidated Recommendations 88/5 and 90/3 into a single Recommendation and establishes guidelines; PARCOM Recommendation 91/5 (1991).

²⁸⁹ PARCOM Recommendation 89/1 (1989).

²⁹⁰ PARCOM Recommendation 89/2 (1989); PARCOM Recommendation 90/1 (1990).

²⁹¹ In the face of the United Kingdom's apparent unwillingness to require an environmental impact assessment for this plant, PARCOM adopted Recommendation 93/5, which establishes that an authorisation for radioactive discharges from nuclear reprocessing installations should only be issued by national authorities if special consideration is given to, among others, a full environmental impact assessment. See further the second edition of this text, at p. 433 thereof.

The OSPAR Convention incorporates all compatible recommendations and agreements adopted under the 1974 Paris Convention,²⁹² but further extends its scope. It adopts a broader definition of 'land-based sources', which refers to 'point and diffuse sources on land from which substances or energy reach the maritime area by water, through the air or from the coast'.²⁹³ Parties commit to take all possible steps to prevent and eliminate pollution and, to this end, to adopt programmes and measures.²⁹⁴ Programmes and measures require the use of best available techniques for point sources and best environmental practice for point and diffuse sources, using the criteria in Appendix 2 to the Convention.²⁹⁵ Substances which shall be the subject of programmes include heavy metals, organohalogen compounds, organic compounds of phosphorus and silicon, biocides, oils, nitrogen and phosphorus compounds, radioactive substances including wastes, and persistent synthetic materials.²⁹⁶ Under Annex I, all discharges into the maritime area, and releases into water or air which reach and may affect the maritime area, must be authorised or regulated and be subject to a system of regular monitoring to assess compliance.²⁹⁷

The parties to the OSPAR Convention have agreed to set and review emission limits for substances, reduce discharges and monitor the state of the marine environment. They have also created a number of strategies, most notably the Hazardous Substances Strategy, the Radioactive Substances Strategy and the Eutrophication Strategy. Following the adoption in 1998 of the Hazardous Substances Strategy, and its revision in 2003, the focus of OSPAR work shifted from specific sectors and activities to substances, with the objective of ceasing discharges, emissions and losses of hazardous substances by the year 2020. To achieve its objectives, the Convention keeps a List of Substances of Possible Concern, which includes more than 300 substances, and a List of Chemicals for Priority Action. On radioactive pollution, the Radioactive Substances Strategy intends to ensure that, by 2020, discharges, emissions and losses of radioactive substances are reduced to levels where the additional concentrations in the marine environment above historic levels, resulting from such discharges, emissions and losses, are close to zero. The Commission's objectives to combat eutrophication were set to achieve a reduction at source, in the order of 50 per cent compared to 1985, in inputs of phosphorus and nitrogen into areas where these inputs are likely, directly or indirectly, to cause pollution.

UNEP Regional Seas Protocols

Four UNEP Regional Seas Protocols address land-based pollution: the 1980 Athens LBS Protocol (amended in 1996), the 1983 Quito LBS Protocol, the 1990 Kuwait LBS Protocol and

²⁹² Art. 31(2) of the OSPAR Convention, Decision 98/1.

²⁹³ Art. 1(e). It includes sources associated with any deliberate disposal under the seabed made accessible from land and sources associated with man-made structures, other than for the purpose of offshore activities.

²⁹⁴ Art. 1.

²⁹⁵ Annex I, Art. 1(1) and (2). The criteria listed in Appendix 2 include persistency, toxicity, bioaccumulation, radioactivity, the effect of concentrations, the risk of eutrophication, transboundary significance, the risk of undesirable change in the marine ecosystem and irreversibility or durability of effects, interference with legitimate uses of the sea, effects on the taste and/or smell of products for human consumption from the sea, or effects on smell, colour, transparency or other characteristics of the water in the marine environment, distribution patterns, and non-fulfilment of environmental quality objectives: Appendix 2, para. 1.

²⁹⁶ Appendix 2, para. 3.

²⁹⁷ Annex I, Art. 2. The OSPAR Commission is required to draw up plans to reduce and phase out certain hazardous substances and to reduce inputs of nutrients from urban, municipal, industrial, agricultural and other sources: Art. 3.

the 1992 Black Sea LBS Protocol.²⁹⁸ The four Protocols follow a combination of the general approach and structure of the 1974 Paris Convention and of the 1992 OSPAR Convention, obliging parties to take measures to prevent, control and/or eliminate pollution through the development of programmes and measures, including common emissions standards and standards for use.²⁹⁹ The amended 1980 Athens LBS Protocol incorporates a broader definition of land-based sources of pollution, as in the OSPAR Convention, but also goes beyond OSPAR's pollution-abating commitments, setting as its sole objective the elimination of pollution from land-based sources and abandoning its earlier objective to 'strictly limit' certain sources of pollution.³⁰⁰ It also incorporates the notions of 'best available techniques' and 'best environmental practices' in setting implementation measures.³⁰¹ The Kuwait LBS Protocol sets weaker objectives than the other protocols, contemplating only 'reduction' of pollution as its most ambitious measure.³⁰²

Parties to the Athens, Quito and Black Sea LBS Protocols must prohibit the discharge of 'black list' substances listed in Annex I, based on their high level of toxicity, persistence and bioaccumulation. Parties to the Quito and Black Sea LBS Protocols are to 'reduce' the less noxious substances listed in Annex II ('grey list' substances).³⁰³ The discharge of grey list substances must be authorised, taking account of the characteristics and composition of waste, the discharge site and the receiving marine environment, the availability of waste technologies and the potential impairment of marine ecosystems and seawater uses.³⁰⁴

Each Protocol provides for: co-operation on guidelines and standards; the systematic assessment of pollution levels and evaluation of the effectiveness of measures; the exchange of scientific and other information and co-ordination of research; technical assistance for developing countries; and, in some instances, co-operation where watercourses flow through the territories of two or more countries and consultations where land-based pollution originating in the territory of one party is prejudicing the interests of another.³⁰⁵ Reviewing the implementation of the Protocols, revision and amendments of Annexes, and other functions are performed by Meetings of the Parties to the Protocols. Under the 1980 Athens LBS Protocol, decisions on programmes and measures are adopted by two-thirds majority vote, and parties unable to accept a programme or measure must inform the Meeting of the Parties about the action they intend to take.³⁰⁶ The 1983 Quito LBS Protocol, however, merely grants the parties the power to 'examine' the need to amend or revise the Protocol and its Annexes and formulate programmes and measures.³⁰⁷

²⁹⁸ A further LBS Protocol (1999) has been concluded under the 1983 Cartagena Convention, but is yet to come into force. A further LBS Protocol (2009) has been concluded to replace the 1992 Black Sea LBS Protocol but is yet to come into force. See pp. 354–8, above for a list of Regional Seas Agreements. Parties to the Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region adopted on 31 March 2010 the Protocol for the Protection of the Marine and Coastal Environment of the Western Indian Ocean from Land-Based Sources and Activities. This Protocol is not yet in force.

²⁹⁹ 1980 Athens LBS Protocol, Arts. 5 and 6; 1983 Quito LBS Protocol, Arts. IV and V (the obligation being slightly less onerous by requiring parties, respectively, to 'endeavour to prevent, reduce, control and eliminate' and to 'endeavour progressively to reduce').

³⁰⁰ 1980 Athens LBS Protocol, Arts. 4–5. ³⁰¹ 1980 Athens LBS Protocol Art. 5(4).

³⁰² 1990 Kuwait LBS Protocol, Art. IV. ³⁰³ 1983 Quito LBS Protocol, Art. V; 1992 Black Sea LBS Protocol, Art. 4.

³⁰⁴ 1983 Quito LBS Protocol, Arts. IV and V and Annex III.

³⁰⁵ 1980 Athens LBS Protocol, Arts. 7–13; 1983 Quito LBS Protocol, Arts. VI–XII; 1990 Kuwait LBS Protocol, Arts. IX–XII and Annex III; 1992 Black Sea LBS Protocol, Arts. 6, 11, 13, 15 and 16.

³⁰⁶ 1980 Athens LBS Protocol, Art. 15. ³⁰⁷ 1983 Quito LBS Protocol, Art. XV.

Atmospheric pollution

A significant proportion of pollution from or through the atmosphere generally originates from land-based sources. Under Article 212 of UNCLOS, all states must 'prevent, reduce and control pollution of the marine environment, from or through the atmosphere, applicable to the air space under their sovereignty and to vessels flying their flag or vessels or aircraft of their registry'. The 1992 OSPAR Convention, the 1992 Baltic Convention, the 1980 Athens LBS Protocol, the 1983 Quito LBS Protocol and the 1990 Kuwait LBS Protocol include pollution through the atmosphere as a land-based source.³⁰⁸ In 1991, the parties to the 1980 Athens LBS Protocol adopted a new Annex IV to the Protocol which defines the application of the Protocol to land-based sources of pollution transported through the atmosphere, including the compilation of data on sources, on effects and on the effectiveness of existing measures.³⁰⁹ None of these provisions establishes its own programmes or standards; instead, they incorporate by reference 'internationally agreed rules, standards and recommended practices and procedures'.³¹⁰ Prior to UNCLOS, the only international instrument of significance was the 1963 Test Ban Treaty, which protected the marine environment from atmospheric nuclear tests.³¹¹

Pollution from vessels³¹²

Pollution from vessels is caused by operational discharges from ships, such as cleaning of tanks or de-ballasting, or from discharges following accidents. This source is estimated to account for

³⁰⁸ 1992 OSPAR Convention, Art. 1(e); 1992 Baltic Convention, Art. 2(2); 1980 Athens LBS Protocol, Art. 4(1)(b); 1983 Quito LBS Protocol, Art. II(c); 1990 Kuwait LBS Protocol, Art. III. The revised 2009 Black Sea LBS Protocol, not yet in force, regulates pollution transported through the atmosphere in its Annex III.

³⁰⁹ 2 *Yearbook of International Environmental Law* 128 at 136 (1991).

³¹⁰ 1982 UNCLOS, Art. 212(1); on regional and global rules, see pp. 372–8, above.

³¹¹ See Chapter 11, p. 544, below.

³¹² Y. Dinstein, 'Oil Pollution from Ships and Freedom of the High Seas', 3 *Journal of Maritime Law and Commerce* 363 (1971–2); A. W. Anderson, 'National and International Efforts to Prevent Traumatic Vessel Source Pollution', 30 *University of Miami Law Review* 985 (1976); R. M. McGonigle and M. W. Zacher, *Pollution, Politics and International Law: Tankers at Sea* (1979); P. S. Dempsey and L. L. Hellings, 'Oil Pollution by Vessels – An Environmental Tragedy: The Legal Regime of Flags of Convenience, Multilateral Conventions and Coastal States', 10 *Denver Journal of International Law and Policy* 37 (1980); J. Kindt, 'Vessel Source Pollution and the Law of the Sea', 17 *Vanderbilt Journal of Transnational Law* 287 (1984); D. W. Abecassis and R. L. Jarashow, *Oil Pollution from Ships* (1985, 2nd edn); P. Hagen, 'The International Community Confronts Plastics Pollution from Ships: MARPOL Annex V and the Problem That Won't Go Away', 5 *American University Journal of International Law and Policy* 425 (1990); D. Bodansky, 'Protecting the Marine Environment from Vessel-Source Pollution: UNCLOS III and Beyond', 18 *Ecology Law Quarterly* 719 (1991); T. Alcock, 'Ecology Tankers and the Oil Pollution Act of 1990: A History of Efforts to Require Double Hulls on Oil Tankers', 19 *Ecology Law Quarterly* 97 (1992); Y. Sasamura, 'Prevention and Control of Marine Pollution from Ships', 25 *Proceedings of the Law of the Sea Institute* 306 (1993); R. Mitchell, *International Oil Pollution at Sea* (1994); W. Chao, *Pollution from the Carriage of Oil by Sea: Liability and Compensation* (1996); G. F. Little, 'The Hazardous and Noxious Substances Convention: A New Horizon in the Regulation of Marine Pollution', *Lloyd's Maritime and Commercial Law Quarterly* 554 (November 1998); C. de la Rue and C. Anderson, *Shipping and the Environment* (1998); G. Gauci, 'Protection of the Marine Environment Through the International Ship-Source Oil Pollution Compensation Regimes', 8 *Review of European Community and International Environmental Law* 29 (1999); A. K. Tan, *Vessel-Source Marine Pollution: The Law and Politics of International Regulation* (2006); M. H. Nordquist, 'International Law Governing Places of Refuge for Tankers Threatening Pollution of Coastal Environments', in *Law of the Sea, Environmental Law and Settlement of Disputes: Liber Amicorum Judge Thomas A. Mensah* (2007), 497; X. Tarabeux, 'L'Evolution du Droit de la Mer à Travers les Pollutions par Rejets Volontaires d'Hydrocarbures' [The Evolution of the Law of the Sea via Pollution from Deliberate Oil Discharges], 13 *Annuaire du Droit de la Mer* 209 (2008); V. Edwards, 'Ship-Source Pollution', 21 *Journal of Environmental Law* 155 (2009); E. Symeonidou-Kastanidou, 'Ship-Source Marine Pollution: the ECJ Judgments and Their Impact on Criminal Law', 17 *European Journal of Crime, Criminal Law and Criminal Justice* 335 (2009); H. S. Bang, 'Port State Jurisdiction and Article 218 of the UN Convention on the Law of Sea', 40 *Journal of Maritime Law and Commerce* 291 (2009); N. Beale, B. Glaister and T. Hodgson, 'The Environmental Cost of International Shipping', *National Environmental Law Review* 58

about 12 per cent of the total, but has a high public profile due to the visibility and obvious environmental consequences of incidents, particularly involving oil spills, in the past twenty-five years, and most recently the significant oil spill following the *Prestige* accident.³¹³

The gravity of environmental disasters, such as the one caused by the *Prestige*, has also seen reflection in the gravity of the measures that can be imposed by states when enforcing their environmental laws and regulations. The case of the *Prestige* reached the European Court of Human Rights in the case of *Mangouras v. Spain*, in which the master of the *Prestige* challenged the level of the bond imposed in Spain (€3 million), alleging that it was too high and breached Article 5(3) of the ECHR, which guarantees the release of detainees prior to trial with allowance for reasonable bail.³¹⁴ The Grand Chamber found that account had to be taken of the particular circumstances of the case that distinguished it from other cases in which the Court had had occasion to rule on the length of pre-trial detention. It took the view that the seriousness of the environmental disaster justified the domestic courts' concern to ensure that the applicant would appear for trial by fixing a high level of bail. The Chamber therefore concluded that the amount of bail, although high, had not been disproportionate in view of the legal interest being protected, the seriousness of the offence in question and the disastrous environmental and economic consequences of the oil spill. Accordingly, it held that there had been no violation of Article 5(3) of the ECHR.³¹⁵ In reaching its decision the Court stated:

Against this background the Court cannot overlook the growing and legitimate concern both in Europe and internationally in relation to environmental offences. This is demonstrated in particular by States' powers and obligations regarding the prevention of maritime pollution and by the unanimous determination of States and European and international organisations to identify those responsible, ensure that they appear for trial and, if appropriate, impose sanctions on them.³¹⁶

The Chamber referred to UNCLOS, the International Convention on Civil Liability for Oil Pollution Damage, the International Convention for the Prevention of Pollution from Ships and its Protocol (MARPOL 73/78), the practice of ITLOS in relation to what constitutes a reasonable bond,³¹⁷ and the use of criminal law as a means of enforcing environmental obligations imposed by European and international law.³¹⁸

The principal instruments for the prevention of pollution from vessels include UNCLOS and MARPOL 73/78, although all regional seas agreements contain at least one general provision to combat pollution from ships.³¹⁹ Conventions regulating civil liability for oil pollution from vessels are reviewed in Chapter 17.

(2009); I. Cheyne, 'Regulation of Marine Antifouling in International and EC Law', in S. Durr and J. Thomason (eds.), *Biofouling* (2010), Chapter 21; A. Liu, 'Study on Some Problems of the Civil Liability of the Oil Pollution Damage from Vessel', 35 *Environmental Science and Management* 13 (2010).

³¹³ See note 64 above.

³¹⁴ *Mangouras v. Spain (Grand Chamber)*, App. No. 12050/04 (2009), Judgment of 28 September 2010. The case was referred to the Grand Chamber after an initial decision handed down by the Third Section of the Court. See T. Treves, 'Human Rights and the Law of the Sea', 28 *Berkeley Journal of International Law* 1 (2010).

³¹⁵ *Mangouras v. Spain (Grand Chamber)*, App. No. 12050/04 (2009), Judgment of 28 September 2010, para. 57.

³¹⁶ *Ibid.*, para. 86. ³¹⁷ *Ibid.*, paras. 46 and 47. See p. 406 below. ³¹⁸ Paras. 86 and 89.

³¹⁹ 1976 Barcelona Convention, Art. 6 (as revised in 1995); 1978 Kuwait Convention, Art. IV; 1981 Abidjan Convention, Art. 6; 1981 Lima Convention, Art. 4; 1982 Jeddah Convention, Art. IV; 1985 Nairobi Convention, Art. 5; 1986 Noumea Convention, Art. 6; 1986 Cartagena Convention, Art. 5; 1992 Bucharest Convention, Art. VIII; 2002 Antigua Convention, Art. 6.1(b).

UNCLOS

Under Article 211 of UNCLOS, states must establish international rules and standards to prevent, reduce and control pollution of the marine environment from vessels, and adopt routing systems to minimise the threat of accidents that might cause such pollution. They must also adopt national laws for vessels flying their flag or of their registry which 'at least have the same effect as that of generally accepted international rules and standards'.³²⁰ This commits all states to ensuring that their national law complies with, at a minimum, standards generally accepted under international law. Without prejudice to the right of innocent passage, states can establish, individually or as part of co-operative arrangements, special rules for the prevention, reduction and control of vessel pollution as a condition for entry into ports or internal waters of foreign vessels, provided they are given 'due publicity' and are communicated to international organisations.³²¹ States may also adopt laws to combat vessel pollution from the passage of foreign vessels in their territorial seas, including those exercising the right of innocent passage.³²² With respect to their EEZ, states may for the purposes of enforcement adopt laws and regulations that conform to and give effect to generally accepted international rules and standards.³²³ Additionally, for a defined area of the EEZ, states may, with the agreement of the competent international organisation, adopt 'special mandatory measures for the prevention of pollution from vessels' which implement international rules, standards or navigational practices made applicable by that organisation for special areas; this right is limited to a defined area of the EEZ as 'required for recognised technical reasons in relation to its oceanographical and ecological conditions, as well as its utilisation or the protection of its resources and the particular character of its traffic'.³²⁴ Additional laws and regulations for the same area relating to discharges or navigational practices (but not design, construction, manning or equipment standards other than generally accepted international rules and standards) may be adopted by states with the agreement of a competent international organisation.³²⁵

In 2010, ITLOS decided a case that presented some parallels with the 'prompt release' cases referred to below, but which allowed the Tribunal to consider whether provisional measures should apply in order to prevent 'serious harm to the marine environment', as established in Article 290 of UNCLOS. The case concerned a request by Saint Vincent and the Grenadines for provisional measures in relation to the seizure by Spain of the *M/V Louisa* in 2006. The ship had been bunkered with 5,000 gallons of lubrication oil and held an unknown quantity of diesel fuel as well. Saint Vincent and the Grenadines considered that the vessel should be released to prevent environmental damage resulting from any possible oil discharge from the vessel. ITLOS held that it was not necessary to order provisional measures in order to protect the marine environment in light of the assurances given by Spain in relation to continuous monitoring of the ship and the special attention being given to it in light of the fact it was still loaded with oil and fuel and the existence of a protocol for reacting to threats of any kind of environmental

³²⁰ Art. 211(1) and (2).

³²¹ Art. 211(3); see e.g. Council Directive 95/21/EC establishing a system of port state control based on uniform inspection and detention procedures, OJ L157, 7 July 1995, 1; and amendments by Council Directive 2001/106/EC, OJ L19, 22 January 2002, 17.

³²² Art. 211(4). ³²³ Art. 211(5).

³²⁴ Art. 211(6)(a); see generally IMO, Guidelines for the Designation of Special Areas and the Identification of Particularly Sensitive Sea Areas, Res. A.720(17), 6 November 1991.

³²⁵ Art. 211(6)(c).

accident in the port in which the ship was being held.³²⁶ In reaching its decision, the Tribunal took into consideration the obligation of states to protect and preserve the marine environment, as reflected in Article 192 of UNCLOS, and that ‘the parties should in the circumstances act with prudence and caution to prevent serious harm to the marine environment’, recalling its Order in the *Southern Bluefin Tuna* case.³²⁷

MARPOL 73/78

The main international convention regulating pollution from vessels is MARPOL 73/78, which was first adopted at the International Conference on Marine Pollution convened by the IMO in 1973 to replace the 1954 Oil Pollution Convention. MARPOL 1973, the original treaty,³²⁸ was modified by the 1978 Protocol (MARPOL 1978) before the parent Convention entered into force.³²⁹ The modified Convention is known as the International Convention for the Prevention of Pollution from Ships, as modified by the Protocol of 1978 relating thereto, and is usually referred to as MARPOL 73/78. The detailed rules on pollution from ships are set out in six Annexes to the Convention, the last of which was introduced by the Protocol of 1997. Further clarifications to various provisions of MARPOL 73/78 have been adopted by the IMO Marine Environment Protection Committee (MEPC) in the form of resolutions setting out unified and authoritative interpretations or amendments to the Convention. MARPOL 73/78 has attracted widespread support, although the Annexes have received less support, and two have not yet entered into force.

MARPOL 73/78 establishes specific international regulations to implement the objective of completely eliminating intentional pollution of the marine environment by oil and other harmful substances and minimising accidental discharges. That objective has not yet been accomplished, even though the substantive obligations are among the most precise and comprehensive in any international environmental agreement. The parties agree to give effect to the provisions of the Convention, which includes, unless expressly provided otherwise, the Protocols and Annexes.³³⁰ MARPOL 73/78 establishes a framework for the adoption of the regulations in the Annexes, and sets out basic definitions. ‘Harmful substances’ include:

³²⁶ Paras. 74, 75 and 83.

³²⁷ Paras. 76 and 77. Judge Wolfrum, in his Dissenting Opinion, stated that the inclusion of protection of the marine environment as a reason for prescribing provisional measures reflected ‘the change of international law from a mere mechanism providing for the coordination of States’ activities to a legal system which also recognizes and preserves common values of the community of States’. See also the Separate Opinion of Judge Paik. On the *Southern Bluefin Tuna* case, see pp. 420–1, below.

³²⁸ International Convention for the Prevention of Pollution from Ships, London, 2 November 1973, 12 ILM 1319 at 1434 (1973).

³²⁹ Protocol Relating to the 1973 International Convention for the Prevention of Pollution from Ships, London, 17 February 1978, in force 2 October 1983, 17 ILM 546 (1978). Before MARPOL 1973 entered into force, it was recognised that the provisions of Annex II would be difficult for even the most economically advanced states to comply with. MARPOL 1978 was therefore negotiated and adopted to establish a new instrument which provided that the new Convention comprised the 1978 Protocol and its Annex and MARPOL 1973 as amended by MARPOL 1978, and that the provisions of MARPOL 1973 and MARPOL 1978 should be ‘read and interpreted together as one single instrument’: MARPOL 1978, Art. 1. MARPOL 1978 delayed the implementation of Annex II and amended one of the provisions concerning the communication of information: MARPOL 1978, Arts. II and III. 150 states, which represent 99 per cent of the world’s ship tonnage, are party to MARPOL 73/78 including Annexes I and II.

³³⁰ MARPOL 73/78, Art. 1.

any substance which, if introduced into the sea, is likely to create hazards to human health, to harm living resources and marine life, to damage amenities or to interfere with other legitimate uses of the sea.³³¹

The definition of 'discharge' is similarly broad, and covers intentional and unintentional releases from a ship, including 'any escape, disposal, spilling, leaking, pumping, emitting or emptying'; however, it does not include dumping within the meaning of the 1972 London Convention, releases directly arising from exploration and exploitation of seabed mineral resources, or releases for certain scientific research.³³² MARPOL 73/78 applies to ships that are entitled to fly the flag of a party or operate under the authority of a party, but it does not apply to warships or other state-owned ships operated by a state and used only on governmental non-commercial service.³³³ The parties must prohibit and sanction violations and accept certificates required by the regulations which are prepared by other parties as having the same validity as their own certificates.³³⁴ A ship which is in the port or offshore terminal of a party may be subject to an inspection to verify the existence of a valid certificate unless there are 'clear grounds for believing that the condition of the ship or its equipment does not correspond substantially with the particulars of that certificate'.³³⁵ Where that is the case or where no certificate exists, the inspecting party must ensure that the ship does not sail 'until it can proceed to sea without presenting an unreasonable threat of harm to the marine environment'. MARPOL 73/78 requires parties to apply the Convention to ships of non-parties so as to ensure that 'no more favourable treatment is given to such ships'.³³⁶ MARPOL 73/78 also provides for the detection of violations and enforcement, such as in-port inspections to verify whether ships have discharged harmful substances, reporting requirements on incidents involving harmful substances, the communication of information to the IMO, and technical co-operation.³³⁷ Disputes are to be settled by negotiation or arbitration.³³⁸ MARPOL 73/78 includes six Annexes. Annexes I and II bind all parties, whereas Annexes III, IV, V and VI are options which a state may declare it does not accept when first becoming a party to the Convention or may subsequently accede to.³³⁹

Annex I: Pollution by Oil

Annex I to MARPOL 73/78 comprises twenty-six Regulations for the Prevention of Pollution by Oil and six Appendices. It entered into force on 2 October 1983, and was amended in 1984, 1987, 1990, 1991, 1992, 1994, 1997, 1999, 2001 and 2003. A number of amendments were made to introduce double-hull requirements following notorious oil pollution accidents, such as *Exxon Valdez* in 1989, *Prestige* in 2002 and *Erika* in 2009. In 2004, the MEPC adopted an entire revision of Annex I, which incorporated all the amendments made to the Annex and

³³¹ Art. 2(2). ³³² Art. 2(3).

³³³ Art. 3(1) and (3); warships and other state-owned ships must, however, act in a manner which is consistent, so far as is reasonable and practicable, with the Convention: *ibid.*

³³⁴ Art. 5(1) and (2). ³³⁵ Art. 5(2). ³³⁶ Art. 5(4).

³³⁷ Arts. 6, 8, 11 and 17. Protocol I sets out detailed Provisions Concerning Reports on Incidents Involving Harmful Substances. See also IMO Assembly Res. A.648(16) on general principles for ship reporting systems and ship reporting requirements, including guidelines for reporting incidents involving dangerous goods, harmful substances and/or marine pollutants, 19 October 1989.

³³⁸ Art. 10 and Protocol II. ³³⁹ Art. 14.

modified its structure. It entered into force in 2007, and in that same year it was subsequently amended.³⁴⁰ Annex I is divided into seven Chapters. Chapter 1 establishes 'General' provisions, including definitions and scope of application. Nine areas are designated as 'special areas' for which the prohibition on discharges is even stricter: the Mediterranean Sea, the Baltic Sea, the Black Sea, the Red Sea, the 'Gulf area', the Gulf of Aden, the Antarctic, the 'North West European Waters' and the Oman area of the Arabian Sea.³⁴¹ Chapter 2 provides rules concerning surveys and inspections of oil tankers and the issuing of an International Oil Pollution Prevention Certificate. Chapter 3 on requirements for machinery spaces of all ships and Chapter 4 on requirements for oil tankers introduce a number of safety measures, including double-hull requirements. Under the most recently revised regime, single hulls were to be phased out by 2010 – with some exceptions.³⁴² Chapter 5 addresses oil pollution emergencies; Chapter 6, reception facilities; and Chapter 7 establishes requirements for fixed or floating platforms, such as drilling rigs.

Annex II: Noxious Liquid Substances in Bulk

Annex II, which establishes Regulations for the Control of Pollution by 'Noxious Liquid Substances in Bulk', entered into force on 6 April 1987, as amended by the MEPC.³⁴³ It was further amended in 1989, 1994 and 2004.³⁴⁴ It comprises eighteen Regulations and a number of Appendices. Regulations deal with definitions, application and categorisation of substances; the discharge of residues inside and outside 'special areas'; pumping, piping and unloading arrangements; reception facilities and cargo record books; surveys and certification; requirements for minimising accidental pollution; and the carriage and discharge of oil-like substances. The discharge of residues of about 250 substances is allowed only to reception facilities under certain conditions. No discharge of residues containing noxious substances is permitted within twelve miles of the nearest land.³⁴⁵

Annex III: Harmful Substances Carried by Sea in Packaged Form

The Regulations for the Prevention of Pollution by Harmful Substances Carried by Sea in Packaged Form, set out in the draft revised Annex III to MARPOL 73/78, entered into force on 1 July 1992. The most recent revisions occurred in 2005 (now in force)³⁴⁶ and in 2010 (which will enter into force in 2014).³⁴⁷ Annex III, which is implemented through the IMO International Maritime Dangerous Goods Code,³⁴⁸ includes Regulations on packing, marking and labelling, documentation, stowage, and quantity limitations.³⁴⁹ It also prohibits the jettisoning of harmful substances except for safety reasons.³⁵⁰

Annex IV: Sewage from Ships

The Regulations for the Prevention of Pollution by Sewage from Ships, set out in Annex IV to MARPOL 73/78, entered into force in 2003. Amendments were adopted in 2004, 2006 and 2007, all of which are in force. The Regulations address such matters as surveys and certification,³⁵¹

³⁴⁰ Res. MEPC.117(52), 15 October 2004. ³⁴¹ Annex I, Regulation 1. ³⁴² Annex I, Regulation 20.

³⁴³ Res. MEPC.17(22), 1985. ³⁴⁴ Res. MEPC.118(52), 15 October 2004. ³⁴⁵ Annex II, Regulations 1–18.

³⁴⁶ Res. MEPC.156(55), 13 October 2006. ³⁴⁷ Res. MEPC.193(61), 1 October 2010.

³⁴⁸ See IMO Assembly Res. A.81(IV); see Chapter 11, p. 532, note 40, below. ³⁴⁹ Annex III, Regulations 2–6.

³⁵⁰ Annex III, Regulation 7. ³⁵¹ Annex IV, Regulations 3–7.

and facilities for reception of sewage.³⁵² They prohibit, with some exceptions, the discharge of sewage into the sea, unless the sewage complies with disinfection requirements or the ship has an approved sewage treatment plant, or is situated in the waters of a state imposing less stringent requirements.³⁵³

Annex V: Prevention of Pollution by Garbage from Ships

The Regulations for the Prevention of Pollution by Garbage from Ships, set out in Annex V to MARPOL 73/78, entered into force on 31 December 1988. The Regulations apply to all ships, and regulate different types of garbage, subject to rules of special application, special areas and exceptions.³⁵⁴ The disposal from ships into the sea of all plastics is prohibited;³⁵⁵ dunnage, lining and packing materials which float cannot be disposed of within twenty-five nautical miles of land; disposal of food waste and all other garbage is prohibited within twelve nautical miles of land, unless it has passed through a comminuter or grinder, in which case it may not be disposed of within three nautical miles of land.³⁵⁶ Except for food wastes, no garbage may be disposed of from any fixed or floating platform for the exploration, exploitation and associated offshore processing of seabed mineral resources, and from all ships when alongside or within 500 metres.³⁵⁷ For special areas, more stringent requirements apply, such as a prohibition on the disposal of all plastics and all other garbage and rules on reception facilities located in such areas.³⁵⁸

Annex VI: Air Pollution from Ships

The Regulations for the Prevention of Air Pollution from Ships, set out in Annex VI to MARPOL 73/78, were adopted by a Protocol of 26 September 1997. The Annex entered into force on 19 May 2005, and was revised in 2008,³⁵⁹ and amended in 2010 and 2011.³⁶⁰ Regulations set limits on sulphur oxide (SO_x) and nitrogen oxide (NO_x) emissions from ship exhausts, prohibit deliberate emissions of ozone-depleting substances and regulate the emissions of volatile organic compounds.³⁶¹ The 2008 revision lowered the global cap of 4.5 per cent on the sulphur content of fuel oil to 3.5 per cent, with the objective of progressively reducing it to 0.5 per cent by 2020 (subject to a feasibility review to be completed by 2018). The Annex makes provision for the establishment of special 'SO_x Emission Control Areas' with more stringent standards for sulphur emissions by ships in these areas, which by 1 July 2010 were to be reduced to 1.5 per cent, and by 1 January 2015 to 1 per cent.³⁶² The Annex also

³⁵² Annex IV, Regulations 10–12. ³⁵³ Annex IV, Regulation 11.

³⁵⁴ Annex V was amended in 1989, 1990, 1991, 1995, 2000 and 2004. The exceptions are set out in Regulation 6. See also the Guidelines for the Implementation of Annex V of MARPOL 73/78.

³⁵⁵ Annex V, Regulation 3(1)(a). ³⁵⁶ Annex V, Regulation 3(1)(b) and (c).

³⁵⁷ Annex V, Regulation 4(1). Food wastes may be disposed of provided they have passed through a comminuter or grinder and the location is more than twelve nautical miles from land: Regulation 4(2).

³⁵⁸ Annex V, Regulation 5(2)–(4). The special areas are the Mediterranean Sea, the Baltic Sea, the Black Sea, the Red Sea and the Gulf. Regulation 5(1). The North Sea area was added with effect from 18 April 1991, the Antarctic area with effect from 17 March 1992, and the Wider Caribbean region with effect from 4 April 1993.

³⁵⁹ Res. MEPC.175(58), 10 October 2008, in force 1 July 2010.

³⁶⁰ Res. MEPC.190(60), 26 March 2010 and Res. MEPC.194(61), 1 October 2010 (on a revision of Annex I International Air Pollution Prevention Certificate, on SO_x).

³⁶¹ Annex VI, Regulations 12–15.

³⁶² Annex VI, Regulation 14. The Baltic Sea and the North Sea are designated as SO_x Emission Control Areas under the Protocol.

prohibits the incineration on board ships of certain products, such as contaminated packaging materials and polychlorinated biphenyls (PCBs).³⁶³

With regard to greenhouse gases, according to an IMO study, in 2007 international shipping was responsible for the emission of about 2.7 per cent of the global man-made emissions of carbon dioxide.³⁶⁴ In November 2003, the IMO adopted a resolution on the matter,³⁶⁵ and the MEPC adopted in 2004 a set of guidelines on a 'CO₂ Indexing Scheme', which would allow parties to report emissions and develop a voluntary system for ship operators to use during a trial period. In July 2005, the MEPC approved 'Interim Guidelines for Voluntary Ship CO₂ Emission Indexing for Use in Trials'. The MEPC finalised in 2009 a package of specific technical and operational measures to increase efficiency and reduce emissions, which were adopted as an amendment to Annex VI on 15 July 2011.³⁶⁶ Some of the most significant measures are the Energy Efficiency Design Index (EEDI), which sets minimum energy efficiency requirements for new ships, and the Ship Energy Efficiency Management Plan (SEEMP), which provides a mechanism for monitoring ship and fleet efficiency performance over time. These measures, which are expected to come into force by 1 January 2013, will be mandatory for all ships irrespective of flag and ownership, although a six-and-a-half-year waiver applies in respect of implementation of the measures by developing countries. The new regulations include measures on technical assistance and technology transfer to aid developing countries in improving the energy efficiency of their shipping fleets. The MEPC is also considering the feasibility of adopting market-based measures, such as the creation of an international fund or the establishment of an emissions trading system. The MEPC has created a Working Group on GHG Emissions from Ships.

Other agreements on pollution from ships

A new generation of IMO agreements controls different sources of pollution from ships: the 2001 International Convention on the Control of Harmful Anti-Fouling Systems on Ships (AFS), which entered into force in 2008, the 2004 International Convention for the Control and Management of Ships' Ballast Water and Sediments, and the 2009 Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships. The IMO also supported the development of the 2007 Nairobi International Convention on the Removal of Wrecks, which principally addresses matters related to liability for the removal of wrecks from the sea.³⁶⁷

*2001 International Convention on the Control of Harmful Anti-Fouling Systems on Ships (AFS)*³⁶⁸

The objective of this convention is to prohibit the use of harmful organotins found in anti-fouling paints used on ships, and to prevent the use of any other harmful substance in anti-fouling systems in the future. The obligation to prohibit or restrict the use of these anti-fouling systems is extended not only to ships entitled to fly a state's flag, but also to those that operate

³⁶³ Annex VI, Regulation 16.

³⁶⁴ Second IMO GHG Study 2009, IMO, April 2009. On the regulation of greenhouse gas emissions from international shipping, see further Chapter 7, pp. 261–2, above.

³⁶⁵ IMO Res. A.963(23), 'Policies and Practices Related to the Reduction of Greenhouse Gas Emissions from Ships'.

³⁶⁶ IMO Marine Environment Protection Committee (MEPC), 62nd Session, 11–15 July 2011.

³⁶⁷ See pp. 395–6, below. ³⁶⁸ Adopted on 5 October 2001, in force 17 September 2008.

under its authority and/or that enter a port, shipyard or offshore terminal of that state. It also applies to fixed and floating platforms. The treaty foresees the issuing of an 'International Anti-Fouling System Certificate' or the carrying of a 'Declaration on Anti-Fouling Systems', depending on the size of the vessel. Annex 1 to the Convention lists the anti-fouling systems that are to be prohibited or controlled.

*2004 International Convention for the Control and Management of Ships' Ballast Water and Sediments*³⁶⁹

This Convention seeks to address the problem caused by the introduction of invasive species through vessels' ballast water, which at times can be devastating, particularly to native species. The Convention requires all ships to implement a 'Ballast Water and Sediments Management Plan' and to carry a 'Ballast Water Record Book', and all vessels are to be surveyed and certified and may be inspected by the port state. There are special requirements for Sediment Reception Facilities to be prepared for the reception of sediments.

*2009 International Convention for the Safe and Environmentally Sound Recycling of Ships*³⁷⁰

The Convention was developed in partnership with the International Labour Organization and the parties to the Basel Convention. It aims at ensuring that when vessels reach the end of their operational lives they do not pose any unnecessary risk to human health and safety or to the environment, as they may contain hazardous substances such as asbestos, heavy metals and ozone-depleting substances. Ships to be sent for recycling will be required to carry an inventory of hazardous materials. An Appendix to the Convention lists the hazardous materials that may be prohibited or restricted in facilities in charge of recycling or scrapping. Ship recycling yards will be required to provide a 'Ship Recycling Plan'.

Safety agreements

International standards on the safety of shipping have been adopted for load lines,³⁷¹ the prevention of collisions at sea,³⁷² the safety of life at sea³⁷³ and the training of seafarers and fishing vessel personnel.³⁷⁴ These address matters relating to safety at sea, rather than operational or accidental discharge, and have attracted broad support from states. As a

³⁶⁹ Adopted on 13 February 2004, not in force.

³⁷⁰ Hong Kong, 15 May 2009, not in force. See further Chapter 11, pp. 535–6, below.

³⁷¹ International Convention on Load Lines, as amended, London, 5 April 1966, in force 21 July 1968, 604 UKTS 133; Protocol, London, 11 November 1988, in force 3 February 2000. In this framework, in 2008 the Maritime Safety Committee adopted the International Code on Intact Stability, 2008 (2008 IS Code), which was made mandatory and entered into force in July 2010.

³⁷² Convention on the International Regulations for Preventing Collisions at Sea, London, 20 October 1972, in force 15 July 1977, UKTS 77 (1977), Cmnd 6962; amended in 1981, Misc. 8 (1982), Cmnd 8500, in force 1 June 1983. Further amendments were made in 1987, 1989, 1993, 2001 and 2007.

³⁷³ International Convention for the Safety of Life at Sea, London, 1 November 1974, in force 25 May 1980, 1184 UNTS 2; see Protocol of 1978, London, 17 February 1978, in force 1 May 1981, UKTS 40 (1981), Cmnd 8277; Protocol of 1988, London, 11 November 1988, in force 3 February 2000.

³⁷⁴ International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, London, 7 July 1978, in force 28 April 1984, UKTS 50 (1984), Cmnd 9266 (STCW Convention). Amendments in 1995, which completely revised the Convention, entered into force on 1 February 1997. The amended Convention is reprinted in F. Wiswall (ed.), *Benedict on Admiralty* (1998, 7th edn), Doc. 14-6 at 14-483. The STCW Convention and the STCW Code were reviewed between 2006 and 2010. Amendments adopted in 2010 will provide enhanced standards of training for seafarers, and will enter into force on 1 January 2012.

body of binding rules they establish detailed commitments on the design and construction of ships, as well as equipping, manning, operations and matters related to the training of the crew. In implementing these international agreements, the Maritime Safety Committee (MSC) of the IMO has adopted and often amended, numerous standards and recommendations.³⁷⁵

Pollution from seabed activities³⁷⁶

Pollution from seabed activities is caused by the release of harmful substances arising directly from the exploration, exploitation and processing of seabed materials. It accounts for only 1 per cent of pollution of the marine environment, although, in certain regions, such as the Arabian Gulf, the proportion is considerably higher due to oil exploration activities. In April 2010, the explosion of *Deepwater Horizon*, a semi-submersible offshore oil-drilling rig, in the Gulf of Mexico raised concern about the dangers of these operations. Eleven people died in the accident and about 4.9 million barrels of crude oil were released over a period of three months. It is considered the largest accidental marine oil spill in the history of the petroleum industry.³⁷⁷ Severe ecological impacts were felt as a result in the United States, and commercial and recreational fisheries were closed for several months, with some for up to a year, following the accident.

International legislation on pollution from seabed activities is undeveloped. UNCLOS establishes a basic framework of general commitments, which have so far been supplemented by the general rules established in most regional seas agreements and by some specific regional treaties on the matter.

UNCLOS

For seabed activities within areas of national jurisdiction, Article 208 of UNCLOS requires coastal states 'to prevent, reduce and control pollution of the marine environment arising from or in connection with seabed activities subject to their jurisdiction and from artificial islands, installations and structures under their jurisdiction', which should not be less effective than international rules, standards and recommended practices and procedures. States should also establish detailed global and regional rules, standards and recommended practices.³⁷⁸

³⁷⁵ See e.g. the Maritime Safety Committee's revised Recommendations on the safe transport of dangerous cargoes and related activities in port areas, MSC.1/Circ.1216.

³⁷⁶ T. Treves, 'La Pollution Résultant de l'Exploration et de l'Exploitation des Fonds Marins en Droit International', 24 *Annuaire Français de Droit International* 827 (1978); A. L. C. De Mestral, 'The Prevention of Pollution of the Marine Environment Arising from Offshore Mining and Drilling', 20 *Harvard International Law Journal* 469 (1979); J. Kindt, 'The Law of the Sea: Offshore Installations and Marine Pollution', 12 *Pepperdine Law Review* 381 (1984); S. M. Evans, 'Control of Marine Pollution Generated by Offshore Oil and Gas Exploration and Exploitation', 10 *Marine Policy* 82 (1986); J. Kindt, 'The Environmental Aspects of Deep Seabed Mining', 8 *UCLA Journal of Environmental Law and Policy* 125 (1989); B. Barrett and R. Howells, 'The Offshore Petroleum Industry and Protection of the Marine Environment', 2 *Journal of Environmental Law* 53 (1990); A. Nollkaemper, 'Deep Sea-Bed Mining and the Protection of the Environment', 15 *Marine Policy* 55 (1991); M. Gavouneli, *Pollution from Offshore Installations* (1995); Z. Gao (ed.), *Environment Regulation of Oil and Gas* (1998); E. Kirk, 'OSPAR Decision 98/3 and the Dumping of Offshore Installations', 48 *International and Comparative Law Quarterly* 458 (1999); M. Lodge, 'Current Legal Developments International Seabed Authority', 24 *International Journal of Marine and Coastal Law* 185 (2009).

³⁷⁷ 'Gulf Spill Is the Largest of Its Kind, Scientists Say', *New York Times*, 2 August 2010. ³⁷⁸ Art. 208(5).

For seabed activities outside areas of national jurisdiction, under Article 145 of UNCLOS the International Seabed Authority will adopt rules, regulations and procedures for the seabed and ocean floor and subsoil beyond the limits of national jurisdiction (known as 'the Area') for:

1. the prevention, reduction and control of pollution and other hazards to the marine environment, including the coastline, and of interference with the ecological balance of the marine environment, particular attention being paid to the need for protection from harmful effects of such activities as drilling, dredging, excavation, disposal of waste, construction and operation or maintenance of installations, pipelines and other devices related to such activities; and
2. the protection and conservation of the natural resources of the Area and the prevention of damage to the flora and fauna of the marine environment.³⁷⁹

Rules for the protection of the marine environment are adopted by the institutions comprising the International Seabed Authority, namely, the Assembly, following provisional adoption by the Council, and in accordance with the recommendations of the Legal and Technical Commission. The Council must refuse to approve areas for exploitation 'where substantial evidence indicates the risk of serious harm to the marine environment'.³⁸⁰ Under Article 162, the Council can ensure compliance with the provisions on the protection of the marine environment from activities in the international seabed area, including emergency orders to prevent serious harm, and an inspectorate.³⁸¹ In 2000, the International Seabed Authority adopted Regulations on Prospecting and Exploration of Polymetallic Nodules in the Area, Part V of which addresses the 'Protection and Preservation of the Marine Environment'.³⁸² These require the International Seabed Authority to establish and keep under review environmental rules, regulations and procedures to ensure effective protection for the marine environment from harmful effects that may arise from activities in the Area, applying (with states sponsoring such activities) a precautionary approach to such activities. The Regulations impose a duty on each contractor to 'take necessary measures to prevent, reduce and control pollution and other hazards to the marine environment arising from its activities in the Area as far as reasonably possible using the best technology available to it'. The duty is elaborated in the Regulations, contractual clauses and recommendations adopted by the Legal and Technical Commission in 2001. The contractor is required to gather environmental data as exploration activities progress and to establish environmental baselines against which to assess the likely effects of its activities on the marine environment. The contractor is also required to establish and implement a programme to monitor and report on such effects. The Regulations also contain procedures for the exercise by the Council, pursuant to Article 162(2)(w) of the Convention, of its power to issue emergency orders to prevent serious harm to the marine environment arising out of activities in the Area.

In an unprecedented Advisory Opinion, in 2011 the Seabed Disputes Chamber of ITLOS provided clarification on the content of the obligations of states sponsoring activities in the

³⁷⁹ Art. 145. See also UNCLOS, Annex III, Art. 17(1)(b)(xii), enabling the Authority to adopt minimum standards and practices, including those relating to conservation of the resources and protection of the marine environment; and Section 1, para. 5(g) of the Annex to the 1994 Agreement on Part XI of UNCLOS (requiring the Authority to concentrate on the adoption of rules, regulations and procedures incorporating applicable standards for the protection and preservation of the marine environment).

³⁸⁰ Art. 162(2)(x). ³⁸¹ Art. 162(2)(iv) and (3). ³⁸² Regulation 31.

Area, outlining their marked environmental character.³⁸³ Unanimously, the Chamber determined that sponsoring states have a general obligation of 'due diligence', which depends on the level of risk and on the activities involved, but which is also determined by a number of 'direct obligations'.³⁸⁴ According to the Chamber, these direct obligations include: (1) the obligation to apply a precautionary approach; (2) the obligation to apply 'best environmental practices'; (3) the obligation to adopt measures for the protection of the marine environment in the event of an emergency order; and (4) the obligation to ensure compliance by the sponsored contractor with its duty to conduct an environmental impact assessment.³⁸⁵

With regard to the obligation to apply the precautionary approach, the Chamber considered that this obligation is not limited to the implementation of the Nodules Regulations and the Sulphides Regulations, but that it is applicable beyond the scope of these two Regulations and should be considered an integral part of the 'due diligence' obligation.³⁸⁶ On the obligation to apply 'best environmental practices', which are expressly required only in the Sulphides Regulations, the Chamber also provided an extensive interpretation, which makes this obligation applicable also under the Nodules Regulations.³⁸⁷ On the obligation to conduct an environmental impact assessment, the Chamber recognised that this is also 'a general obligation under customary law'.³⁸⁸

Regional agreements

Nearly all regional agreements contain at least one general provision aimed at preventing, reducing and combating pollution resulting directly or indirectly from exploration and exploitation of the seabed and its subsoil (some treaties refer more broadly to the continental shelf).³⁸⁹ The regimes for the Arabian Gulf and for the Mediterranean have adopted specific protocols on the matter, namely, the 1989 Kuwait Exploration Protocol,³⁹⁰ and the 1994 Madrid Offshore Protocol.³⁹¹

1989 Kuwait Protocol and the 1994 Madrid Protocol

Both the Kuwait and Madrid Protocols require that any installations for the exploration or exploitation of resources in the subsoil be subject to prior authorisation. Before such

³⁸³ *Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area* (Advisory Opinion) (Seabed Disputes Chamber of the International Tribunal for the Law of the Sea, ITLOS Case No. 17, 1 February 2011). The Advisory Opinion was submitted to the Seabed Disputes Chamber by the Council of the International Seabed Authority, requesting the Chamber to render an opinion on the legal responsibilities and obligations of states parties to UNCLoS with respect to the sponsorship of activities in the Area, including reference to the extent of liability of a state party and the appropriate measures to take to fulfil a sponsoring state's responsibility. See Chapter 6, pp. 225–6, above. See also D. Freestone, 'Advisory Opinion of the Seabed Disputes Chamber of International Tribunal for the Law of the Sea on "Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area"', 15 *ASIL Insights* 7 (2011), www.asil.org/insights110309.cfm.

³⁸⁴ The Chamber stated that these direct obligations 'may also be seen as a relevant factor in meeting the "due diligence" obligation of the sponsoring State', para. 242(3).

³⁸⁵ Para. 242. ³⁸⁶ Paras. 125–35. See further Chapter 6, pp. 225–6, above. ³⁸⁷ Paras. 136–7.

³⁸⁸ Para. 135. On the consideration of the Chamber regarding environmental impact assessment, see Chapter 6, p. 201, above, and Chapter 14, pp. 621–2, below.

³⁸⁹ 1976 Barcelona Convention, Art. 7 (as revised in 1995); 1978 Kuwait Convention, Art. IV; 1981 Abidjan Convention, Art. 6; 1982 Jeddah Convention, Art. VII; 1985 Nairobi Convention, Art. 8; 1986 Noumea Convention, Art. 8; 1986 Cartagena Convention, Art. 8; 1992 Bucharest Convention, Art. XI.

³⁹⁰ See p. 355, above. ³⁹¹ See p. 354, above.

authorisation or licence is granted, competent authorities must assess the potential environmental effects of the operation. To this end, an environmental impact statement may – or may not – be required.³⁹² The Madrid Protocol establishes that parties shall prescribe sanctions in the case of breach of obligations of the Protocol.³⁹³ The Protocols establish safeguard provisions to prevent accidents and require operators to have in place a ‘contingency plan’. The Kuwait Protocol sets specific requirements in this regard;³⁹⁴ the Madrid Protocol implements the provisions already established in the Protocol Concerning Cooperation in Combating Pollution of the Mediterranean Sea by Oil and Other Harmful Substances in Cases of Emergency.³⁹⁵

Regulation of these activities also involves regulation of dumping from offshore installations. The Kuwait Protocol regulates the discharge of oily wastes and establishes that parties shall take ‘all practicable measures to ensure’ that the disposal of certain substances, such as plastics, garbage or sewage, is prohibited.³⁹⁶ The Madrid Protocol clearly prohibits the discharges of certain types of sewage and of non-biodegradable garbage.³⁹⁷ For other discharges such as oil, oily mixtures, and drilling fluids and cuttings, the Protocol establishes the need for parties to formulate common standards of disposal.³⁹⁸ In both regimes, the use and storage of chemicals shall be subject to a ‘Chemical Use Plan’.³⁹⁹

Other agreements

One aspect of the regulation of the exploration and the exploitation of the seabed relates to the regulation of dumping. A number of international agreements have developed specific regulations on dumping from offshore installations, which were described above in the section addressing pollution from dumping.⁴⁰⁰ The 1992 Baltic Sea Convention contains some additional measures on offshore activities. In its Annex VI it establishes the obligation to carry out an environmental impact assessment before offshore activity can start, and includes a commitment to use best available technology and best environmental practice. It establishes controls for discharges limits during exploration and exploitation, including the requirement of prior authorisation for some substances, and the need for each offshore unit to have a contingency plan.⁴⁰¹

Annex III to the 1992 OSPAR Convention focuses on dumping from offshore activities and does not establish the requirement, as in the Baltic Convention, to subject all offshore installations to a prior environmental impact assessment. However, in 2003 the OSPAR Commission adopted an ‘Offshore Oil and Gas Industry Strategy’. It is based on Annexes III and V to the Convention, and draws from OSPAR’s guiding principles such as the precautionary principle and the ecosystem approach. OSPAR’s Offshore Industry Committee is charged with implementing this strategy, including the development of programmes and measures and an assessment of their implementation.⁴⁰²

³⁹² Kuwait Protocol, Arts. III–IV; Madrid Protocol, Arts. 4–6. ³⁹³ Madrid Protocol, Art. 7.

³⁹⁴ Art. VIII. See also Arts. VI–VII. ³⁹⁵ Art. 16. See generally Section IV on Safeguards. ³⁹⁶ Arts. IX and X.

³⁹⁷ Arts. 11 and 12. ³⁹⁸ Art. 10. ³⁹⁹ Kuwait Protocol, Art. XI; Madrid Protocol, Art. 9.

⁴⁰⁰ See pp. 365–72, above. ⁴⁰¹ Annex VI, Regulations 2–5 and 7.

⁴⁰² See 2003 Strategies of the OSPAR Commission for the Protection of the Marine Environment of the North-East Atlantic, Reference number: 2003-21; and Terms of Reference of OSPAR Committees, Reference number: 2001-4.

Environmental emergencies

Fourteen international conventions and protocols provide a framework for international co-operation to combat emergency situations threatening the marine environment.⁴⁰³ They were developed in response to individual oil pollution incidents, beginning in 1969 with the *Torrey Canyon* accident, which resulted in the escape of 117,000 tons of crude oil in the western approaches to the United Kingdom, causing extensive damage to the British coast and to the coast of France.⁴⁰⁴ The ship was registered under the flag of Liberia and the accident occurred outside the territorial sea of the United Kingdom, raising the question of whether the coastal state could intervene to address a pollution incident occurring in areas beyond national jurisdiction. This led to the Brussels Conference of 1969 and the adoption of the 1969 Intervention Convention. Of these international instruments, three are global and eleven are regional; of the latter, eight are Protocols to UNEP Regional Seas Conventions.

1969 Intervention Convention and 1973 Intervention Protocol

The 1969 International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties (1969 Intervention Convention) was adopted under the auspices of IMCO (now IMO).⁴⁰⁵ It allows action by coastal states in an area of the global commons without affecting the high seas freedoms or other rights and duties.⁴⁰⁶ It allows parties to

take such measures on the high seas as may be necessary to prevent, mitigate or eliminate grave and imminent danger to their coastline or related interests from pollution or threat of pollution of the sea by oil, following upon a maritime casualty or acts related to such a casualty, which may reasonably be expected to result in major harmful consequences.⁴⁰⁷

Before such action is taken, unless extreme urgency requires otherwise, prior notification or consultation must take place between the coastal state and other affected states, particularly the flag state, and independent experts chosen from an IMO list.⁴⁰⁸ The measures taken by the coastal state must satisfy certain principles and conditions: they must be proportionate to the actual or threatened damage, must not go beyond what is reasonably necessary to achieve the purpose of Article I, and must cease as soon as that purpose has been achieved.⁴⁰⁹ A party that goes beyond what is permitted by the Convention and causes damage to others will be liable to pay compensation for such damage.⁴¹⁰

The 1969 Convention was supplemented in 1973 by a Protocol on Intervention on the High Seas in Cases of Marine Pollution by Substances Other Than Oil (1973 Intervention Protocol).⁴¹¹ The 1973 Protocol allows parties to take similar action to that permitted under the 1969 Convention in relation to substances listed by the IMO and annexed to the Intervention

⁴⁰³ See also 1986 IAEA Notification Convention and 1986 IAEA Assistance Convention, Chapter 16 below.

⁴⁰⁴ Report of the Home Office, *The Torrey Canyon*, Cmnd 3246 (1967).

⁴⁰⁵ Brussels, 29 November 1969, in force 6 May 1975, 9 ILM 25 (1970). ⁴⁰⁶ Preamble and Art. VII.

⁴⁰⁷ Art. I(1). 'Maritime casualty' includes ship collisions, stranding or navigation incident or other occurrence resulting in material damage to a ship: Art. II(1). The Convention does not apply to warships or state-owned or -operated ships on non-commercial service: Art. I(2).

⁴⁰⁸ Arts. III and IV. ⁴⁰⁹ Art. V. ⁴¹⁰ Art. VI.

⁴¹¹ 2 November 1973, in force 30 March 1983, UKTS 27 (1983), Cmnd 8924.

Protocol, as well as other substances 'which are liable to create hazards to human health, to harm living resources and marine life, to damage amenities or to interfere with other legitimate uses of the sea'.⁴¹² In the case of the latter, the party taking action will have the burden of establishing that the substance could reasonably pose a grave and imminent danger which is analogous to that posed by listed substances.⁴¹³

1989 Salvage Convention

The 1989 International Convention on Salvage has the dual purpose of encouraging salvage and measures to protect the marine environment from the consequences of accidents.⁴¹⁴ It was adopted largely as a consequence of the accident in 1978 involving the *Amoco Cadiz*, which resulted in massive pollution of the Brittany coast of France. This highlighted the inadequacy of existing instruments, in particular the 1910 Convention for the Unification of Certain Rules of Law Respecting Assistance and Salvage at Sea,⁴¹⁵ and the need to provide for rules governing the remuneration of efforts by salvors to prevent or mitigate pollution. The 1989 Salvage Convention addresses this point by creating an incentive for salvors to take measures to protect the environment, even if those measures may have no useful result. The Convention also protects the legal position of coastal states with respect to pollution. Article 9 provides:

Nothing in this Convention shall affect the right of the coastal State concerned to take measures in accordance with generally recognised principles of international law to protect its coastline or related interests from pollution or the threat of pollution following upon a maritime casualty or acts relating to such a casualty which may reasonably be expected to result in major harmful consequences, including the right of the coastal State to give directions in relation to salvage operations.

The heart of the Convention is set out in Articles 12–14. Under Article 12, salvage operations entitle the salvor to a reward only if the operations have had a useful result, except as otherwise provided. Article 13 recognises that preventing environmental damage can contribute a useful result: the reward is to be fixed to encourage salvage operations and is to take into account, *inter alia*, 'the skill and efforts of the salvors in preventing or minimising damage to the environment'.⁴¹⁶ Moreover, under Article 14, a 'safety net' is established to provide 'special compensation' from the owner of the vessel, equivalent to his expenses, for salvage operations for a vessel which threatened damage to the environment and for which the salvor has not earned a reward under Article 13 which is at least equivalent to the special compensation formula provided by Article 14.⁴¹⁷ According to Article 14(2), the special compensation payable by the owner to the salvor under Article 14(1) may be increased by up to 30 per cent of the expenses incurred by the salvor if the salvor has prevented or minimised damage to the

⁴¹² Art. I(1) and (2). The IMO list annexed is subject to an amendment procedure requiring adoption with the support of two-thirds of parties to the Protocol present and voting. Arts. I(2) and II to VIII of and the Annex to the 1969 Intervention Convention apply to substances in Art. I. Amendments to the list of substances were made in 1991 (in force 30 March 1993), 1996 (in force 19 December 1997) and 2002 (in force 22 June 2004).

⁴¹³ Art. I(3). ⁴¹⁴ London, 28 April 1989, not yet in force, IMO Leg/Conf.7/27, 2 May 1989.

⁴¹⁵ Brussels, 23 September 1910, UKTS 4 (1913), Cmnd 6677; as amended by Protocol, Brussels, 27 May 1967, UNTS 22 (1978), Cmnd 7095.

⁴¹⁶ Art. 13(1)(b). ⁴¹⁷ Art. 14(1).

environment. By way of incentive, the competent tribunal may increase the special compensation up to 100 per cent if it is 'fair and just' to do so and bearing in mind the criteria set out in Article 13. The salvor is also subject to a negative incentive: negligence and the failure to prevent or minimise environmental damage may result in the salvor being deprived of the whole or part of any special compensation due.⁴¹⁸

1990 OPRC Convention and 2000 HNS Protocol

The 1990 London International Convention on Oil Pollution Preparedness, Response and Co-operation (1990 OPRC Convention)⁴¹⁹ promotes international co-operation in the event of a major oil pollution threat. Its provisions are applicable to ships, offshore units, sea ports and oil handling facilities. Even before it came into force in 1995, the Convention was being implemented by many states pursuant to the resolution of the conference that adopted it,⁴²⁰ and it has been relied upon on numerous occasions, including to help Saudi Arabia and other countries cope with a major oil spill in the Gulf in 1991.

The Preamble to the 1990 OPRC Convention includes a number of provisions of relevance to general rules of international environmental law, noting the 'importance of precautionary measures and prevention in avoiding oil pollution in the first instance', and taking 'account of the polluter-pays principle as a general principle of international environmental law'. The Convention commits parties to take all appropriate measures in accordance with its provisions to prepare for and respond to an oil pollution incident.⁴²¹ These measures include: oil pollution emergency plans on ships, offshore units and sea ports and oil handling facilities; oil pollution reporting procedures; and national and regional systems for preparedness and response.⁴²² The Convention sets out the action to be taken on receiving an oil pollution report and provides for international co-operation in pollution response.⁴²³ An Annex establishes principles governing reimbursement for costs of assistance, which are without prejudice to the rights of parties to recover from third parties under other applicable provisions of national and international law.⁴²⁴

In 2000, a Protocol to the OPRC Convention was adopted to apply the same principles of the Convention to hazardous and noxious substances. The 2000 Protocol to the OPRC Convention on Preparedness, Response and Co-operation to Pollution Incidents by Hazardous and Noxious Substances (2000 HNS Protocol)⁴²⁵ establishes a list of hazardous and noxious substances defined by reference to lists of substances included in other IMO Conventions and Codes and include: oils; other liquid substances defined as noxious or dangerous; liquefied gases; liquid substances with a flashpoint not exceeding 60°C; dangerous, hazardous and harmful materials and substances carried in packaged form; and solid bulk materials defined as possessing chemical hazards. As with the 1992 Convention, the 2000 HNS Protocol seeks to provide a global framework for international co-operation in combating major pollution incidents

⁴¹⁸ Art. 14(5). ⁴¹⁹ London, 30 November 1990, in force 13 May 1995, 30 ILM 735 (1991).

⁴²⁰ Conf.Res.2 (Implementation Pending Entry into Force), 30 ILM 753 (1991).

⁴²¹ Art. 1(1). 'Oil pollution incident' is defined as 'an occurrence or series of occurrences having the same origin, which results or may result in a discharge of oil and which poses or may pose a threat to the marine environment, or to the coastline or related interests of one or more States, and which requires emergency action or other immediate response': Art. 2(2).

⁴²² Arts. 3, 4 and 6. ⁴²³ Arts. 5 and 7.

⁴²⁴ Annex; it also provides that 'special attention' shall be paid to the 1969 CLC and the 1971 Oil Pollution Fund Convention and any subsequent amendments (see also Art. 11).

⁴²⁵ London, 15 March 2000, not yet in force.

involving hazardous and noxious substances. Parties to the 2000 HNS Protocol will be required to establish measures for dealing with pollution incidents, either nationally or in co-operation with other countries. Ships will be required to carry a shipboard pollution emergency plan to deal specifically with incidents involving hazardous and noxious substances.

1969 and 1983 Bonn Agreements⁴²⁶

The first regional agreement in this area was the 1969 Bonn Agreement for Co-operation in Dealing with Pollution of the North Sea by Oil (1969 Bonn Agreement),⁴²⁷ which established a model followed by the other agreements. Limited to pollution by oil which 'presents a grave and imminent danger to the coast or related interests' of one or more parties,⁴²⁸ the Agreement required parties to share information on relevant national organisations and techniques for avoiding and dealing with oil pollution, to inform other parties without delay of a casualty or the presence of oil slicks which present a serious threat, and to require their ships and aircraft to report such casualties and oil slicks.⁴²⁹ The 1969 Bonn Agreement divides the North Sea into zones for which parties are responsible for assessing the nature, extent and movement of the spillage, keeping it under observation, and providing information to other parties.⁴³⁰ Parties are not specifically required to clean up the spillage, but, if they engage in disposal, they may seek assistance from other parties likely to be affected, in which case other parties called upon to help must 'use their best endeavours to bring such assistance as is within their power'.⁴³¹

In 1983, the North Sea coastal states adopted the 1983 Agreement for Co-operation in Dealing with Pollution of the North Sea by Oil and Other Harmful Substances (1983 Bonn Agreement) which superseded the 1969 Bonn Agreement.⁴³² The 1983 Agreement extends the co-operative framework to oil and other harmful substances and includes threatened as well as actual pollution.⁴³³ It goes beyond the 1969 Agreement by requiring parties: to jointly develop and establish guidelines for joint action; to provide information on pollution incidents of this kind which they have dealt with; to establish a standard form for the reporting of pollution; to provide for rules concerning the costs of action covered by the 1983 Agreement in the absence of an agreement concerning financial arrangements; and to have regular meetings of the parties and to designate a secretariat.⁴³⁴

UNEP Regional Seas Protocols

Nine of the UNEP Regional Seas Conventions have emergency Protocols: the 1976 Barcelona Emergency Protocol (replaced by the 2002 Protocol); the 1978 Kuwait Emergency Protocol; the 1981 Abidjan Pollution Emergency Protocol; the 1981 Lima Emergency Agreement (with its 1983 Quito Protocol); the 1982 Jeddah Pollution Emergency Protocol; the 1983 Cartagena Oil Spills Protocol; the 1985 Nairobi Emergency Pollution Protocol; the 1986 Noumea Pollution Emergencies Protocol; and the 1992 Bucharest Protocol on Cooperation in Combating Pollution

⁴²⁶ See www.bonnagreement.org.

⁴²⁷ Bonn, 9 June 1969, in force 9 August 1969, 704 UNTS 3. See also the 1971 Agreement Between Denmark, Finland, Norway and Sweden Concerning Co-operation in Measures to Deal with Pollution of the Sea by Oil, and the 1990 Accord of Co-operation for the Protection of the Coasts and Waters of the Northeast Atlantic Against Pollution Due to Hydrocarbons or Other Harmful Substances, Lisbon, 17 October 1990, 30 ILM 1231 (1991).

⁴²⁸ Art. 1. ⁴²⁹ Arts. 4 and 5. ⁴³⁰ Art. 6. ⁴³¹ Art. 7.

⁴³² Bonn, 13 September 1983, in force 1 September 1989, IELMT 983:68, Art. 19(2). ⁴³³ Art. 1.

⁴³⁴ Arts. 3(2), 4(e), 5(3) and 9-15.

of the Black Sea Marine Environment by Oil and Other Harmful Substances in Emergency Situations. These include similar provisions which establish frameworks for co-operation in cases of grave and imminent danger to the marine environment, the coast or related interests due to the presence of massive quantities of oil or other harmful substances (not those in the 1983 Cartagena Oil Spills Protocol) resulting from accidental causes or an accumulation of small discharges which are polluting or threatening to pollute.⁴³⁵ Each Protocol reflects variations on a theme which generally provides for co-operation based upon obligations: to maintain contingency plans for combating pollution; to develop and apply monitoring activities; to salvage and recover harmful substances which have been released or lost overboard; to exchange information; to co-ordinate the means of communication; to ensure the reporting by their ships and aircraft of specified accidents; to take certain actions (including assessment and measures to avert or reduce the effects of pollution) in the event of a threat; to call for assistance first from other parties likely to be affected; and to establish regional or sub-regional co-ordination centres.⁴³⁶ In each case, ensuring implementation of the Protocol is a matter for Meetings of the Parties to the Protocol,⁴³⁷ or the organ established under the relevant framework convention.⁴³⁸

Liability and compensation

Rules of liability and compensation for damage to the marine environment establish an incentive to prevent harm and also may require restoration; several instruments have been adopted to establish rules of liability in relation to pollution or damage to the marine environment. Currently, the main instruments are: the International Convention on Civil Liability for Oil Pollution Damage (1992 CLC, as amended); the International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage (1992 Oil Fund Convention), supplemented by the 2003 Protocol and subsequently amended; the 1996 International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea (1996 HNS Convention); and the 2001 International Convention on Civil Liability for Bunker Oil Pollution Damage (2001 Bunker Oil Convention).⁴³⁹ The 2007 Nairobi International Convention on the Removal of Wrecks clarifies responsibility for the removal of wrecks from the sea, which lies upon the registered owner who

⁴³⁵ 1976 Barcelona Emergency Protocol, Art. 1; 1978 Kuwait Emergency Protocol, Art. 1(2) and (5); 1981 Abidjan Pollution Emergency Protocol, Art. I(2) and (5); 1981 Lima Emergency Agreement, Arts. I and III; 1982 Jeddah Pollution Emergency Protocol, Art. I(2) and (5); 1983 Cartagena Oil Spills Protocol, Arts. I(3) and (4) and II; 1985 Nairobi Emergency Pollution Protocol, Arts. 1(d)–(g) and 2; 1986 Noumea Pollution Emergencies Protocol, Arts. 1(c) and (d) and 2; and 1992 Bucharest Emergency Protocol, Arts. 1–2.

⁴³⁶ 1976 Barcelona Emergency Protocol, Arts. 3–11 and Annex A; 1978 Kuwait Emergency Protocol, Arts. II–XII (establishing a Marine Emergency Mutual Aid Centre) and Appendix A; 1981 Abidjan Pollution Emergency Protocol, Arts. 4–10; 1981 Lima Emergency Agreement, Arts. IV–XI, and the 1983 Quito Protocol, Arts. I–III (establishing detailed co-operation mechanism for massive oil spills); 1982 Jeddah Pollution Emergency Protocol, Arts. II–XI (establishing a Marine Emergency Mutual Aid Centre); 1983 Cartagena Oil Spills Protocol, Arts. 3–9; 1985 Nairobi Emergency Pollution Protocol, Arts. 3–9; 1986 Noumea Pollution Emergencies Protocol, Arts. 3–9; and 1992 Bucharest Emergency Protocol, Arts. 3–6.

⁴³⁷ 1976 Barcelona Emergency Protocol, Art. 12; 1981 Abidjan Pollution Emergency Protocol, Art. 11; 1981 Lima Emergency Agreement, Art. XII; 1983 Cartagena Oil Spills Protocol, Art. 10; 1985 Nairobi Emergency Pollution Protocol, Art. 10; and 1986 Noumea Pollution Emergencies Protocol, Art. 10.

⁴³⁸ 1978 Kuwait Emergency Protocol, Art. XIII; 1982 Jeddah Pollution Emergency Protocol, Art. XIII.

⁴³⁹ For a discussion on the liability regime provided by these agreements, see Chapter 17, pp. 745–57, below.

is required to maintain insurance or other financial security. The registered owner is not liable under this Convention if already liable under some other convention.⁴⁴⁰

UNCLOS establishes basic rules on state responsibility and liability,⁴⁴¹ and the 1972 London Convention and all UNEP Regional Seas Conventions also call for the development of rules on liability and compensation.⁴⁴² However, to date, no such regional rules have been adopted.

CONSERVATION OF MARINE LIVING RESOURCES⁴⁴³

Introduction

The marine living resources of the oceans and seas include bony fish, sharks and rays, cephalopods, crustaceans, and other invertebrates, such as corals. They also include birds, turtles, and marine mammals, such as cetaceans and seals.⁴⁴⁴ According to a ten-year survey finalised in 2010, there are, excluding microbes, about 250,000 validly described marine species together with 750,000 more species remaining to be described.⁴⁴⁵ Living marine

⁴⁴⁰ Nairobi, 18 May 2007, not in force. IMO Doc. LEG/CONF.16/19, 23 May 2007. Arts. 10–12.

⁴⁴¹ See Chapter 17, pp. 729–33, below.

⁴⁴² 1972 London Dumping Convention, Art. X; 1976 Barcelona Convention, Art. 12; 1978 Kuwait Convention, Art. XIII; 1981 Abidjan Convention, Art. 15; 1981 Lima Convention, Art. 11; 1982 Jeddah Convention, Art. XIII; 1983 Cartagena de Indias Convention, Art. 14; 1985 Nairobi Convention, Art. 15; 1986 Noumea Convention, Art. 20; 1992 Bucharest Convention, Art. XVI; 2002 Antigua Convention, Art. 13.

⁴⁴³ D. M. Johnston, *The International Law of Fisheries: A Framework for Policy Oriented Enquiries* (1965); D. Caron, 'International Sanctions, Ocean Management, and the Law of the Sea: A Study of Denial of Access to Fisheries', 16 *Ecology Law Quarterly* 311 (1989); W. Herrington, 'In the Realm of Diplomacy and Fish: Some Reflections on the International Convention on High Seas Fisheries in the North Pacific Ocean and the Law of the Sea Negotiations', 16 *Ecology Law Quarterly* 101 (1989); D. Lodge, 'New Approaches to Fisheries Enforcement', 2 *Review of European Community and International Environmental Law* 277 (1993); W. T. Burke, *The New International Law of Fisheries: UNCLOS 1982 and Beyond* (1994); J. de Yturriaga, *The International Regime of Fisheries: From UNCLOS to the Presencial Sea* (1997); E. Hey (ed.), *Developments in International Fisheries Law* (1999); F. Orrego Vicuña, *The Changing International Law of High Seas Fisheries* (1999); R. Churchill and A. Lowe, *The Law of the Sea* (1999, 3rd edn); OECD, *Towards Sustainable Fisheries: Economic Aspects of the Management of Living Marine Resources* (1999); D. Vidas and W. Ostreng (eds.), *Order for the Oceans at the Turn of the Century* (1999); S. Kaye, *International Fisheries Management* (2000); O. Stokke (ed.), *Governing High Seas Fisheries* (2001); S. Cassese, 'Administrative Law Without the State – The Challenge of Global Regulation', 37 *New York University Journal of International Law and Politics* 663 (2004–5); J. Kooiman, M. Bavinck, S. Jentoff and R. Pullin, *Fish for Life: Interactive Governance for Fisheries* (2005); P. Ehlers and R. Lagoni, *International Maritime Organisations and Their Contribution Towards a Sustainable Marine Development* (2006); D. Devine, *Contemporary Regulation of Marine Living Resources and Pollution* (2007); S. J. Holt, 'Sustainable Use of Wild Marine Living Resources: Notion or Myth?', 1 *Foundations of Environmental Sustainability* 185 (2008); G. Winter, *Towards Sustainable Fisheries Law: A Comparative Analysis* (2009); M. H. Nordquist, T. Koh and J. N. Moore, *Freedom of Seas, Passage Rights and the 1982 Law of the Sea Convention* (2009); C. Mora, R. A. Myers, M. Coll *et al.*, 'Management Effectiveness of the World's Marine Fisheries', 7 *Public Library of Science* (2009); R. Warner, *Protecting the Oceans Beyond National Jurisdiction: Strengthening the International Law Framework* (2009); G. Holland and D. Pugh (eds.), *Troubled Waters: Ocean Science and Governance* (2010); J. F. Pulvenis de Séligny, 'The Marine Living Resources and the Evolving Law of the Sea', 1 *Aegean Review of the Law of the Sea* 61 (2010); M. A. Young, *Trading Fish, Saving Fish: The Interaction Between Regimes in International Law* (2011); J. Harrison, *Making the Law of the Sea: A Study in the Development of International Law* (2011).

⁴⁴⁴ See generally FAO FishFinder, www.fao.org/fishery/fishfinder/about/en; and the Marine Census Report 2010, note 445 below.

⁴⁴⁵ J. H. Ausubel, D. Trew Crist and P. E. Waggoner, *First Census of Marine Life 2010, Highlights of a Decade of Discovery* (2010) and *First Census of Marine Life 2010, Scientific Results to Support the Sustainable Use and Conservation of Marine Life: Summary for Policymakers* (2010), 3. See also World Register of Marine Species, www.marinespecies.org.

resources and their associated ecosystems outside of coastal areas have been primarily affected over the last fifty years by fishing. They have also been impacted by pollution and habitat destruction, with another important driver of change in marine systems being climate change.⁴⁴⁶

FAO statistics show that the annual take of fisheries from the oceans is occurring at a rate that goes far beyond sustainable levels, and that further international efforts are needed to conserve fisheries and other marine living resources. According to 2008 FAO data, 53 per cent of stocks were fully exploited, 28 per cent over-exploited and 3 per cent depleted. Most of the stocks of the top ten species, which account for about 30 per cent of the world marine capture fisheries, are fully exploited. Of the twenty-three tuna stocks, about 60 per cent are fully exploited, and possibly up to 35 per cent are over-exploited or depleted.⁴⁴⁷ Some scientists consider these FAO statistics to be 'over-optimistic'.⁴⁴⁸ The development and use of new technologies and fishing practices (which allow fishing in previously remote and unexplored areas), the over-capitalisation of fishing fleets (which is seen to lead to the over-exploitation of fisheries), the continued use of destructive practices, such as trawling or dynamiting, and increased demand for fisheries resources for human consumption and animal feed, are all placing an overwhelming strain on the ability of these ocean resources to sustain and replenish themselves.⁴⁴⁹

The main objective of international law for fisheries conservation has been to establish a framework for international co-operation towards the management and conservation of fisheries and marine living resources which is built upon two related obligations: international research and scientific co-operation, and international regulation. Both are influenced by changes that have taken place over the past century, resulting in an extension of the rights of coastal states and a corresponding diminution of the area of high seas on which any state is allowed to fish. Despite the belief that the extension of the coastal states' rights would benefit conservation efforts, reports of landings do not suggest that the new regime has led to a stabilisation of fish stocks at levels that are sustainable. This aspect of the conservation of biological diversity poses particularly complex challenges for international law. Many marine living resources are migratory over medium or long distances and do not remain conveniently within the territorial jurisdiction of any single state.⁴⁵⁰ The fact that

⁴⁴⁶ D. Pauly and J. Alder (coord.), 'Marine Fisheries Systems', in *Ecosystems and Human Well-being: Current State and Trends*, Vol. 1, *Findings of the Condition and Trends Working Group of the Millennium Ecosystem Assessment* (2005), 480 and 490.

⁴⁴⁷ FAO, *World Review of Fisheries and Aquaculture* (2010), 8.

⁴⁴⁸ D. Pauly and J. Alder (coord.), 'Marine Fisheries Systems', in *Ecosystems and Human Well-being: Current State and Trends*, Vol. 1, *Findings of the Condition and Trends Working Group of the Millennium Ecosystem Assessment* (2005), 482.

⁴⁴⁹ Scientists also observed that landings from global fisheries have shifted since the 1950s from large piscivorous fishes towards smaller invertebrates and planktivorous fishes, and conclude that this may imply major changes in the structure of marine food webs, which could lead to widespread fisheries collapses; see D. Pauly, V. Christensen, J. Dalsgaard, R. Froese and F. Torres Jr, 'Fishing Down Marine Food Webs', 279 *Science* 860 (1998). See also, on the impact of overfishing, J. B. Jackson, M. X. Kirby, W. H. Berger *et al.*, 'Historical Overfishing and the Recent Collapse of Coastal Ecosystems', 293 *Science* 629 (2001). For an earlier analysis of the threats to fisheries, not dissimilar to those currently identified, see F. W. Bell, *Food from the Sea: The Economics and Politics of Ocean Fisheries* (1978), 339–40, cited in L. K. Caldwell, *International Environmental Policy* (1990, 2nd edn), 285.

⁴⁵⁰ See, in this regard, the decision of the WTO Appellate Body in the *Shrimp/Turtle* case, Chapter 19, pp. 818–24, below.

many marine living resources are found in the high seas area, beyond the national jurisdiction of any state, means that they have been traditionally subject to the right of all states to allow fishing activities and to benefit from the freedom of the high seas. In the absence of effective international management regimes for these areas, there is little incentive for a state to impose conservation measures unilaterally when it knows that its abstention will be replaced by the activities of fishing vessels from other states. Many marine living resources are therefore 'shared' within the meaning of the 1978 draft UNEP Principles.⁴⁵¹ According to Churchill and Lowe, four consequences of particular note flow from the common property nature of marine living resources:

a tendency for fish stocks to be fished above biologically optimal levels; a tendency for more fishermen to engage in a fishery than is economically justified; a likelihood of competition and conflict between different groups of fishermen; and the necessity for any regulation of marine fisheries to have a substantial international component.⁴⁵²

As in other areas of international environmental law, conservation rules with regard to marine living resources are closely related to the jurisdictional rights of states.⁴⁵³ The 1982 UNCLOS establishes maritime zones, according to which different rules govern marine living resources in and beyond national territory.⁴⁵⁴ However, even before its entry into force it was apparent that UNCLOS was not providing all the necessary tools for the adequate management of marine living resources. In 1992, Agenda 21 recognised that new approaches to marine and coastal area management and development were necessary, and identified some key programme areas that required further action, such as the sustainable use and conservation of marine living resources of the high seas and under national jurisdiction; addressing critical uncertainties for the management of the marine environment and climate change; and strengthening international, including regional, co-operation and co-ordination.⁴⁵⁵

Ten years later, the Johannesburg Plan of Implementation made a reasonably concrete contribution in relation to fisheries. In the face of growing concerns, states recognised the need to 'maintain or restore stocks to levels that can produce the maximum sustainable yield with the aim of achieving these goals for depleted stocks on an urgent basis and where possible not later than 2015',⁴⁵⁶ and to implement the new treaties and soft law instruments developed since UNCED, such as the 1995 Fish Stocks Agreement, the 1995 Code of Conduct for Responsible Fisheries, and the FAO's international plan of action to prevent, deter and eliminate illegal, unreported and unregulated fishing by 2004.⁴⁵⁷ The Johannesburg Plan of Implementation encouraged the application by 2010 of the ecosystem approach and promoted 'integrated, multidisciplinary and multisectoral coastal and ocean development'.⁴⁵⁸

⁴⁵¹ See Chapter 2, pp. 36–7, above. ⁴⁵² R. R. Churchill and A. V. Lowe, *The Law of the Sea* (1988, 2nd edn), 224.

⁴⁵³ See Chapter 1, pp. 11–12, above; and pp. 399–400, below. ⁴⁵⁴ Paras. 17.44 and 17.69.

⁴⁵⁵ Agenda 21, Chapter 17.1. ⁴⁵⁶ Para. 31(a).

⁴⁵⁷ Para. 31(b)–(d). The Implementation Plan also calls for the elimination of subsidies that contribute to illegal, unreported and unregulated fishing: para. 30(f).

⁴⁵⁸ Para. 30(d) and (e).

Milestones in the development of fisheries law

The rules of international law relating to the sustainable use and conservation of marine living resources have a lengthy history, particularly compared to other international environmental issues. The current legal regime reflects developments in state practice and treaty law that extend back to the second half of the eighteenth century. Landmark historical developments include the 1893 award of the arbitral tribunal in the *Pacific Fur Seal* arbitration, the establishment of the FAO in 1945, the Geneva Conventions adopted by the 1958 United Nations Conference on the Law of the Sea, and the ICJ judgment in the *Fisheries Jurisdiction* case in 1974.

Pacific Fur Seal arbitration

The *Pacific Fur Seal* arbitration award of 1893 is relevant today for at least three reasons:⁴⁵⁹ it reflects the inherent difficulties in the conservation of natural resources which fall, wholly or partly, outside the jurisdiction of a single state; the Regulations adopted in the award illustrate early international legal techniques for the conservation of shared natural resources; and it indicates the role of international courts and tribunals in the peaceful resolution of disputes and the progressive development of international legal arrangements. The *Pacific Fur Seal* arbitration concerned the right of states to adopt regulations to conserve fur seals in areas beyond national jurisdiction. It arose out of a dispute between the United States and the United Kingdom following their failure (with France, Germany, Japan, Russia, Sweden and Norway) to agree on international rules to protect fur seal fisheries in the Bering Sea from indiscriminate destruction and extermination by over-exploitation.

The US had claimed jurisdiction over the Bering Sea and a right of protection and property in the fur seals found outside the ordinary three-mile territorial sea limit.⁴⁶⁰ The US argued that property rights entitled it to preserve the fur seals from destruction, and that even if it did not have property rights it had an interest in the 'legitimate and proper use of the seal herd on its territory' which it was entitled to protect against wanton destruction. In terms not dissimilar to its position underlying the yellow-fin tuna case nearly 100 years later, the US argued that no part of the high seas was open to individuals for the purpose of destroying national interests of such a character and importance.⁴⁶¹ The arbitrators held, by a majority of five to two, that the US had no 'right of protection or property in the fur seals frequenting the islands of the United States in the Bering Sea, when such seals are found outside the ordinary three-mile limit'.⁴⁶²

Having rejected the US argument that the United States could apply conservation measures in areas beyond national jurisdiction, the arbitrators adopted Regulations for the protection and preservation of fur seals outside jurisdictional limits. The Regulations included elements recognisable in modern international environment law, including rules establishing closed seasons, and limiting the methods and means of hunting.⁴⁶³

⁴⁵⁹ 15 August 1893, 1 *Moore's International Arbitration Awards* 755. ⁴⁶⁰ *Ibid.*, 811.

⁴⁶¹ *Ibid.*, Declaration 11. The arbitrators adopted a Supplementary Declaration, *ibid.*, 856, which recommended that the critical condition of fur seal populations required both governments to come to an understanding to prohibit any killing of fur seals for a period of two or three years, or at least one year.

⁴⁶² 8 IPE 3877. ⁴⁶³ Regulations, Arts. 1, 2, 3, 5 and 6–8.

The Regulations adopted by the tribunal in the *Pacific Fur Seal* arbitration in 1893 were followed by treaties in 1911, 1942 and 1957,⁴⁶⁴ which also introduced some innovative principles, including quantitative limits on the number of seals that could be taken and a commitment to transfer, by way of compensation, a number of sealskins between the various parties.

The principle of absolute freedom to fish on the high seas endorsed by the *Pacific Fur Seal* arbitration meant that coastal states did not have jurisdiction for that reason alone over the marine living resources of the high seas. Jurisdiction to prescribe legislation for the conservation of these resources and to enforce such legislation was a matter exclusively for the state which has granted to a ship the right to sail under its flag (flag state).⁴⁶⁵ Today, the advent of new technologies and practices leading to over-exploitation of the marine living resources of the high seas illustrates the limitations of the principle underlying the award of the *Pacific Fur Seal* arbitration, and is causing the traditional approach to be challenged by coastal states concerned with the effects of high seas fisheries activities, and also by international legislative and judicial efforts which are seeking to place limits on traditional high seas fisheries freedoms, in particular the 1995 Fish Stocks Agreement. In this context, the *Pacific Fur Seal* arbitration award shaped the form and content of subsequent agreements to conserve marine living resources, including the International Whaling Conventions of 1931 and 1937,⁴⁶⁶ and many bilateral fisheries agreements to conserve individual species or regional stocks.⁴⁶⁷ These were *ad hoc* efforts that could not effectively address the global expansion of international fisheries activities in the period after the Second World War.

Food and Agriculture Organization

The establishment of the Food and Agriculture Organization (FAO) in 1945 created a forum for the development of a more co-ordinated international approach to fisheries regulation at the regional and global levels. It will be recalled that the FAO was the only UN specialised agency with a mandate to promote the conservation of natural resources, and its competence over agricultural matters included fisheries and other marine products.⁴⁶⁸ The Committee on Fisheries (COFI) has served as a focal point for the activities of the organisation, and continues to do so, with more than 190 members.⁴⁶⁹ The FAO has assisted in developing and managing a number of regional fisheries agreements, and other agreements in the field of fisheries, such as the 1993 Compliance Agreement and the 2009 Agreement on Port State Measures. Some non-binding instruments developed in the framework of the FAO have had remarkable influence in guiding current policies and rules on international fisheries, such as the Code of Conduct for Responsible Fisheries. The FAO also provides advice and assistance to governments and international organisations through data collection, research, and education and training. Some count as negative aspects of the organisation its excessive bureaucracy and the slowness of its initiatives, although these features should be attributed to its members more than to the organisation itself.

⁴⁶⁴ Treaty for the Preservation and Protection of Fur Seals, 7 July 1911, 104 BFSP 175; Provisional Fur Seals Treaty, 156 UNTS 363; Interim Convention on the Conservation of North Pacific Fur Seals, 9 February 1957, 314 UNTS 105.

⁴⁶⁵ UNCLOS, Art. 92. ⁴⁶⁶ See pp. 423–8, below.

⁴⁶⁷ See e.g. Canada–United States, Convention for the Preservation of the Halibut Fishery of the Northern Pacific Ocean, 2 March 1923, 32 LNTS 93; Canada–United States, Convention for the Preservation of the Halibut Fishery of the Northern Pacific Ocean and the Bering Sea, 9 May 1930, 121 LNTS 209.

⁴⁶⁸ Chapter 3, pp. 70–2, above. ⁴⁶⁹ On the Committee of Fisheries, see www.fao.org/fi/body/cofi/cofi.asp.

The First UN Conference on the Law of the Sea (1958)

In 1958, the First United Nations Conference on the Law of the Sea adopted four conventions. Three of the conventions established general rules. The 1958 Convention on the Territorial Sea and the Contiguous Zone recognised the sovereignty of the coastal state and rights over living resources in the territorial sea up to twelve nautical miles from the baseline. Article 2 of the Convention on the High Seas, which includes all parts of the sea that are not included in the territorial sea or in the internal waters of a state, recognised the freedom of the high seas for coastal and non-coastal states under the general principles of international law, including freedom of fishing, which is 'to be exercised by all states with reasonable regard to the interests of other states in the exercise of the freedom'. The 1958 Convention on the Continental Shelf granted sovereign rights to coastal states over the continental shelf for exploration and exploitation of the natural resources without affecting the legal status of superjacent waters as high seas.⁴⁷⁰ Under Article 5(1), such exploration or exploitation 'must not result in any unjustifiable interference ... [with] fishing or the conservation of the living resources of the sea'.

Of the four conventions, the only one which established detailed obligations was the 1958 High Seas Fishing and Conservation Convention, which, like the High Seas Convention, recognised the general right of all states to engage in fishing on the high seas.⁴⁷¹ The right to fish on the high seas was not, however, unlimited. The Convention required states to adopt such measures for their nationals 'as may be necessary for the conservation of the living resources of the high seas', which co-operation should lead to negotiated agreements for the conservation of living resources.⁴⁷² The Convention also recognised the special interests of coastal states in maintaining the productivity of living resources of adjacent areas of high seas, and declared that coastal states could take unilateral measures of conservation for any stock of fish or other resources in any areas of the high seas to maintain the productivity of the living resources of the sea.⁴⁷³ However, such measures could only be taken if negotiations with other states concerned had not led to a conservation agreement within six months,⁴⁷⁴ and limits existed on the right of recourse to unilateral measures: the need for conservation measures should be urgent, based on scientific findings, and should be non-discriminatory against foreign fishermen.⁴⁷⁵ In 1960, a supplementary conference failed to agree on an extension of the territorial sea beyond the traditional three-mile limit or on the extension of certain exclusive fishing rights for coastal states beyond their territorial seas.⁴⁷⁶ Consequently, a number of states, including Iceland, extended their claims to exclusive fishing rights to a twelve-nautical-mile limit and, in some cases, even up to a 200-nautical-mile limit.

⁴⁷⁰ Art. 2(1) and (3). 'Natural resources' include 'living organisms belonging to the sedentary species; that is to say, organisms which, at the harvestable stage, either are immobile on or under the seabed or are unable to move except in constant physical contact with the seabed or subsoil': Art. 2(4). In the *North Sea Continental Shelf* cases, the ICJ found that Arts. 1 and 2 of the Convention represented customary international law: (1969) ICJ Reports 3, para. 72.

⁴⁷¹ Geneva, 29 April 1958, in force 20 March 1966, 559 UNTS 285.

⁴⁷² Arts. 1(2) and 2. The Convention defines 'conservation' as 'the aggregate of the measures rendering possible the optimum sustainable yield from those resources so as to secure a maximum supply of food and other marine products': Art. 2.

⁴⁷³ Arts. 6 and 7(1). ⁴⁷⁴ Art. 7(1).

⁴⁷⁵ Art. 7(2). Disputes, including those over unilateral measures, could go before a special commission with the power to take binding decisions: Arts. 9 and 11.

⁴⁷⁶ Whiteman, 4 *Digest of International Law* 91–137.

Fisheries Jurisdiction case

In 1972, Iceland extended its exclusive fishing zone to fifty nautical miles, catalysing disputes with the United Kingdom and the Federal Republic of Germany over access to fishing grounds. The disputes were submitted to the ICJ, which was thus presented with an opportunity to consider, *inter alia*, the issue of conservation and its relationship to traditional fisheries freedoms.⁴⁷⁷ The Court denied Iceland's right to extend its exclusive fishery zone to fifty nautical miles from the baseline, and held that Iceland could not unilaterally exclude vessels of the United Kingdom and the Federal Republic of Germany from the area within the fifty-nautical-mile limit from the baseline. The Court also held, however, that, as Iceland was a state which was specially dependent on coastal fisheries, it had certain preferential fishing rights in areas beyond its territorial sea; the United Kingdom and the Federal Republic of Germany had traditional fishing rights in those areas; an 'equitable solution' required these two potentially conflicting rights to be reconciled; and, for these reasons and for 'conservation needs', neither right was 'absolute'.⁴⁷⁸ Accordingly, the Court held that the states concerned had

an obligation to take full account of each other's rights and of any fishery conservation measures the necessity of which is shown to exist in those waters. It is one of the advances in maritime international law, resulting from the intensification of fishing, that the former *laissez faire* treatment of the living resources of the sea in the high seas has been replaced by a recognition of a duty to have due regard to the rights of other states and the needs of conservation for the benefits of all. Consequently, both parties have the obligation to keep under review the fishery resources in the disputed waters and to examine together, in the light of the scientific and other available information, the measures required for the conservation and development, and equitable exploitation, of those resources, taking into account any international agreement in force between them, such as the North-East Atlantic Fisheries Convention of 24 January 1959, as well as such other agreements as may be reached in the matter in the course of further negotiation.⁴⁷⁹

This *dictum* from the Court recognised the duty of states to have 'due regard' to the 'needs of conservation for the benefits of all', and in effect established limits on the right of states to fish on the high seas. The decision of the Court provides a basis for the establishment of further limitations on the traditional rights of states, in respect both of fisheries and of other shared natural resources.

The 1972 Stockholm Conference on the Human Environment

In the period prior to and following the judgment in the *Fisheries Jurisdiction* cases, other developments were beginning to emphasise the need for international collaboration to address over-exploitation of marine living resources. The 1972 Stockholm Declaration stated a general

⁴⁷⁷ *Fisheries Jurisdiction cases (United Kingdom v. Iceland)* (Merits), (1974) ICJ Reports 3; (*Federal Republic of Germany v. Iceland*) (Merits), (1974) ICJ Reports 175; P. Sands *et al.*, *Basic Documents in International Environmental Law* (1995), vol. IIA, 810.

⁴⁷⁸ *Fisheries Jurisdiction cases (United Kingdom v. Iceland)* (Merits), (1974) ICJ Reports 3 at 30–1; (*Federal Republic of Germany v. Iceland*) (Merits), (1974) ICJ Reports 174 at 198–9.

⁴⁷⁹ *Fisheries Jurisdiction cases (United Kingdom v. Iceland)* (Merits), (1974) ICJ Reports 3 at 31; (*Federal Republic of Germany v. Iceland*) (Merits), (1974) ICJ Reports 174 at 199.

obligation to safeguard the natural resources of the Earth for present and future generations, but its main concern with regard to the marine environment was pollution.⁴⁸⁰ The Action Plan for the Human Environment called on international bodies responsible for fisheries, including the FAO, to contribute to the preparations of the United Nations Conference on the Law of the Sea.⁴⁸¹ The actual development of today's international regime for the conservation and management of marine living resources did not begin until the negotiations of what is now UNCLOS.

UNCLOS

The 1982 UNCLOS is the principal international legal instrument setting forth the general rights and obligations of states and other members of the international community for the conservation and sustainable use of marine living resources. It was negotiated over a period of nearly two decades and the question of fisheries rights and obligations, including conservation, was a central issue. Most developing countries and some developed countries, including Australia, Canada and Norway, sought an extension of the jurisdictional rights of coastal states over fisheries; other states, including the United States, proposed a management approach which took into account the migratory characteristics of different species so that highly migratory species would be regulated by the various international fisheries commissions, and other species would be primarily subject to the jurisdiction of coastal states; states whose ships engaged in long-distance fishing, including Japan and the former Soviet Union, generally opposed any extension of coastal states' management rights which might interfere with their long-distance fishing rights.⁴⁸² On balance, the provisions of the 1982 UNCLOS extended the rights of coastal states, principally by formalising the legal status of exclusive economic zones. The Convention also recognised the need for special rules to manage and conserve particular types of species.

UNCLOS has exerted a significant influence on the practice of states, particularly since it came into force in 1994. In respect of the provisions on the management and conservation of fisheries, it may be considered to reflect customary international law. UNCLOS provided the basis for the deliberations at UNCED on international legal aspects of conservation, and is described by Agenda 21 as setting forth 'rights and obligations of states with respect to conservation and utilisation' of marine living resources.⁴⁸³ In contrast to its approach to the regulation of the protection and preservation of the marine environment in Part XII, UNCLOS does not regulate marine living resources comprehensively in a single section of the Convention. Instead, it includes provisions on the conservation and sustainable use of marine living resources in the framework of states' rights and obligations in different jurisdictional areas: in territorial waters, in archipelagic waters, on the continental shelf, in the exclusive economic zone, and on the high seas. UNCLOS also includes special rules for stocks that move across the jurisdictions of two or more states, such as highly migratory, anadromous and catadromous species, and also for marine mammals.

⁴⁸⁰ Stockholm Declaration, Principles 2 and 7. ⁴⁸¹ Recommendation 47.

⁴⁸² Churchill and Lowe, *The Law of the Sea* (1988, 2nd edn), 231–2.

⁴⁸³ Agenda 21, paras. 17.44 and 17.69; see also the Preamble to the 1992 OSPAR Convention, which describes UNCLOS as reflecting customary international law.

Territorial waters, archipelagic waters and the continental shelf

Under UNCLOS, a coastal state has sovereignty over the twelve-nautical-mile territorial sea and the marine living resources found therein.⁴⁸⁴ Each coastal state is free to set laws for the conservation and sustainable use of living resources subject to compliance with its international legal obligations. Each coastal state can adopt laws governing innocent passage through its territorial waters in respect of, *inter alia*, the conservation of marine living resources, the prevention of infringement of its fisheries laws, and the preservation of its environment.⁴⁸⁵

Archipelagic states have sovereignty over the waters within archipelagic baselines, including marine living resources found therein, and the rules of innocent passage applicable to territorial waters apply also to archipelagic waters.⁴⁸⁶ However, archipelagic states must recognise the traditional fishing rights of neighbouring states that are immediately adjacent to the archipelagic waters, for areas falling within archipelagic waters, subject to these rights being regulated by non-transferable bilateral agreements.⁴⁸⁷

Coastal states continue to have exclusive sovereign rights over their continental shelf to explore and exploit natural resources.⁴⁸⁸ These rights do not affect the legal status of superjacent waters and their exercise must not infringe or unjustifiably interfere with navigation and other rights and freedoms of other states.⁴⁸⁹

Exclusive economic zone

UNCLOS established new rules of international law for the exclusive economic zone of coastal states. Under Article 56(1), the coastal state has within the EEZ 'sovereign rights for the purpose of exploring and exploiting, conserving and managing the natural resources, whether living or non-living'.

Subject to its right to determine the total allowable catch (TAC) of living resources in its EEZ, the coastal state must ensure through conservation and management measures that living resources are not endangered by over-exploitation, taking into account the best scientific evidence available to it.⁴⁹⁰ This requirement is clarified by the additional obligation of states to ensure that populations of harvested species are restored or maintained

at levels which can produce the maximum sustainable yield, as qualified by relevant environmental and economic factors, including the economic needs of coastal fishing communities and the special requirements of developing states, and taking into account fishing patterns, the interdependence of stocks, and any generally recommended international minimum standards, whether sub-regional, regional or global.⁴⁹¹

⁴⁸⁴ Arts. 2 and 3.

⁴⁸⁵ Art. 21(1)(d)–(f). Fishing activities which occur in the territorial seas are inconsistent with innocent passage: Art. 19(2)(i).

⁴⁸⁶ Arts. 49 and 52(1). ⁴⁸⁷ Art. 51(1).

⁴⁸⁸ Art. 77(1) and (2). The 'natural resources' include the sedentary species as defined in the 1958 Continental Shelf Convention, p. 348, above.

⁴⁸⁹ Art. 78. Cf. the equivalent provision in the 1958 Continental Shelf Convention, p. 401, above.

⁴⁹⁰ Art. 61(1) and (2). ⁴⁹¹ Art. 61(3).

These measures must also take into consideration the need to keep associate or dependent species above a level at which they would be seriously threatened.⁴⁹² Coastal states must promote the 'optimum utilisation' of living resources and determine their capacities to harvest the living resources of their EEZ.⁴⁹³ They can give other states access to the surplus of the allowable catch, taking into account all relevant factors, including the economic needs of the coastal state, of neighbouring states, and of states that have traditionally been involved in the fishery.⁴⁹⁴

Nationals of other states fishing in the EEZ must comply with the measures, laws and regulations adopted by the coastal state, including conservation laws. Coastal states must give due notice of such measures and laws.⁴⁹⁵ The conservation and development of a stock or stocks of associated species which occur in the EEZ of two or more coastal states, or in the EEZ and in an area beyond and adjacent to the EEZ, often referred to as 'straddling stocks', should be subject to agreed measures by those states which are necessary to co-ordinate and ensure the conservation and development of such stocks without prejudice to other provisions relating to the EEZ.⁴⁹⁶ Similarly, states fishing for highly migratory species, such as tunas, swordfish, oceanic sharks and cetaceans, are required to co-operate.⁴⁹⁷ The need for implementation of these obligations with regard to straddling and highly migratory species resulted in the adoption of the 1995 Fish Stocks Agreement.⁴⁹⁸

UNCLOS also includes in relation to the EEZ rules that are applicable to marine mammals, anadromous stocks, catadromous stocks and sedentary species. Marine mammals, such as whales and seals, are subject to the provisions of Articles 65 and 120.⁴⁹⁹ For anadromous species (such as salmon, which spawn in freshwaters but spend most of their time in the sea), the management and conservation is primarily a matter for the states in whose rivers they originate, subject to the rule that fishing for such stocks on the high seas is prohibited in the waters beyond the high seas unless this would result in economic dislocation for a state other than a state of origin.⁵⁰⁰ For catadromous stocks (such as eels, which spawn at sea but spend most of their time in freshwaters), management responsibilities rest with the coastal state in whose waters they spend the greater part of their life-cycles, and fishing on the high seas of such stocks is prohibited.⁵⁰¹ UNCLOS treats sedentary species as part of the natural resources of the coastal state's continental shelf.⁵⁰²

High seas

Part VII of UNCLOS establishes rules for high seas activities. Article 87 maintains the freedom of all states to fish on the high seas, subject to the limited conditions established by the Convention and by other rules of international law, and 'with due regard for the interests of other states in their exercise of the freedom of the high seas, and also with due regard for the rights under this Convention with respect to activities in the Area'. Article 116 limits in three ways the right of nationals to fish on the high seas. First, treaty obligations must be complied with.⁵⁰³ Second, the rights, duties and interests of coastal states must be respected in relation to

⁴⁹² Art. 61(4). ⁴⁹³ Art. 62(1).

⁴⁹⁴ Art. 62(2) and (3). Arts. 69 and 70 relate to the rights of land-locked and geographically disadvantaged states. In practice, there would be no obligation for the coastal state to allow foreign access to its fisheries if it determines to set an allowable catch below its harvesting capacity. See W. T. Burke, *The New International Law of Fisheries* (1994), 63.

⁴⁹⁵ Art. 62(4) and (5). ⁴⁹⁶ Art. 63. ⁴⁹⁷ Art. 64. Annex I of UNCLOS provides a list of highly migratory species.

⁴⁹⁸ See p. 435, below. ⁴⁹⁹ See p. 424, below. ⁵⁰⁰ Art. 66. ⁵⁰¹ Art. 67. ⁵⁰² Art. 68.

⁵⁰³ See pp. 420–2, below.

the provisions on shared stocks, highly migratory species, marine mammals, anadromous stocks and catadromous stocks (as set out in Articles 63(2) and 64–67 and supplemented by the 1995 Fish Stocks Agreement). Third, provisions concerning the conservation and management of the living resources of the high seas as set out in Articles 116–120 must be respected.

Under Article 117, states must take such measures for their nationals as may be necessary for the conservation and management of the living resources of the high seas, and under Article 118 they must co-operate for the establishment of regional or sub-regional fisheries organisations where nationals exploit identical living resources, or different living resources in the same area, and must negotiate to take measures necessary for the conservation of the living resources concerned. In determining the allowable catch and in establishing other conservation measures for the high seas, Article 119 requires that measures be based on the best scientific evidence available to produce the maximum sustainable yield, and that consideration be given to the effects on associated or dependent species. Such measures and their implementation must be non-discriminatory, in form or in fact, against fishermen of any state.⁵⁰⁴ Article 65 also applies to the conservation of marine mammals on the high seas.⁵⁰⁵

Controversies with regard to the implementation of UNCLOS have led states to seek recourse to the means foreseen in Article 287 of UNCLOS, namely, the International Tribunal for the Law of the Sea (ITLOS), the ICJ and arbitral tribunals. There are only a handful of cases, but they exemplify well the key tensions present in the implementation of the current law on marine living resources. The jurisprudence is discussed below in more detail.

In addition to these decisions, a number of cases have been brought before ITLOS seeking compliance with the ‘prompt release’ provisions established by UNCLOS in Articles 73 and 292, whereby the coastal state is required to release promptly, upon payment of a bond or other security, any vessel it has detained for the purpose of ensuring compliance with its own laws and regulations. The first ‘prompt release’ case decided by ITLOS, in 1997, concerned a request for the prompt release of an oil tanker. Since then, ITLOS has considered eight cases in which fishing vessels (including support vessels) were engaged in illegal activities in EEZs and had been arrested by the coastal states concerned.⁵⁰⁶ ITLOS considered that it had jurisdiction under Article 292 of UNCLOS in five of those cases and ordered the prompt release of the respective vessels and determined the bond or security to be placed for their release. In some of these cases, discussion arose around the gravity of engaging in illegal fishing and how the Tribunal should determine the amount of the security imposed in each case. Overall, ITLOS has refrained from making any express consideration of the gravity of illegal fishing, but in the *Volga* case it stated that it ‘understands the international concerns about illegal, unregulated and unreported fishing’ and proceeded to accept the ‘gravity’ of the infraction according to the domestic legislation of the coastal state (Australia) and fixed the bond requested by this country.⁵⁰⁷

⁵⁰⁴ Art. 119(3)(a). ⁵⁰⁵ Art. 120.

⁵⁰⁶ Case No. 5: *The ‘Camouco’ case (Panama v. France)*, Prompt Release, 17 January 2000; Case No. 6: *The ‘Monte Confurco’ case (Seychelles v. France)*, Prompt Release, 18 November 2000; Case No. 8: *The ‘Grand Prince’ case (Belize v. France)*, Prompt Release, 20 April 2001; Case No. 9: *The ‘Chaisiri Reefer 2’ case (Panama v. Yemen)*, Prompt Release; Case No. 11: *The ‘Volga’ case (Russian Federation v. Australia)*, Prompt Release, 23 December 2002; Case No. 13: *The ‘Juno Trader’ case (Saint Vincent and the Grenadines v. Guinea-Bissau)*, Prompt Release, 18 December 2004; Case No. 14: *The ‘Hoshinmaru’ case (Japan v. Russian Federation)*, Prompt Release, 6 August 2004; Case No. 15: *The ‘Tomimaru’ case (Japan v. Russian Federation)*, Prompt Release, 6 August 2007.

⁵⁰⁷ *Volga* case, paras. 68–73. See also the Dissenting Opinion of Judge Anderson in the *Camouco* case (*Panama v. France*), Judgment of 7 February 2000, 39 ILM 666 (2000) (‘Article 292 aims to protect certain economic and

1995 Fish Stocks Agreement and other global arrangements⁵⁰⁸

UNCLOS provided a clear jurisdictional framework for the management of fisheries, but did not bring with it a solution to the growing pressures placed on fishery resources. In the preparations for UNCED, concern was raised about the importance of giving full effectiveness to the provisions of UNCLOS. No international agreement on the management of marine living resources was reached at UNCED, but Agenda 21, in its Chapter 17, provided a roadmap which influenced some of the steps taken subsequently, particularly with regard to enhancing international co-operation in the management of straddling, highly migratory and high seas living resources.

Agenda 21 identified the main problems in the management of fisheries, which twenty years later remain alarmingly contemporary:

- inadequate monitoring and enforcement of effective conservation measures;
- over-utilisation of resources;
- over-capitalisation;
- excessive fleet size;
- vessel reflagging to escape controls;
- insufficiently selective gear;
- unreliable databases; and
- lack of sufficient co-operation between states.⁵⁰⁹

humanitarian values: ships and crews should be released from detention upon posting "reasonable" security pending trial on fishery or pollution charges. At the same time, Part V of the Convention protects other values, including the conservation of the living resources of the sea and the effective enforcement of national fisheries laws and regulations. In my opinion, greater significance should have been accorded to these latter values in deciding the question of the reasonableness of the security in this case.). See T. A. Mensah, 'The Tribunal and the Prompt Release of Vessels', 22 *International Journal of Marine and Coastal Law* 425 (2007); and see further Chapter 5, p. 177, above.

⁵⁰⁸ E. Hey, *The Regime for the Exploitation of Transboundary Marine Fisheries Resources: The United Nations Law of the Sea Convention* (1989); E. Meltzer, 'Global Overview of Straddling and Highly Migratory Fish Stocks: The Non-Sustainable Nature of High Seas Fisheries', 25 *Ocean Development and International Law* 255 (1994); M. Hayashi, 'The 1995 Agreement on the Conservation and Management of Straddling and Highly Migratory Fish Stocks: Significance for the Law of the Sea Convention', 29 *Ocean and Coastal Management* 51 (1995); D. Momtaz, 'L'Accord Relatif à la Conservation et la Gestion des Stocks Chévauchants et Grands Migrateurs', *Annuaire Français de Droit International* 676 (1995); F. Orrego Vicuña, 'Coastal States Competences over High Seas Fisheries and the Changing Role of International Law', 55 *ZaöRV* 520 (1995); D. Anderson, 'The Straddling Stocks Agreement of 1995: An Initial Assessment', 45 *International and Comparative Law Quarterly* 463 (1996); P. G. Davies and C. Redgwell, 'The International Legal Regulation of Straddling Fish Stocks', 67 *British Year Book of International Law* 199 (1996); D. Balton, 'Strengthening the Law of the Sea: The New Agreement on Straddling Fish Stocks and Highly Migratory Fish Stocks', 27 *Ocean Development and International Law* 125 (1996); D. Freestone and Z. Makuch, 'The New International Environmental Law of Fisheries: The 1995 UN Straddling Stocks Convention', 7 *Yearbook of International Environmental Law* 3 (1996); E. de Lone, 'Improving the Management of the Atlantic Tuna: The Duty to Strengthen the ICCAT in Light of the 1995 Straddling Stocks Agreement', 6 *New York University Environmental Law Journal* 657 (1998); A. Boyle, 'Problems of Compulsory Jurisdiction and the Settlement of Disputes Relating to Straddling Fish Stocks', 14 *International Journal of Marine and Coastal Law* 1 (1999); T. Henriksen, G. Hønneland and A. Sydnes, *Law and Politics in Ocean Governance: The UN Fish Stocks Agreement and Regional Fisheries Management Regimens* (2006); Y. Takei, 'UN Fish Stocks Agreement: 2006 Review Conference', 21 *International Journal of Marine and Coastal Law* 551 (2006); W. Micke, 'International and Australian Environmental Laws to Improve the Protection and Conservation of Stocks of Highly Migratory Oceanic Species of the Southern Hemisphere', 16 *Queensland Environmental Practice Reporter* 120 (2010).

⁵⁰⁹ Agenda 21, para. 17.45.

To address most of these problems, Agenda 21 emphasised, in particular, the need to enhance international co-operation within a framework based on 'multi-species management and other approaches that take into account the relationships among species' – a notion close to what is today described as the 'ecosystem approach'.⁵¹⁰ To this end, Agenda 21 called for states to convene an intergovernmental conference to promote the effective implementation of UNCLOS on the issue of straddling and highly migratory fish stocks.⁵¹¹

1995 Fish Stocks Agreement

The UN General Assembly convened a conference on straddling and highly migratory fish stocks in 1993, whose work was to be fully consistent with the provisions of UNCLOS.⁵¹² The UN Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (1995 Fish Stocks Agreement)⁵¹³ was rapidly adopted on 4 August 1995 and came into force on 11 December 2001. The object of the Agreement is 'to ensure the long-term conservation and sustainable use of straddling fish stocks and highly migratory fish stocks through effective implementation of the relevant provisions of the Convention'. Although it is designed to implement the relevant provisions of UNCLOS, states are not required to be a party to UNCLOS to be a party to the 1995 Fish Stocks Agreement.

The Agreement applies to the conservation and management of straddling fish stocks and highly migratory fish stocks beyond areas under national jurisdiction, except that its Articles 6 and 7 apply also to the conservation and management of such stocks within areas under national jurisdiction, and coastal states must apply the general principles enumerated in Article 5 to stocks within areas under national jurisdiction.⁵¹⁴ No reservations are permitted.⁵¹⁵

The Agreement introduces a new set of international obligations for the conservation of living resources, which were not present in UNCLOS and have had a marked influence in subsequently adopted agreements, including those at the regional level. Under Article 5, coastal states and states fishing on the high seas commit to adopt a broad range of measures, which merit restating in full:

- (a) adopt measures to ensure long-term sustainability of straddling fish stocks and highly migratory fish stocks and promote the objective of their optimum utilization;
- (b) ensure that such measures are based on the best scientific evidence available and are designed to maintain or restore stocks at levels capable of producing maximum sustainable yield, as qualified by relevant environmental and economic factors, including the special requirements of developing States, and taking into account fishing patterns, the interdependence of stocks and any generally recommended international minimum standards, whether subregional, regional or global;
- (c) apply the precautionary approach in accordance with article 6;
- (d) assess the impacts of fishing, other human activities and environmental factors on target stocks and species belonging to the same ecosystem or associated with or dependent upon the target stocks;

⁵¹⁰ Paras. 17.45 and 17.46. ⁵¹¹ Para. 17.49(e). ⁵¹² UNGA Res. 47/192 (1992).

⁵¹³ 34 ILM 1542 (1995), in force 11 December 2001. As at 15 May 2011, the Agreement had 141 parties.

⁵¹⁴ Art. 3(1) and (2). ⁵¹⁵ Art. 42.

- (e) adopt, where necessary, conservation and management measures for species belonging to the same ecosystem or associated with or dependent upon the target stocks, with a view to maintaining or restoring populations of such species above levels at which their reproduction may become seriously threatened;
- (f) minimise pollution, waste, discards, catch by lost or abandoned gear, catch of non-target species, both fish and non-fish species (hereinafter referred to as non-target species) and impacts on associated or dependent species, in particular endangered species, through measures including, to the extent practicable, the development and use of selective, environmentally safe and cost-effective fishing gear and techniques;
- (g) protect biodiversity in the marine environment;
- (h) take measures to prevent or eliminate overfishing and excess fishing capacity and to ensure that levels of fishing effort do not exceed those commensurate with the sustainable use of fishery resources;
- (i) take into account the interests of artisanal and subsistence fishers;
- (j) collect and share, in a timely manner, complete and accurate data concerning fishing activities on, *inter alia*, vessel position, catch of target and non-target species and fishing effort, as set out in Annex I, as well as information from national and international research programmes;
- (k) promote and conduct scientific research and develop appropriate technologies in support of fishery conservation and management; and
- (l) implement and enforce conservation and management measures through effective monitoring, control and surveillance.

In applying a precautionary approach, absence of adequate scientific information shall not be used as a reason for postponing or failing to take conservation and management measures. States must establish stock-specific 'precautionary reference points', which correspond to the state of the resource and the fishery and which can be used as a guide for fisheries management. Such scientifically determined values are not to be exceeded, but, if they are, action must be taken to restore the stocks. Implementation of the precautionary approach also requires improving decision-making by obtaining and sharing the best scientific information available, and taking uncertainties into account. In addition to developing measures for target stocks, states are required to take measures to minimise the impact of fishing for such stocks on associated and dependent species and their environment.⁵¹⁶

The 1995 Agreement envisages a significant role for sub-regional and regional fisheries organisations and arrangements in facilitating co-operation by states in the development and enforcement of conservation and management measures for straddling and highly migratory stocks.⁵¹⁷ Where a regional fisheries organisation is competent to establish conservation and management measures for a particular stock, states fishing for those stocks are required to become members of or participants in the organisation, or agree to apply its measures, in order to be permitted to continue to fish for the stock.⁵¹⁸ This far-reaching provision has the

⁵¹⁶ Art. 6.

⁵¹⁷ Arts. 8–10. The Agreement also provides for the conditions for new membership or participation of organisations, transparency in their activities and decision-making and strengthening of existing organisations (Arts. 11–13), as well as rules on enclosed and semi-enclosed seas and certain high seas areas (Arts. 15 and 16).

⁵¹⁸ Art. 8(4) and Art. 17 (Part IV, 'Non-Members and Non-Participants').

consequence, in effect, of departing from traditional principles reflecting absolute rights of high seas fisheries freedoms, even for those states that are not parties to regional agreements. This is precisely one of the provisions that has prevented some states from joining the Agreement.

The Agreement places primary responsibility on the flag state for ensuring compliance with conservation and management measures established by sub-regional or regional organisations, which includes the obligation of the flag state to co-operate with the coastal state in cases of unauthorised fishing.⁵¹⁹ However, the Agreement also recognises the role of port states in ensuring compliance,⁵²⁰ and establishes innovative provisions to ensure international co-operation in enforcement, also through sub-regional or regional fisheries organisations when established. These measures include the right for states party to such organisations to board and inspect vessels flying the flag of another state party to the Agreement.⁵²¹ The dispute settlement provisions of UNCLOS apply also to the 1995 Fish Stocks Agreement.⁵²²

1993 Compliance Agreement

Under UNCLOS, and as echoed by the 1995 Fish Stocks Agreement, primary responsibility for complying with measures for the conservation of living resources on the high seas lies with the flag State.⁵²³ Unfortunately not all flag states behave responsibly with respect to the vessels they flag and do not deter practices that may have a negative impact on high seas species and ecosystems. Agenda 21 noted the problem of so-called ‘flags of convenience’ and called upon states to take effective action, consistent with international law, to deter reflagging of vessels by their nationals as a means of avoiding compliance with applicable conservation and management rules for fishing activities on the high seas.⁵²⁴

In response to this call, states negotiated and adopted within the framework of the FAO the 1993 Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas (1993 Compliance Agreement), which did not enter into force until ten years later.⁵²⁵ This Agreement details, even if not in exhaustive depth, the content of flag state responsibility, which includes the general duty to take such necessary measures to ensure that vessels flying its flag do not undermine ‘the effectiveness of international conservation and management measures’. It also establishes the duty for flag states to ensure that vessels they flag are duly authorised, are included in a record of fishing vessels and that no vessel that has undermined the effectiveness of conservation and management measures, or that was previously registered with a state not party, is authorised to fish unless certain conditions are observed.⁵²⁶ The Agreement establishes a general obligation for states to co-operate and some basic information-exchange requirements, which can be supplemented voluntarily with other, more detailed information.⁵²⁷

This Agreement has been criticised for setting excessively broad obligations, for being applicable only to fisheries on the high seas and for permitting the exclusion of vessels of less than 24 metres, which is not a negligible size. Although in force, it has received a significantly low number of ratifications,⁵²⁸ which is an indicator of its limited success. In 2009, the FAO Committee on Fisheries (COFI) agreed that an Expert Consultation on the development of flag state performance criteria should be convened, to be followed by a Technical Consultation. The

⁵¹⁹ Arts. 18, 19 and 20(6). ⁵²⁰ Art. 23. ⁵²¹ Arts. 21 and 22. ⁵²² Chapter 5, pp. 147–8, above.

⁵²³ Art. 94. ⁵²⁴ Agenda 21, para. 17.53. See also paras. 17.51 and 17.52.

⁵²⁵ Approved by the FAO Conference in November 1993, FAO Res. 15/93, in force 24 April 2003.

⁵²⁶ Arts. III and IV. ⁵²⁷ Arts. V and VI.

⁵²⁸ As at 1 July 2011, it had been accepted by thirty-eight states and the EU.

Technical Consultation met for the first time in May 2011. The precise objective of this consultative process is not clear, including whether it may lead to the development of criteria that can be used to assess the level of compliance of flag states with their international obligations, or whether the outcome may be a general set of criteria which collate the obligations already recognised in international legal instruments.⁵²⁹

1995 Code of Conduct for Responsible Fisheries

In parallel with the preparations for UNCED and the subsequent elaboration of the 1995 Fish Stocks Agreement, the FAO sponsored the elaboration of a voluntary Code of Conduct on Responsible Fisheries, which was unanimously adopted by the FAO Conference on 31 October 1995.⁵³⁰ The Code is intended to be global in scope, and is directed towards members and non-members of FAO, fishing entities, sub-regional, regional and global organisations, whether governmental or non-governmental, and all persons concerned with the conservation of fishery resources and the management and development of fisheries. It provides principles and standards applicable to the conservation, management and development of all fisheries, and covers the capture and processing of and trade in fish and fishery products, fishing operations, aquaculture, fisheries research and the integration of fisheries into coastal area management. In 1999, fisheries ministers from 126 states adopted the Rome Declaration on the Implementation of the Code of Conduct for Responsible Fisheries, which supported the implementation of existing plans of action,⁵³¹ such as those on fishing capacity or sharks; the ratification of UNCLOS, of the 1993 Compliance Agreement and of the 1995 Fish Stocks Agreement, and the development of a new plan of action to address all forms of illegal, unreported and unregulated fishing.⁵³² The Rome Declaration took some of the principles stated in the Code of Conduct further, for example by pledging to implement the 'ecosystem approach', not previously recognised in the Code of Conduct.⁵³³ The 1995 Code of Conduct has provided a framework for action on fisheries regulation at the FAO. In addition, its influence has been felt further afield, and many years after its adoption, such as in the agreement creating the 2009 South Pacific Regional Fisheries Management Organization (SPRFMO).

Regional fishery arrangements⁵³⁴

The establishment of regional agreements for the management of shared living resources is not a new concept. The treaties that followed the *Pacific Fur Seal* arbitration in the early 1900s are a

⁵²⁹ FAO Fisheries and Aquaculture Report No. 918 FIEL/R918, *Report of the Expert Consultation on Flag State Performance*, Rome, 23–26 June 2009; and *Technical Consultation on Flag State Performance (FI-805)*, Rome, 2–6 May 2011, www.fao.org/fishery/nems/39660/en.

⁵³⁰ See www.fao.org/fi/agreem/codecond/ficonde.asp.

⁵³¹ International Plans of Action for the Management of Fishing Capacity, for the Conservation and Management of Sharks and for Reducing Incidental Catch of Seabirds in Longline Fisheries.

⁵³² Rome Declaration on the Implementation of the Code of Conduct for Responsible Fisheries, adopted by the FAO Ministerial Meeting on Fisheries, Rome, 10–11 March 1999, www.fao.org/DOCREP/005/X2220E/X2220E00.htm. See also p. 429, below.

⁵³³ *Ibid.*, para. 12(c).

⁵³⁴ E. J. Molenaar, 'Addressing Regulatory Gaps in High Seas Fisheries', 20 *International Journal of Marine and Coastal Law* 533 (2005); T. McDorman, 'Implementing Existing Tools: Turning Words into Actions – Decision-Making Process of Regional Fisheries Management Organisations (RFMOs)', 20 *International Journal of Marine and Coastal Law* 423 (2005); A. Sydenes, 'Regional Fisheries Organisations and International Fisheries Governance', in

good example of the need for states to enter into agreements to prevent the over-exploitation of renewable resources on the high seas.⁵³⁵ However, the first efforts at international co-operation in the field of fisheries focused on co-operation for research, not resource management. In 1902, the International Council for the Exploration of the Sea (ICES) was established,⁵³⁶ and in 1919 the International Commission for the Scientific Exploration of the Mediterranean was also set up. ICES has served as a model for international scientific bodies in other regions, and continues to be influential today in research on the marine environment and on marine living resources in the North Atlantic. The 1919 Commission for the Mediterranean was replaced by a new international body, the General Fisheries Commission for the Mediterranean, in charge of the rational management of the Mediterranean fisheries.⁵³⁷ Since those first initiatives, international bodies concerned with the conservation and management of marine living resources continued to be established during the twentieth century and more recently in the 2000s, gradually shifting from their initial advisory role to that of a decision-maker and enforcer.⁵³⁸ In addition to strictly scientific and advisory bodies,⁵³⁹ today there are about twenty international organisations in charge of actual management of marine living resources. The latter are known – in FAO terminology – as ‘regional fishery bodies’, or more broadly as ‘regional fishery management organisations’ (RFMOs).

UNCLOS establishes the obligation for states to co-operate in establishing the appropriate conservation and development of shared stocks ‘either directly or through appropriate sub-regional or regional organisations’.⁵⁴⁰ As explained above, the 1995 Fish Stocks Agreement affirms and strengthens the role of sub-regional and regional fisheries organisations and arrangements in respect of straddling and highly migratory fish stocks. In addition, the 1995 FAO Code of Conduct reiterates the duty of states to co-operate through fisheries management organisations or other arrangements in the conservation and management of aquatic living resources.⁵⁴¹

S. A. Ebbin, A. Hoel and A. Sydnes (eds.), *A Sea Change: The Exclusive Economic Zone and Governance Institutions for Living Marine Resources* (2005); A. Willock and M. Lack, *Follow the Leader: Learning from Experience and Best Practice in Regional Fisheries Management Organizations* (2006); T. Henriksen, ‘Revisiting the Freedom of Fishing and Legal Obligations on States Not Party to Regional Fisheries Management Organizations’, 40 *Ocean Development and International Law* 80 (2009); E. J. Molenaar, ‘Non-Participation in the Fish Stocks Agreement: Status and Reasons’, 26 *International Journal of Marine and Coastal Law* 195 (2011).

⁵³⁵ See p. 400, above.

⁵³⁶ See www.ices.dk.

⁵³⁷ Rome, 24 September 1949, in force 20 February 1952, 126 UNTS 257, amended 1963 and 1976; twenty-four states and the EU are party.

⁵³⁸ J. Swan, *Decision-Making in Regional Fishery Bodies or Arrangements: The Evolving Role of RFBs and International Agreement on Decision-Making Processes*, FAO Fisheries Circular No. 995 (2004).

⁵³⁹ See Asia-Pacific Fishery Commission (APFIC); Bay of Bengal Programme Inter-Governmental Organization (BOBP-IGO); Fishery Committee for the Eastern Central Atlantic (CECAF); Committee for Inland Fisheries and Aquaculture of Africa (CIFA); Ministerial Conference on Fisheries Cooperation Among African States Bordering the Atlantic Ocean (COMHAFAT); Regional Fisheries Committee for the Gulf of Guinea (COREP); Commission for Inland Fisheries of Latin America (COPECAL); Permanent Commission for the South Pacific (CPPS); Caribbean Regional Fisheries Mechanism (CRFM); European Inland Fisheries and Aquaculture Advisory Commission (EIFAAC); Fishery Committee of the West Central Gulf of Guinea (FCWC); Forum Fisheries Agency (FFA); International Council for the Exploration of the Sea (ICES); Mekong River Commission (MRC); North Atlantic Marine Mammal Commission (NAMMCO); Latin American Organization for Fisheries Development (OLDEPESCA); North Pacific Marine Science Organization (PICES); Southeast Asian Fisheries Development Center (SEAFDEC); Secretariat of the Pacific Community (SPC); Sub-regional Fisheries Commission (SRFC); Southwest Indian Ocean Fisheries Commission (SWIOFC); Western Central Atlantic Fishery Commission (WECAFC).

⁵⁴⁰ Arts. 62–67 and 118. See pp. 403–5, above. ⁵⁴¹ See pp. 408–10, above.

The first RFMOs with competence over the management of marine living resources were established in the early and mid-twentieth century, with initiatives such as the International Pacific Halibut Commission of 1923, and the General Fisheries Commission for the Mediterranean of 1949, mentioned above. However, more than half of currently existing RFMOs were set up after UNCED, mostly after the 1995 Fish Stocks Agreement. The principal regulatory commissions or organisations are, in alphabetical order, the following:

- Central Asian and Caucasus Regional Fisheries and Aquaculture Commission (CACFAC), 2009⁵⁴²
- Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR), 1980⁵⁴³
- Commission for the Conservation of Southern Bluefin Tuna (CCSBT), 1993⁵⁴⁴
- Convention on the Conservation and Management of Pollock Resources in the Central Bering Sea (CCBSP), 1994⁵⁴⁵
- General Fisheries Commission for the Mediterranean (GFCM), 1949⁵⁴⁶
- Indian Ocean Tuna Commission (IOTC), 1996⁵⁴⁷
- Inter-American Tropical Tuna Commission (IATTC), 1949⁵⁴⁸
- International Commission for the Conservation of Atlantic Tunas (ICCAT), 1966⁵⁴⁹
- International Pacific Halibut Commission (IPHC), 1923⁵⁵⁰
- Lake Victoria Fisheries Organization (LVFO), 1994⁵⁵¹
- North Atlantic Salmon Conservation Organization (NASCO), 1982⁵⁵²

⁵⁴² Agreement on the Central Asian and Caucasus Regional Fisheries and Aquaculture Commission, approved by the FAO Council on 1 October 2009, in force on 3 December 2010.

⁵⁴³ Convention on the Conservation of Antarctic Marine Living Resources, Canberra, 20 May 1980, in force 7 April 1982, 19 ILM 841 (1980). See www.ccamlr.org.

⁵⁴⁴ Convention for the Conservation of Southern Bluefin Tuna, May 1993, in force 20 May 1994. See www.ccsbt.org; A. Cameron, 'Is There Hope for the Fish: The Post-Arbitration Effectiveness of the Convention for the Conservation of Southern Bluefin Tuna', 15 *New York University Environmental Law Journal* 247 (2007); D. Kolody, T. Polachek, M. Basson and C. Davies, 'Salvaged Pearls: Lessons Learned from a Floundering Attempt to Develop a Management Procedure for Southern Bluefin Tuna', 94 *Fisheries Research* 339 (2008).

⁵⁴⁵ Adopted 16 June 1994, in force 8 December 1995. See www.afsc.noaa.gov/REFM/CBS/Default.htm.

⁵⁴⁶ Agreement for the Establishment of the General Fisheries Commission for the Mediterranean (GFCM), approved at the Fifth Session of the FAO Conference in 1949, in force 20 February 1952, amended in 1963, 1976 and 1997. See www.gfcm.org; N. Ferri, 'Current Legal Developments: General Fisheries Commission for the Mediterranean', 24 *International Journal of Marine and Coastal Law* 163 (2009).

⁵⁴⁷ Agreement for the Establishment of the Indian Ocean Tuna Commission, approved by the FAO Council in November 1993, in force March 1996. See www.iotc.org.

⁵⁴⁸ Convention for the Establishment of an Inter-American Tropical Tuna Commission, Washington, 31 May 1949, in force 3 March 1950; replaced by the Convention for the Strengthening of the Inter-American Tropical Tuna Commission, in force 27 August 2010. See www.iattc.org.

⁵⁴⁹ International Convention for the Conservation of Atlantic Tunas, Rio de Janeiro, 14 May 1966, in force 21 March 1969, amended in 1984 and 1992. See www.iccat.int; A. Serdy, 'Fishery Commission Quota Trading under International Law', 21 *Ocean Yearbook* 265 (2007); J. C. Levesque, 'International Fisheries Agreement: Review of the International Commission for the Conservation of Atlantic Tunas: Case Study – Shark Management', 32 *Marine Policy* 528 (2008); K. McGlade, *Regional Fisheries Management Organizations: An Examination of the International Commission for the Conservation of Atlantic Tuna as an International Fisheries Policy Instrument* (2009).

⁵⁵⁰ Convention for the Preservation of the Halibut Fishery, Washington, 2 March 1923, 32 LNTS 93, amended in 1930 (121 LNTS 45) and 1937 (159 LNTS 209). The new Convention was signed in Ottawa on 2 March 1953 and entered into force on 28 October 1953; the US and Canada are party. When the two countries extended their fishery jurisdictions, a Protocol amending the Convention was signed in Washington, on 29 March 1979 and entered into force on 15 October 1980. See www.iphc.int.

⁵⁵¹ 30 June 1994. See www.lvfo.org.

⁵⁵² Convention for the Conservation of Salmon in the North Atlantic Ocean, Reykjavik, 2 March 1982, in force 1 October 1983, 2 SMTE 157. The Convention has nine parties. See www.nasco.int/convention.html; North Atlantic

- North East Atlantic Fisheries Commission (NEAFC), 1980⁵⁵³
- North Pacific Anadromous Fish Commission (NPAFC), 1952⁵⁵⁴
- Northwest Atlantic Fisheries Organization (NAFO), 1978⁵⁵⁵
- Regional Commission for Fisheries (RECOFI), 1999⁵⁵⁶
- South Indian Ocean Fisheries Agreement (SIOFA), 2006⁵⁵⁷
- South Pacific Regional Fisheries Management Organization (SPRFMO), 2009⁵⁵⁸
- Southeast Atlantic Fisheries Organization (SEAFO), 2001⁵⁵⁹
- Western and Central Pacific Fisheries Commission (WCPFC), 2004⁵⁶⁰

Negotiations to conclude an agreement to manage non-highly migratory species in the North Pacific began in 2006 between Japan, the Republic of Korea, the Russian Federation and the United States, and later on were joined by Canada, China and Chinese Taipei. Substantive negotiations concluded in 2011 with agreement on the Convention on the Conservation and Management of High Seas Fisheries Resources in the North Pacific Ocean.⁵⁶¹

In addition to these fisheries organisations, other bodies regulate non-fishery resources, such as the International Whaling Commission⁵⁶² and the Agreement on the Conservation of Albatrosses and Petrels (ACAP), described below.⁵⁶³ Special reference should be made to the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR), which was not established as a fishery management body, but rather as an organisation with a broader mandate to ensure the conservation of Antarctic marine living resources, including the 'rational use' of those resources.⁵⁶⁴ Because of its ecosystemic approach to conservation, CCAMLR is

Salmon Conservation Organization, *Ten Year Review of the Activities of the North Atlantic Salmon Conservation Organization, 1984–94* (1995).

⁵⁵³ Convention on Future Multilateral Co-operation in North-East Atlantic Fisheries, London, 18 November 1980, in force 17 March 1982, 2 SMTE 107 (replacing the North East Atlantic Fisheries Commission established in 1949). Amended in 2004 and 2006. The Convention has nine parties. See www.neafc.org; T. Bjørndal, 'Overview, Roles, and Performance of the North East Atlantic Fisheries Commission (NEAFC)', 33 *Marine Policy* 685 (2009).

⁵⁵⁴ Convention for the Conservation of Anadromous Fish Stocks in the North Pacific Ocean, Moscow, 11 February 1992, in force 16 February 1993; four states are party. The 1992 Convention replaced the International Convention for the High Seas Fisheries of the North Pacific Ocean, Tokyo, 9 May 1952, in force 12 June 1953, 205 UNTS 65. See www.npafc.org; C. A. Holt, M. B. Rutherford and R. M. Peterman, 'International Cooperation Among Nation-States of the North Pacific Ocean on the Problem of Competition Among Salmon for a Common Pool of Prey Resources', 32 *Marine Policy* 607 (2008).

⁵⁵⁵ Convention on Future Multilateral Co-operation in the Northwest Atlantic Fisheries, Ottawa, 24 October 1978, in force 1 January 1979, 2 SMTE 60 (replacing the North-West Atlantic Fisheries Commission established in 1959). Amended in 2007. The Convention has fourteen parties. See www.nafo.int; A. B. Kirkpatrick, *Fishing for Ballots: Special Interest Politics and the Northwest Atlantic Fisheries Organization* (2011).

⁵⁵⁶ Approved by the FAO Council in November 1999, in force on 26 February 2001.

⁵⁵⁷ Rome, 7 July 2006, in force March 2011.

⁵⁵⁸ Auckland, 14 November 2009; not in force. See www.southpacificrfmo.org.

⁵⁵⁹ Convention on the Conservation and Management of the Fishery Resources in the Southeast Atlantic Ocean, Windhoek, 20 April 2001, in force 13 April 2003. The 2001 Convention replaced the 1973 Convention on the Conservation of the Living Resources of the Southeast Atlantic, Rome, 23 October 1969, in force 24 October 1971, 801 UNTS 101. See www.seafo.org; D. G. M. Miller and E. J. Molenaar, 'The SEAFC Convention: A Comparative Analysis in a Developing Coastal State Perspective', 20 *Ocean Yearbook* 305 (2006).

⁵⁶⁰ Honolulu, 5 September 2000, in force 19 June 2004. See www.wcpfc.int; T. Aqorau, 'Western and Central Pacific Fisheries Commission', 24 *International Journal of Marine and Coastal Law* 737 (2009); H. Parris, 'Is the Western and Central Pacific Fisheries Commission Meeting Its Conservation and Management Objectives?', 53 *Ocean and Coastal Management* 10 (2010).

⁵⁶¹ There was agreement on the English text of the Convention. See <http://nwpbfo.nomaki.jp/index.html>.

⁵⁶² See pp. 425–8, below. ⁵⁶³ See p. 429, below.

⁵⁶⁴ CCAMLR Convention, Art. II(1) and (2). See further Chapter 13, pp. 580–2, below.

often regarded as the best available model of sound conservation and management of marine living resources, even if not considered strictly as an RFMO. However, CCAMLR does also control and manage the extraction of fisheries from its convention area, making decisions not dissimilar from those of RFMOs.

The mandate, scope and membership of these regional organisations differ widely. Some organisations are concerned exclusively with inland fisheries, such as the LVFO and the CACFAC, or even with fisheries in states' territorial waters, such as RECOFI.⁵⁶⁵ The majority of RFMOs give coverage to the management of resources both in the high seas and in the EEZs of their members, but a significant number of them, namely, CCBSP, IATTC, NPAFC, SEAFO, SIOFA and SPRFMO regulate high seas fisheries exclusively. The majority of RFMOs establish a convention area, in which the organisation applies its measures. Some of these areas are very clearly defined, although some bodies establish areas of competence that are not precisely defined and that may extend along the 'migratory range' of a species, such as salmon,⁵⁶⁶ or may go beyond established boundaries for the purposes of scientific research.⁵⁶⁷ Some RFMOs focus on a single species, such as southern bluefin tuna, and are not geographically bound. This leads to overlaps with other regimes. RFMOs have tried in recent times to improve their co-ordination and to clarify the applicable regimes for each species.⁵⁶⁸ Some RFMOs cover vast areas of the ocean, such as ICCAT and WCPFC, and have large memberships (although ICCAT, as the largest, does not exceed forty-eight members); others, such as IPHC, have no more than two members.

Overall, these organisations have evolved as a group since the establishment of the first agreements. They have reflected some of the changes in international law, which required greater scrutiny over the sustainability of their policies and practices in the face of a generalised decline in most fisheries they managed. In particular, some of the most significant changes occurred after the adoption of the 1995 Fish Stocks Agreement, in which the precautionary and ecosystem approaches penetrated a number of organisations. All RFMOs established after 1995 (the IOTC excluded) expressly recognise the need to apply the precautionary approach in exercising their functions.⁵⁶⁹ A number of them also refer, explicitly or implicitly, to the application of the ecosystem approach.⁵⁷⁰

These regional bodies are established by treaty and endowed with a regulatory function, which grants them power to adopt binding or non-binding conservation measures. The organisations are frequently equipped with an scientific advisory body, and with a body in charge of ensuring compliance with the conservation and management measures adopted by the RFMO. All RFMOs have a secretariat and hold annual meetings of their members, in addition to frequent intersessional technical meetings on scientific and technical matters. Some of these organisations – GFCM, IOTC and RECOFI – have been established in the framework of the FAO, under Article XIV of its Constitution.

⁵⁶⁵ It regulates fisheries in the area bordered by Bahrain, Iraq, Iran, Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates.

⁵⁶⁶ This is the case of NASCO.

⁵⁶⁷ See e.g. CCBSP and NPAFC.

⁵⁶⁸ See e.g. the case of overlap between CCAMLR and CCSBT: A. Hemmings, 'Regime Overlap in the Southern Ocean: the case of Southern Bluefin Tuna and CCSBT in the CCAMLR Area', 3 *New Zealand Yearbook of International Law* 1 (2006).

⁵⁶⁹ GFCM, RECOFI, SEAFO, SPRFMO and WCPFC.

⁵⁷⁰ SEAFO, SPRFMO and WCPFC.

RFMOs adopt a wide range of conservation and management measures: they determine total allowable catches, mesh and net sizes, and size limits of fish. They also prohibit certain types of fishing gear and appliances and establish closed seasons and areas. Most organisations also establish monitoring, control and surveillance requirements, which include the establishment of lists of vessels authorised to fish and/or of vessels not allowed to fish if considered to have engaged in illegal, unreported and unregulated fishing, requirements for vessels to carry a satellite-based 'vessel monitoring system', and for states to report on inspections and other actions. In order to exert further control over their regulated activities, some RFMOs have established 'catch documentation schemes', which track the source of any traded species throughout its commercialisation process. Most RFMOs support scientific research and data collection to better inform their decisions.

In recent times, and responding to the need to improve the effectiveness of their actions, some RFMOs have strengthened their co-operation with each other, making efforts to harmonise their measures and share information. Most notably, the five so-called 'tuna RFMOs'⁵⁷¹ initiated in 2007 a co-ordination process, known as the Kobe process, which so far has not rendered many concrete results.⁵⁷² Other examples of close co-ordination are offered by NEAFC and NAFO, which share data and mutually recognise the lists of identified illegal vessels, which can then be used for enforcement purposes in both convention areas.

Each organisation has a different record of achievement in respect of fulfilling its objectives. Judging by fisheries catch statistics, which continue to show significant over-exploitation even in areas where many of the commissions operate, it is clear that their achievements are, for the most part, limited. The United Nations General Assembly has also acknowledged such failures, and, in its 2006 'Sustainable Fisheries' resolution, it 'urged' RFMOs

to strengthen and modernize their mandates and the measures adopted by such organizations or arrangements, to implement modern approaches to fisheries management as reflected in the Agreement and other relevant international instruments relying on the best scientific information available and application of the precautionary approach, and incorporating an ecosystem approach to fisheries management and biodiversity considerations, where these aspects are lacking, to ensure that they effectively contribute to long-term conservation and management and sustainable use of marine living resources.⁵⁷³

As part of its call to RFMOs, the General Assembly also requested that these organisations undertake public and preferably independent reviews of their performance 'on an urgent basis'.⁵⁷⁴ In 2007, the FAO Committee on Fisheries called on RFMOs to initiate such reviews. Starting in 2008, some RFMOs began assessment of their performance. Overall, they concluded that there was room for improvement and that the status of their managed stocks was poor. The review of NEAFC, an organisation generally regarded as having a significantly well-developed regime, concluded:

⁵⁷¹ CCSBT, IATTC, ICCAT, IOTC and WCPFC. ⁵⁷² See www.tuna-org.org.

⁵⁷³ UNGA Res. 61/105, UN Doc. A/RES/61/105, 6 March 2007, para. 70. The 'Agreement' referred to here is the Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, 2167 UNTS 37924.

⁵⁷⁴ *Ibid.*, para. 73.

the status of main fish stocks in the Convention Area is at a critical point and, unless effective action is taken promptly, there is a strong possibility that in the future their sustainable use will be compromised.⁵⁷⁵

Among the key problems identified by the review panels were the lack of adequate scientific data, which results in high levels of uncertainty and does not permit members to take adequate management decisions; and low levels of compliance by members, including failing in their reporting obligations.

In addition to the conclusions from RFMO-led assessments, other reasons have been put forward to explain the limited success of these legal and institutional arrangements, suggesting the need for a radical overhaul to the law-making and enforcement process which would require further incursions to be made on the extensive right of states to permit high seas fishing.⁵⁷⁶ First, the availability of reliable information on the status of stocks needs to be improved to ensure that decisions can be made on the basis of the best available information, including future trends. In particular, there is a need for an independent information-gathering function. Second, the manner in which the commissions determine total allowable catches needs to be based upon objective scientific criteria, including biological requirements, and if conservation on a sustainable basis is to be assured economic needs will have to be de-emphasised. Moreover, the decision to set total allowable catches should be separated from the decision on the allocation of quotas to individual parties to ensure that the decision on the former is reached on an objective basis. Third, the emphasis on setting quantitative limits may be inefficient in that it applies to a catch after it has been caught, and should be supplemented by increased emphasis upon regulatory measures which are subject to port enforcement, including regulation of gear, area, season and duration requirements, and new techniques for limiting entry to particular areas and the conduct of certain activities. Fourth, the commissions will increasingly need to take binding decisions on the basis of a majority vote to by-pass the blocking ability of the lone dissenter. Fifth, there is a need to improve the domestic enforcement of international fisheries obligations, building on efforts which allow some of the commissions (such as NEAFC and NAFO) to carry out limited surveillance based upon mutual inspection. To that end, consideration needs to be given to finding effective ways to allow the commissions to participate in the enforcement process. Sixth, the whole question of membership in the commissions needs to be addressed to ensure that all states participating in fisheries activities in areas within their competence can participate in the legislative and enforcement process. Finally, there is a need to improve upon existing, *ad hoc* monitoring, control and surveillance arrangements which are often inefficient.

Despite these historic failures and the growing emphasis being placed on coastal states' management rights and conservation obligations, the fisheries commissions will continue to play a role, especially for migratory and high seas species. In 2010, the United Nations General Assembly urged states to take further action by co-operating in the development of 'best

⁵⁷⁵ Performance Review Panel Report of the North East Atlantic Fisheries Commission (2008), viii.

⁵⁷⁶ For an early analysis of RFMO performance, still valid today, see World Conservation Monitoring Centre, *Global Biodiversity: Status of the Earth's Living Resources* (1992), 534.

practice guidelines' for RFMOs.⁵⁷⁷ A number of expert initiatives have pointed to key steps, or best practices, to be taken, which generally address the failures referred to above.⁵⁷⁸

Fisheries case law⁵⁷⁹

The implementation of the current regime for the management of marine living resources, based on UNCLOS and further developed by the 1995 Fish Stocks Agreement and by regional fishery arrangements, has also brought controversy, with some disputes being heard before international judicial bodies. The most important cases evidence the ever present tensions in the regulation of fisheries today: the prioritisation of conservation goals versus those that favour exploitation of the resource; protection of the rights of the coastal state versus those of distant water fishing nations; and unilateral action versus commonly agreed rules.

Estai case (Canada v. Spain)⁵⁸⁰

The dispute between Canada and Spain over fishing for the Greenland halibut in the high seas occurred against the background of the UN negotiations on the 1995 Fish Stocks Agreement, and may well have influenced the outcome of those negotiations. On 12 May 1994, Canada adopted legislation and implementing regulations amending the Coastal Fisheries Protection Act, which included conservation and management measures for fish stocks in the North Atlantic Fisheries Organization (NAFO) Regulatory Area, including areas beyond Canada's 200-nautical-mile zone. The regulations prescribed particular stocks, such as Greenland halibut, as being straddling stocks and subject to prescribed Canadian conservation and management measures. According to the Canadian government, the legislation and regulations were intended to enable Canada to take the urgent steps necessary to prevent further destruction of straddling fish stocks on the Grand Banks of Newfoundland, and to permit their rebuilding.

These measures had followed stringent cuts for the Greenland halibut fishery that had been adopted by Canada, for areas within its own jurisdiction. In September 1994, Canada proposed that NAFO should manage the Greenland halibut stock. NAFO agreed to establish a total allowable catch (TAC) for Greenland halibut of 27,000 tonnes for 1995, 8,000 tonnes less than the amount Spain had caught in 1993. This TAC was for the entire stock in certain NAFO regulatory areas, including the parts of those areas that lay within Canada's 200-nautical-mile zone. The NAFO Commission adopted allocations of Greenland halibut for Canada (16,300 tonnes for 1995) and the European Union (3,400 tonnes for 1995), with the remainder being

⁵⁷⁷ UNGA Res. 65/38, UN Doc. A/RES/65/38, para. 109, 30 March 2011.

⁵⁷⁸ A. Willock and M. Lack, *Follow the Leader: Learning from Experience and Best Practice in Regional Fisheries Management Organizations* (2006); Royal Institute of International Affairs, *Recommended Best Practices for Regional Fisheries Management Organizations* (2007).

⁵⁷⁹ D. M. Ong, 'Current Marine Environmental Issues and the International Tribunal for the Law of the Sea', 18 *International Journal of Marine and Coastal Law* 315 (2003); G. Rashbrooke, 'The International Tribunal for the Law of the Sea: A Forum for the Development of Principles of International Environmental Law?', 19 *International Journal of Marine and Coastal Law* 515 (2004); J. Harrison, 'Judicial Law-Making and the Developing Order of the Oceans', 22 *International Journal of Marine and Coastal Law* 283 (2007).

⁵⁸⁰ L. de la Fayette, 'The Fisheries Jurisdiction Case (Spain v. Canada), Judgment on Jurisdiction of 4 December 1998', 48 *International and Comparative Law Quarterly* 664 (1999); R. Stromberg, *Unilateralism in Canadian Foreign Policy: An Examination of Three Cases* (2006); Y. Shigeta, *International Judicial Control of Environmental Protection: Standard Setting, Compliance Control and the Development of International Environmental Law by the International Judiciary* (2010).

divided principally between Russia and Japan. On 3 March 1995, the European Union objected to the NAFO quota and set for itself a unilateral quota in excess of the TAC that had been allocated to it by NAFO. On 9 March 1995, the Spanish fishing vessel *Estai* was boarded on the high seas and inspected, and then charged with offences under Canada's Coastal Fisheries Protection Act, including excessive fishing for Greenland halibut in areas beyond Canada's 200-nautical-mile zone. On 28 March 1995, Spain initiated proceedings before the ICJ, asking:

- (A) that the Court declare that the Canadian legislation, insofar as it purports to exercise jurisdiction over vessels flying foreign flags on the high seas, beyond Canada's exclusive economic zone, is unopposable to the Kingdom of Spain;
- (B) that the Court adjudge and declare that Canada must refrain from repeating the actions complained of, and make due amends to the Kingdom of Spain in the form of compensation, the amount of which shall cover all damage and injury caused; and
- (C) that, consequently, the Court also declare that the boarding of the Spanish flag vessel *Estai* on the high seas on 9 March 1995, as well as the coercive measures and the exercise of jurisdiction over it and its captain, constitutes a concrete violation of the above-indicated principles and norms of international law.

As described in Chapter 5 above, the ICJ declined jurisdiction, on the grounds that Canada's acceptance of the Court's jurisdiction did not, following a new reservation made by Canada, encompass 'disputes arising out of or concerning conservation and management measures taken by Canada with respect to vessels fishing in the NAFO Regulatory Area'.⁵⁸¹ Canada had made its reservation to acceptance of the Court's jurisdiction at the same time that it had enacted its new fisheries conservation legislation, which allowed Canada to take enforcement action for the purpose of conserving its straddling fish stocks beyond its EEZ.⁵⁸² Under UNCLOS, this is not permitted, with the exception of the right of hot pursuit.⁵⁸³ In reaching this conclusion, the Court rejected Spain's argument that Canada's acts were not 'conservation and management' measures: for a measure to be characterised as a 'conservation and management measure', it is sufficient that its purpose is to conserve and manage living resources and that, to this end, it satisfies various technical requirements.⁵⁸⁴ Having regard to various international agreements, including the 1995 Fish Stocks Agreement and the 1993 FAO Compliance Agreement, a majority of the Court concluded that the measures taken by Canada fell within its reservation.⁵⁸⁵

The view was not supported by all members of the Court, particularly those who saw the object of Canada's reservation as being 'to signal *urbi et orbi* that Canada claims special jurisdiction over the high seas', with consequences for traditional high seas fisheries freedoms.⁵⁸⁶

⁵⁸¹ (1998) ICJ Reports 432; Chapter 5, p. 173, note 304, above.

⁵⁸² Canada, Coastal Fisheries Protection Act, amended May 1994, sections 5 and 7. ⁵⁸³ Art. 111.

⁵⁸⁴ Para. 70.

⁵⁸⁵ Para. 71. The Court went on to reject Spain's argument that Canada's reservation had to be interpreted so as to cover only acts compatible with international law.

⁵⁸⁶ Dissenting Opinion of Judge Bedjaoui, (1998) ICJ Reports 519 (the conflation of the merits of the case with the Court's jurisdiction appears even more evident in Judge Bedjaoui's expression of regret 'that the Court did not reject, or even hold null and void, a reservation whose object and purpose . . . was to permit encroachment upon an essential freedom of international law, both past and present, without fear of judicial intervention': *ibid.*, 536).

Southern Bluefin Tuna cases (New Zealand v. Japan, Australia v. Japan)⁵⁸⁷

In July 1999, Australia and New Zealand initiated arbitration proceedings under Part XV of and Annex VII to UNCLOS, alleging that Japan had breached its obligations under Articles 64 and 116–119 of UNCLOS in relation to the conservation and management of southern bluefin tuna stock through implementation of a unilateral experimental fishing programme. The three states were parties to the 1993 Convention for the Conservation of Southern Bluefin Tuna, a regional fisheries convention established to ‘ensure, through appropriate management, the conservation and optimum utilisation of southern bluefin tuna’.⁵⁸⁸ The Convention established a Commission for the Conservation of Southern Bluefin Tuna with power to decide upon a total allowable catch (TAC) for southern bluefin tuna and its allocation among the parties to the Convention.⁵⁸⁹ The parties had been unable to reach agreement through the Commission on a new TAC: Japan had sought an increase in the size of the previous TAC, whereas Australia and New Zealand argued that available scientific information did not indicate that the southern bluefin tuna stock had recovered sufficiently to support a higher TAC. In 1998, Japan initiated a unilateral experimental fishing programme on the basis that this was necessary in order to gather scientific data on the state of the southern bluefin tuna stock. Australia and New Zealand objected to Japan’s experimental fishing programme, claiming that its purpose was simply to allow Japan to take more than its allocated portion of the southern bluefin tuna TAC. Australia and New Zealand claimed that Japan, *inter alia*, had: failed to adopt necessary conservation measures so as to maintain or restore stocks to levels which could produce a maximum sustainable yield; carried out unilateral experimental fishing which would result in southern bluefin tuna being taken by Japan over and above the national allocations previously agreed under the Convention; failed to co-operate with New Zealand and Australia; and otherwise failed in its UNCLOS obligations in respect of conservation and management of southern bluefin tuna, having regard to the precautionary principle.

Two weeks after initiating the Annex VI proceedings, Australia and New Zealand requested ITLOS to prescribe provisional measures pending the decision of the arbitral tribunal to be set up in accordance with Annex VII to UNCLOS. By its Order of 27 August 1999, ITLOS ordered the three states to ensure that their annual catches did not exceed national annual allocations at the levels last agreed by the parties, and to

⁵⁸⁷ B. Kwiatkowska, Case Report, 94 *American Journal of International Law* 150 (2000); B. Kwiatkowska, Case Report, 95 *American Journal of International Law* 162 (2001); A. Boyle, ‘The Southern Bluefin Tuna Arbitration’, 50 *International and Comparative Law Quarterly* 337 (2001); S. Marr, ‘The Southern Bluefin Tuna Cases: The Precautionary Approach and Conservation and Management of Fish Resources’, 11 *European Journal of International Law* 815 (2000); B. Kwiatkowska, ‘The Southern Bluefin Tuna Cases’, 15 *International Journal of Marine and Coastal Law* 1 (2000); C. Romano, ‘The Southern Bluefin Tuna Dispute: Hints of a World to Come ... Like It or Not’, 32 *Ocean Development and International Law* 313 (2001); J. Peel, ‘The Future for Resolving Fisheries Disputes under UNCLOS in the Aftermath of the Southern Bluefin Tuna Arbitration’, 1 *Melbourne Journal of International Law* 53 (2002); T. Stephens, ‘The Limits of International Adjudication in International Environmental Law: Another Perspective on the Southern Bluefin Tuna Case’, 19 *International Journal of Marine and Coastal Law* 117 (2004); N. Klein, *Dispute Settlement in the UN Convention on the Law of the Sea* (2005); N. Ando, ‘The Southern Bluefin Tuna Case and Dispute Settlement under the United Nations Convention on the Law of the Sea: A Japanese Perspective’, in N. Malick Tafsir and R. Wolfrum (eds.), *Law of the Sea, Environmental Law and Settlement of Disputes* (2007), 867.

⁵⁸⁸ Convention for the Conservation of Southern Bluefin Tuna, adopted 10 May 1993, in force 30 May 1994, 1819 UNTS 360, Art. 3.

⁵⁸⁹ Arts. 6 and 8(3)(a).

[r]efrain from conducting an experimental fishing programme involving the taking of a catch of southern bluefin tuna, except with the agreement of the other parties or unless the experimental catch is counted against its annual national allocation.⁵⁹⁰

Of particular note in the Order is the Tribunal's view that, in the face of scientific uncertainty as to the status of the southern bluefin tuna stock, 'the parties should . . . act with prudence and caution to ensure that effective conservation measures are taken to prevent serious harm to the stock of southern bluefin tuna'.⁵⁹¹ Although ITLOS did not mention the precautionary principle by name, its Order is regarded (including by some of its members)⁵⁹² as a case of application of the precautionary approach. The dispute showcases the frequently differing interests of nations concerning the sustainable exploitation of marine living resources and their consideration of scientific uncertainty in making their decisions. The case also evidences some of the limitations of regional fishery arrangements, as consensus-based organisations with weak enforcement mechanisms.

The case did not proceed to the merits after the decision of the Annex VII arbitral tribunal, the following year, accepting Japan's argument that the tribunal did not have jurisdiction to receive the claims.⁵⁹³

Swordfish case (Chile v. EU)⁵⁹⁴

During much of the 1990s, Chile and the EU were involved in a dispute concerning the conservation of declining stocks of swordfish in the South Pacific. Concerned about the state of stocks, in 1991 Chile implemented a number of conservation measures within its exclusive economic zone and, in relation to its own nationals, in the high seas adjacent to that zone. Thereafter, Chile prohibited the unloading in its ports (for onward transportation) of swordfish caught in waters beyond its jurisdiction. Once again, the unilateral act of a coastal state to conserve fisheries led to a dispute, which was eventually brought to two different dispute settlement procedures.

Following unsuccessful negotiations, in April 2000 the EU brought the matter to the WTO Dispute Settlement Body (DSB), claiming that Chile's prohibition was inconsistent with GATT 1994, in particular Article V (providing for freedom of transit for goods through the territory of each contracting party) and Article XI (prohibiting quantitative restrictions on imports or exports). For its part, Chile considered that its measures were covered by Article XX(g), permitting it to adopt and enforce measures relating to the conservation of natural resources in conjunction with restrictions on domestic production or consumption.⁵⁹⁵ In December 2000, the WTO DSB established a Panel to resolve the dispute.⁵⁹⁶

⁵⁹⁰ *Southern Bluefin Tuna cases (New Zealand v. Japan; Australia v. Japan) (Provisional Measures)*, 38 ILM 1624 (1999), para. 90(c) and (d).

⁵⁹¹ *Ibid.*, para. 77. ⁵⁹² Separate Opinion of Judge Treves, *ibid.*, at 1645, paras. 8–9.

⁵⁹³ Chapter 5, p. 176, above.

⁵⁹⁴ M. A. Orellana, 'The Swordfish Dispute Between the EU and Chile at the ITLOS and the WTO', 71 *Nordic Journal of International Law* 55 (2002); A. Serdy, 'See You in Port: Australia and New Zealand as Third Parties in the Dispute Between Chile and the EU over Chile's Denial of Port Access to Spanish Vessels Fishing for Swordfish on the High Seas', 1 *Melbourne Journal of International Law* 79 (2002); T. Komori and K. Wellens, *Public Interest Rules of International Law* (2009).

⁵⁹⁵ Chapter 19, p. 805, note 33, below.

⁵⁹⁶ Case DS193, Chile: Measures Affecting the Transit and Importation of Swordfish, WTO Press Release, 12 December 2000.

Thereafter, by September 2000, Chile had initiated UNCLOS Annex VII arbitration proceedings against the EU, alleging violations of various fisheries provisions of UNCLOS. The parties subsequently agreed that the dispute be submitted to a special chamber of ITLOS composed of five members.⁵⁹⁷ The parties requested the special chamber to decide, on the basis of UNCLOS, issues put forward by the parties. The issues put forward by Chile were *inter alia*:

- (a) whether the EU had complied with its obligations under the Convention, especially Arts. 116 to 119, to ensure conservation of swordfish, in the fishing activities undertaken by vessels flying the flag of any of its member States in the high seas adjacent to Chile's exclusive economic zone;
- (b) whether the EU had complied with its obligations under the Convention, in particular Art. 64, to co-operate with Chile as a coastal State for the conservation of swordfish in the high seas adjacent to Chile's exclusive economic zone;
- (c) whether the EU had challenged the sovereign right and duty of Chile, as a coastal State, to prescribe measures within its national jurisdiction for the conservation of swordfish and to ensure their implementation in its ports, in a non-discriminatory manner, as well as the measures themselves, and whether such challenge would be compatible with the Convention;
- (d) whether the obligations arising under Articles 300 and 297(1)(b) of the Convention had been fulfilled by the EU.

The issues put to ITLOS by the EU were:

- (a) whether the Chilean Decree 598 which purported to apply Chile's unilateral conservation measures relating to swordfish on the high seas was in breach of, *inter alia*, Arts. 87, 89 and 116 to 119 of the Convention;
- (b) whether the 'Galapagos Agreement' signed in Santiago de Chile on 14 August 2000 was negotiated in keeping with the provisions of the Convention and whether its substantive provisions were in consonance with, *inter alia*, Arts. 64 and 116 to 119 of the Convention;
- (c) whether Chile's actions concerning the conservation of swordfish were in conformity with Art. 300 of the Convention and whether Chile and the European Union remained under a duty to negotiate an agreement on co-operation under Art. 64 of the Convention; and
- (d) whether the jurisdiction of the special chamber extended to the issue referred to in paragraph (c) above.

In January 2001, the EU and Chile agreed to suspend (but not terminate) the WTO and ITLOS proceedings,⁵⁹⁸ to resume bilateral co-operation, and to put in place a provisional arrangement. The provisional arrangement comprised three elements: a resumption of meetings within the framework of the Bilateral Scientific and Technical Commission on Swordfish Stocks in the South-East Pacific; access for a limited number of EU vessels to Chilean ports, permitting transshipment or landing of up to 1,000 tons of swordfish under a joint programme to assist in the scientific evaluation of swordfish stocks; and a commitment to agree on a multilateral framework for the conservation and management of swordfish in the Southeast Pacific, with a

⁵⁹⁷ *Case Concerning the Conservation and Sustainable Exploitation of Swordfish Stocks in the South-Eastern Pacific Ocean (Chile - EC)*, Order 2000/3 of 20 December 2000, 40 ILM 475 (2001). The special chamber comprised Judges Chandrasekhara Rao (President), Caminos, Yankov, Wolfrum and Judge Ad Hoc Orrego Vicuña.

⁵⁹⁸ See ITLOS Order, 15 March 2001, www.itlos.org/case_documents/2001/document_en_99.pdf.

diplomatic conference to be held in 2002. Between 2001 and 2008, the proceedings remained suspended.⁵⁹⁹ On 16 December 2009, the Special Chamber, after considering the request of the parties to discontinue the case, ordered that the case be removed from the list of cases. The case ended as a result of the parties having reached an 'Understanding' on 16 October 2008, which replaced the 2001 'Provisional Arrangement' and provided a 'definitive commitment to cooperate for the long-term conservation and management of swordfish stocks in the South Eastern Pacific'. The Understanding involved an agreement freezing the fishing effort by the parties at 2008 levels (or at the maximum historical peak); allowing EU vessels fishing for swordfish in the high seas in accordance with the new Understanding to be granted access to designated Chilean ports; and establishing a Bilateral Scientific and Technical Committee (BSTC), also responsible for advising the parties on the adoption of further conservation measures if needed.⁶⁰⁰

Marine mammals⁶⁰¹

The conservation of marine mammals (cetaceans, pinnipeds, sirenians), including whales, dolphins and seals, is an issue which has received widespread public attention since 1972, when a proposal was put forward at the Stockholm Conference to establish a total moratorium on commercial whaling.⁶⁰² Since then, the whale has emerged as a symbol of the world environmental movement and has come to represent, perhaps better than any other single issue, the difficulty of reconciling the need to conserve biological diversity, protect cultural and indigenous values, and give effect to economic needs. Forty years after Stockholm, the issue remains controversial, as shown by the case filed by Australia against Japan in 2010 challenging the legality of Japan's 'scientific whaling' programme.⁶⁰³

⁵⁹⁹ See ITLOS Order 2003/2 of 16 December 2003; Order 2005/1 of 29 December 2005; Order 2007/3 of 30 November 2007; and Order 2008/1 of 11 December 2008.

⁶⁰⁰ Order 2009/1 of 16 December 2009.

⁶⁰¹ R. M. M'Gonigle, 'Economising of Ecology: Why Big, Rare Whales Still Die', 9 *Ecology Law Quarterly* 119 (1980); P. Birnie, *International Regulation of Whaling: From Conservation of Whaling to Conservation of Whales and Regulation of Whale-Watching* (1985); P. Birnie, 'International Legal Issues in the Management and Protection of the Whale: A Review of Four Decades of Experience', 29 *Natural Resources Journal* 903 (1989); N. Doubleday, 'Aboriginal Subsistence Whaling: The Right of Inuit to Hunt Whales and Implications for International Environmental Law', 17 *Denver Journal of International Law and Policy* 373 (1989); A. D'Amato and S. Chopra, 'Whales: Their Emerging Right to Life', 85 *American Journal of International Law* 21 (1991); G. Rose and S. Crane, 'The Evolution of International Whaling' in P. Sands (ed.), *Greening International Law* (1993), 159; D. Caron, 'The International Whaling Commission and the North Atlantic Marine Mammal Commission: The Institutional Loss of Coercion in Consensual Structures', 89 *American Journal of International Law* 154 (1995); P. Birnie, 'Small Cetaceans and the International Whaling Commission', 10 *Georgetown International Environmental Law Review* 1 (1997); M. Maffei, 'The International Convention for the Regulation of Whaling', 12 *International Journal of Marine and Coastal Law* 287 (1997); P. Birnie, 'Are Twentieth Century Marine Conservation Conventions Adaptable to Twenty First Century Goals and Principles?', 12 *International Journal of Marine and Coastal Law* 488 (1997); W. C. G. Burns, 'The Berlin Initiative on Strengthening the Conservation Agenda of the International Whaling Commission: Toward a New Era for Cetaceans?', 13 *Review of European Community and International Environmental Law* 72 (2004); D. Currie, 'Whales, Sustainability and International Environmental Governance', 16 *Review of European Community and International Environmental Law* 45 (2007); P. H. Sand, 'Japan's "Research Whaling" in the Antarctic Southern Ocean and the North Pacific Ocean in the Face of the Endangered Species Convention (CITES)', 17 *Review of European Community and International Environmental Law* 56 (2008); S. V. Scott, 'Intergovernmental Organizations as Disseminators, Legitimizers, and Disguisers of Hegemonic Policy Preferences: The United States, the International Whaling Commission, and the Introduction of a Moratorium on Commercial Whaling', 21 *Leiden Journal of International Law* 581 (2008).

⁶⁰² Chapter 2, p. 32, above. ⁶⁰³ See pp. 426–8, below.

Whale species have been hunted on a large scale since the eighteenth and nineteenth centuries for lamp oil, for perfume ingredients, and for the whalebones used in corset stays.⁶⁰⁴ In the second half of the nineteenth century, new technological developments, such as cannon-fired harpoons, allowed whalers to catch the faster species, such as blue, fin, sei, Bryde's and minke whales. By 1988, the grey whale was extinct in the Atlantic, and has been nearly extinct in the western North Pacific; the humpback, bowhead and black right whales were categorised as endangered; and the population of the blue whale, estimated at between 166,000 and 226,400 in pre-whaling times, had dropped to between 7,500 and 15,000 worldwide.⁶⁰⁵ Other members of the cetacean family include dolphins, which are not generally endangered but have been adversely affected by modern fishing practices, such as driftnet fishing, in a way that has attracted widespread criticism because of the high rate of incidental taking of dolphins. Of the pinniped species, the Galapagos fur seal, the Juan Fernandez fur seal and the Guadalupe fur seal are thought to be vulnerable as a result of nineteenth- and twentieth-century sealing, tourism and human disturbance. The Japanese sea lion is thought to be extinct as a result of persecution by fishermen and coastal development.⁶⁰⁶ For similar reasons, the Mediterranean monk seal and the Hawaiian monk seal are endangered, and the Caribbean monk seal is thought to be extinct. Among the sirenian species, the West African and the Caribbean manatee and the dugong are thought to be vulnerable species, and the Amazonian manatee is endangered.

Marine mammals are subject to the general rules established by UNCLOS governing the conservation of marine living resources as well as the special provisions of Article 65 of UNCLOS, which provides that nothing in the provisions relating to the exclusive economic zone

restricts the right of a coastal state or the competence of an international organisation, as appropriate, to prohibit, limit or regulate the exploitation of marine mammals more strictly than provided for in [the provisions of UNCLOS on the EEZ]. States shall co-operate with a view to the conservation of marine mammals and in the case of cetaceans shall in particular work through the appropriate international organisations for their conservation, management and study.

This provision applies to the conservation and management of marine mammals in the high seas.⁶⁰⁷ Marine mammals are protected by other treaties, including those that establish general rules, the 1973 CITES⁶⁰⁸ and 1979 Bonn Convention on migratory species.⁶⁰⁹ Four agreements are in place which specifically address whaling issues: the 1946 International Convention for the Regulation of Whaling (1946 International Whaling Convention); the 1992 Agreement on the Conservation of Small Cetaceans of the Baltic and North Seas (1992 ASCOBANS); the 1992 Agreement Establishing the North Atlantic Marine Mammals Conservation Organization (1992 NAMMCO); and the 1996 Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area (1996 ACCOBAMS).

⁶⁰⁴ World Resources Institute, *World Resources (1988-9)*, 155. ⁶⁰⁵ *Ibid.*, 156, Table 9.4. ⁶⁰⁶ *Ibid.*

⁶⁰⁷ UNCLOS, Art. 120.

⁶⁰⁸ By 1983, Appendix I to CITES listed the following whales: sperm, fin, sei, blue, humpback, bowhead, right, Bryde's, grey and bottlenose, as well as several dolphin types, and all cetaceans not listed in Appendix I or II. See Chapter 10, pp. 473-4, below.

⁶⁰⁹ See further Chapter 10, pp. 502-4, below.

International Whaling Commission

The International Whaling Commission (IWC) was established by the 1946 International Whaling Convention,⁶¹⁰ which replaced a 1937 agreement.⁶¹¹ It currently has eighty-nine parties. The 1946 Convention began as a whaling club, established 'to provide for the proper conservation of whale stocks and thus make possible the orderly development of the whaling industry', while taking into account the need to safeguard whale resources from over-fishing and to achieve optimum levels of whale stocks without causing widespread economic and nutritional distress in the context of an international system of regulation.⁶¹² The Convention, which includes a Schedule establishing the detailed regulations and obligations under the Convention, applies to factory ships, land stations and whale catchers and 'to all waters in which whaling is prosecuted'.⁶¹³ The Convention does not, however, define what is meant by a 'whale' and this has led to differences of view as to whether the IWC has competence over dolphins and porpoises, which are all cetaceans and therefore members of the same taxonomic family as whales. The IWC has, however, exercised competence over small cetaceans in the past. For example, in 1980 it adopted a resolution recommending that the Scientific Committee, in part through the Sub-Committee on Small Cetaceans, continue to consider the status of small cetaceans.⁶¹⁴

The IWC is the principal institutional organ established by the Convention, and is assisted by a secretariat.⁶¹⁵ The IWC's functions include studies and investigations, collecting and analysing statistical information, and methods of maintaining and increasing populations of whale stocks. More specifically, it has the power under Article V(1) to amend the provisions of the Schedule by adopting 'regulations' for the conservation and utilisation of whale resources, and under Article VI it may make 'recommendations' (which are not binding) on any matter relating to whales or whaling. The powers of the IWC under Article V(1) allow it to take binding decisions on the regulation of whaling, including prohibitions on species, seasons and waters and the establishment of technical requirements.⁶¹⁶

There are a number of exceptions to the specific obligations established under the Convention and in the Schedule. The main one is scientific: parties may grant a special permit authorising a national to kill, take or treat whales 'for the purposes of scientific research subject to such restrictions as to number ... and other conditions' as the party thinks fit.⁶¹⁷ The authorising party must report such authorisations to the IWC, as well as scientific information relating to whaling, including the results of the research conducted pursuant to Article VIII(1).⁶¹⁸ The IWC has also adopted other exceptions including catch limits for aboriginal subsistence whaling to satisfy aboriginal subsistence needs.⁶¹⁹ The Convention also includes enforcement provisions. Each party must ensure the application of the Convention and the prosecution and punishment of infractions, and since 1949 at least two inspectors must be maintained on factory ships, and adequate inspection maintained at land stations.⁶²⁰ In 1971,

⁶¹⁰ Washington, 2 December 1946, in force 10 November 1948, 161 UNTS 72; forty-two states are party; the Convention has been subject to one amending Protocol (19 November 1956, 338 UNTS 366), but is usually subject to an annual amendment of its Schedule.

⁶¹¹ 8 June 1937, 190 LNTS 79, and amending Protocol (24 June 1938, 196 LNTS 131); the 1937 Convention itself superseded the 1931 Convention for the Regulation of Whaling, Geneva, 24 September 1931, 55 LNTS 349.

⁶¹² Preamble. ⁶¹³ Art. I. ⁶¹⁴ IPE III/B/26-07-80. ⁶¹⁵ Art. III. ⁶¹⁶ Art. V(1). ⁶¹⁷ Art. VIII(1).

⁶¹⁸ Art. VIII(1) and (3). ⁶¹⁹ See para. 13(a) of the 1999 Schedule, which was adopted in 1982. ⁶²⁰ Art. IX.

the IWC established an international observer scheme, which grants the IWC limited powers of observation, intended to provide some international oversight.

In recent years, the Convention has been reoriented. Originally intended to be an instrument for the 'orderly development of the whaling industry', it has been transformed into the primary international instrument prohibiting commercial whaling. Events leading up to the moratorium on commercial whaling adopted in 1986 can be divided into phases. The first, which lasted until 1972, regulated the total amount of whales that could be taken in any year by setting 'blue whale units' (one blue whale was equal to two fin whales, or two-and-a-half humpbacks, or six sei whales) but did not set individual species limits.⁶²¹ From 1972 to 1976, the IWC operated a quota on a species-by-species basis. In 1976, a 'New Management Procedure' (NMP) was put in place which divided each species into stocks and established a quota for each stock (Initial Management Stocks; Sustained Management Stocks; and Protection Stocks). In the meantime, by the early 1980s, the membership of the IWC had grown significantly, and for the first time composed a majority of anti-whaling nations. In 1982, the requisite three-fourths majority existed, and the IWC adopted a 'moratorium' on commercial whaling, effective as of 1986, by amending the Schedule.⁶²²

In 1938, the IWC established its first whale sanctuary in the Antarctic, where all commercial whaling was prohibited. In 1979, a sanctuary was established for the Indian Ocean, which was extended by ten years in 1992 and again in 2002. In 1994, the IWC established the Southern Ocean Sanctuary, where commercial whaling is also prohibited; its status was reviewed in 2004 and extended for a further ten years, even though Japan had attempted to remove it but lost the vote at the IWC.⁶²³

The ban on commercial whaling led a number of countries, in particular Japan and Iceland, to make use of the Article VIII 'scientific whaling' exception, leading to further controversy and dispute over the meaning of 'scientific research', which is undefined by the Convention or Schedule.⁶²⁴ Since 1986 Japan has continued to hunt whales in the Southern Ocean, including within the Sanctuary, under the 'scientific permit' exception. To carry out these activities in the Southern Ocean, Japan established the 'Japanese Whale Research Programme under Special Permit in the Antarctic', called JARPA (1986–2002), and resumed in 2004 as JARPA II.

On 31 May 2010, Australia instituted proceedings against Japan before the ICJ, alleging that Japan, by conducting JARPA II, breached international obligations both under the 1946 International Whaling Convention and under CITES and the Convention on Biological

⁶²¹ S. Lyster, *International Wildlife Law* (1985), 25.

⁶²² 1992 IWC Schedule, para. 10(e). The amendment came into force on 3 February 1983 except for Japan, Norway, Peru and the Soviet Union, which lodged objections. Peru withdrew its objection on 22 July 1983. Japan withdrew its objections with effect from 1 May 1987 for commercial pelagic whaling, from 1 October 1987 for commercial coastal whaling for minke and Bryde's whales, and from 1 April 1988 for commercial coastal sperm whaling. As Norway and the Russian Federation have not withdrawn their objections, the paragraph is not binding on them.

⁶²³ 1999 IWC Schedule, para. 7(a) and (b). In 2002, proposals for sanctuaries in the South Pacific and the South Atlantic failed to gain the necessary three-quarters majorities to be adopted.

⁶²⁴ The IWC adopted in 2008 new Guidelines on scientific permits, which require that all proposed permits have to be submitted for review by the Scientific Committee. The Scientific Committee's review concentrates on the following issues: (1) whether the permit adequately specifies its aims, methodology and the samples to be taken; (2) whether the research is essential for rational management and research; (3) whether the methodology and sample size are likely to provide reliable answers to the questions being asked; (4) whether the questions can be answered using non-lethal research methods; (5) whether the catches will have an adverse effect on the stock; and (6) whether there is the potential for scientists from other nations to join the research programme. A specialist workshop is to review the Scientific Permit Proposals and Research Results.

Diversity.⁶²⁵ This controversy follows years of opposition by Australia to Japan's JARPA II, as well as calls upon Japan in 2005 and 2007 by the IWC, and by a group of twenty-nine IWC members, not to engage in lethal whaling as part of its JARPA II programme. Between 2008 and 2010, specific negotiations were held under the IWC – in the Small Working Group on the Future of the IWC – to address core issues of the regime, including the continuance of scientific research permits.⁶²⁶ Australia called for an end to unilateral scientific whaling, while Japan maintained the need to continue such a programme. Against this background, and with no consensus reached on the matter, Australia filed its application claiming that Japan 'has breached and is continuing to breach the following obligations under the ICRW':

- (a) the obligation under paragraph 10(e) of the Schedule to the ICRW to observe in good faith the zero catch limit in relation to the killing of whales for commercial purposes; and
- (b) the obligation under paragraph 7(b) of the Schedule to the ICRW to act in good faith to refrain from undertaking commercial whaling of humpback and fin whales in the Southern Ocean Sanctuary.⁶²⁷

Australia further asserted that Japan has breached and is continuing to breach, *inter alia*, the following obligations:

- (a) under the Convention on International Trade in Endangered Species of Wild Fauna and Flora ('CITES'), the Fundamental Principles contained in Article II in relation to 'introduction from the sea' of an Annex I listed specimen other than in 'exceptional circumstances', and the conditions in Article III(5) in relation to the proposed taking of humpback whales under JARPA II; and
- (b) under the Convention on Biological Diversity, the obligations to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction (Article 3), to co-operate with other Contracting Parties, whether directly or through a competent international organisation (Article 5), and to adopt measures to avoid or minimise adverse impacts on biological diversity (Article 10(b)).⁶²⁸

Australia considers that, having regard to the scale of the JARPA II programme, to the lack of any demonstrated relevance for the conservation and management of whale stocks, and to the risks presented to targeted species and stocks, the JARPA II programme cannot be justified under Article VIII of the ICRW. Australia has specifically requested the Court to order that Japan:

- (a) cease implementation of JARPA II;
- (b) revoke any authorisations, permits or licences allowing the activities the subject of this application to be undertaken; and
- (c) provide assurances and guarantees that it will not take any further action under the JARPA II or any similar program until such program has been brought into conformity with its obligations under international law.⁶²⁹

⁶²⁵ *Whaling in the Antarctic (Australia v. Japan)*, Application instituting proceedings, filed on 31 May 2010, available at www.icj-cij.org/docket/index.php?p1=3&p2=3&k=64&case=148&code=aj&p3=0.

⁶²⁶ See meeting-related documents on the Future of the IWC at www.iwcoffice.org/commission/futuredocs.htm.

⁶²⁷ Application, para. 36. ⁶²⁸ Application, para. 38. ⁶²⁹ Para. 40.

Tensions at the IWC between whaling and non-whaling nations have been ongoing for decades and are reflected in earlier developments, which led to the creation in 1991 and 1992 of two new instruments, following the departure of Canada and Iceland from the IWC (Iceland returned to the IWC in 2002), and doubts expressed by Norway and Japan about their future participation.

1992 ASCOBANS

In March 1992, the Agreement on the Conservation of Small Cetaceans of the Baltic and North Seas (1992 ASCOBANS) was signed, and adopted as an agreement under the 1979 Bonn Agreement.⁶³⁰ The Convention was negotiated in the context of drastic decreases in the population of harbour porpoises of the Baltic Sea and the adverse effects of by-catches, habitat deterioration and disturbance on populations of small cetaceans, in the Baltic and North Seas. It establishes a framework for co-operative action to maintain a 'favourable conservation status' for small cetaceans, and commits parties to apply the conservation, research and management measures set out in the Annex within the limits of their jurisdiction and in accordance with their international obligations.⁶³¹ Its provisions do not affect the rights and obligations of a party arising under any other existing treaty, convention or agreement.⁶³² The Annex establishes a Conservation and Management Plan, which sets: general obligations in relation to: habitat conservation and management; surveys and research; the use of by-catches and strandings; legislation; and information and education. The habitat and conservation measures commit parties to 'work towards' the prevention of release of hazardous substances, the development of modifications to fishing gear and practice to reduce by-catches, the effective regulation of activities that affect their food resources, and the prevention of other significant disturbance. Additional measures are required to establish an efficient system for reporting and retrieving by-catches and stranded specimens, and further obligations to 'endeavour to establish' the prohibition under national law of the intentional killing and taking of small cetaceans and the obligation to release any animals caught alive and in good health. The Convention is administered by Meetings of the Parties, assisted by an advisory committee and a secretariat. A second Agreement on the Conservation of the Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area (1996 ACCOBAMS) was adopted in 1996 and came into force in June 2001.⁶³³

1992 NAMMCO

In April 1992, the Faroe Islands, Greenland, Iceland and Norway adopted an Agreement on the North Atlantic Marine Mammals Conservation Organization (NAMMCO)⁶³⁴ as a counterbalance to the IWC, which was seen by these countries as having been hijacked by non-whaling interests. The aims of NAMMCO include the conservation of marine mammals in the North Atlantic, although its powers are limited to those of an advisory and scientific nature. Participation in NAMMCO is open to other states provided that they are approved by all parties, a

⁶³⁰ New York, 17 March 1992, in force 29 March 1994; eight states are party.

⁶³¹ Art. 2(1) and (2); 'small cetacean' is defined as 'any species, subspecies or population of toothed whales *Odontocet*, except the sperm whale *Physeter macrocephalus*': Art. 1(2)(a).

⁶³² Art. 8.2.

⁶³³ Monaco, 24 November 1996, in force 1 June 2001, 36 ILM 777 (1997); twelve states are party.

⁶³⁴ Nuuk, Greenland, 9 April 1992, in force 7 July 1992; four states are party.

stringent requirement which reflects the desire to prevent entry by states which do not share a similar desire to allow the resumption of at least some commercial whaling and for increased cultural exceptions to the existing moratorium. It remains to be seen whether NAMMCO is an 'appropriate international organisation' within the meaning of Article 65 of UNCLOS.

In 1999, France, Italy and Monaco concluded an Agreement Concerning the Creation of a Marine Mammal Sanctuary in the Mediterranean. The 1999 Agreement establishes a sanctuary for whales and dolphins in the Mediterranean Sea off the coasts of the signatory states. It is the largest marine protected area in the Mediterranean.⁶³⁵

Marine birds

Albatrosses and petrels are marine migratory species, which are susceptible to threats operating throughout their range, particularly the incidental catch of seabirds during long-line and trawl-fishing operations, but also due to chemical contamination, marine pollution and over-exploitation of food resources. Recognising the need for international co-operation on such migratory species, in 2001 states concluded, under the Convention on the Conservation of Migratory Species of Wild Animals (1979 Bonn Convention), the Agreement on the Conservation of Albatrosses and Petrels (ACAP), which entered into force on 1 February 2004 and was amended in 2009.⁶³⁶

The Agreement aims at achieving and maintaining a favourable conservation status for albatrosses and petrels, guided by the precautionary approach. Conservation measures shall apply to species listed in its Annex 1, which currently covers nearly thirty species of albatrosses and petrels. ACAP has established an Action Plan describing a number of conservation measures to be implemented by parties, which include research and monitoring, reducing incidental mortality in fisheries, eradicating non-native species at breeding sites and reducing disturbances, habitat loss and pollution.⁶³⁷

ACAP is not geographically restricted, although so far it has focused on species that breed in the southern hemisphere. ACAP has established a number of memoranda of understanding with other organisations that have competence over these species such as CCAMLR,⁶³⁸ with RFMOs and with advisory organisations such as the Latin American Fisheries Development Organization (OLDEPESCA).⁶³⁹ ACAP supports the implementation of the actions elaborated in the FAO International Plan of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries.⁶⁴⁰

Destructive fishing practices⁶⁴¹

Apart from the rules designed to protect particular species or habitats of fisheries, international law also regulates methods and means of fishing to conserve stocks. The Regulations

⁶³⁵ Rome, 25 November 1999. ⁶³⁶ The interim secretariat is located in Hobart, Australia.

⁶³⁷ Arts. III and VI.

⁶³⁸ Memorandum of Understanding (MoU) between the Secretariat for the Agreement on the Conservation of Albatrosses and Petrels (ACAP) and the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR), Hobart, 1 April 2010.

⁶³⁹ Memorandum of Understanding between the Latin American Organization for Fisheries Development and the Secretariat for the Agreement on the Conservation of Albatrosses and Petrels, La Paz, Bolivia, 4 September 2009.

⁶⁴⁰ Art. III.1(h).

⁶⁴¹ D. M. Johnston, 'The Driftnetting Problem in the Pacific Ocean: Legal Considerations and Diplomatic Options', 21 *Ocean Development and International Law* 5 (1990); W. T. Burke, 'Driftnets and Nodules: Where Goes the United

established by the tribunal in the *Pacific Fur Seal* arbitration prohibited the use of nets, firearms and explosives, and similar provisions are to be found in many other international fisheries agreements. Technological innovations have led to the use of driftnets of a width of up to thirty miles to sweep the high seas with 'the single most destructive fishing technology ever devised by man'.⁶⁴² Driftnets have been controversial because of the advantages of scale which they bring to fishing practices and because they incidentally catch non-target fish, dolphins, turtles and sea birds.

Driftnet fishing

The first agreement to address driftnet fishing directly was the 1989 Convention for the Prohibition of Fishing with Long Driftnets in the South Pacific, which requires parties to prohibit its nationals and 'vessels documented under its laws' from engaging in driftnet fishing activities in the area governed by the 1986 Noumea Convention.⁶⁴³ The 1989 Convention defines a driftnet as a 'gillnet or other net or a combination of nets which is more than 2.5 kilometres in length the purpose of which is to enmesh, entrap or entangle fish by drifting on the surface of or in the water'.⁶⁴⁴ Driftnet fishing activities include: the use of a driftnet to catch, take or harvest fish; attempts to carry out such activities or engage in activities which can reasonably be expected to have that result; and any supporting or preparatory activities.⁶⁴⁵ Parties must adopt measures to prevent assistance in the use of driftnets in the Convention's area of application (the 'Area'), to prohibit the use of driftnets within their jurisdiction, and to prohibit the transshipment of driftnet catches within areas under their jurisdiction.⁶⁴⁶ Further measures which parties are permitted but not required to adopt (provided that they are consistent with international law) include: prohibiting the landing of driftnet catches within their territories; prohibiting the processing of driftnet catches in their facilities; prohibiting imports of fish or fish products caught using a driftnet; restricting port access for driftnet fishing vessels; and prohibiting the possession of driftnets on board any fishing vessel within their jurisdiction.⁶⁴⁷ The South Pacific Forum Fisheries Agencies (FFA) has administrative responsibilities, and the Convention additionally provides for consultation and co-operation with 'distant water fishing nations' and other entities in the conservation of South Pacific albacore tuna.⁶⁴⁸ The Convention is only open to signature, ratification and accession by members of the FFA and to certain states or territories who are within or linked to the Convention Area.⁶⁴⁹ In 1990, Protocols to the Convention were adopted to allow states outside the Convention Area to associate themselves with the Convention. Protocol I is open to states

States?', 21 *Ocean Development and International Law* 237 (1990); W. T. Burke, 'Regulation of Driftnet Fishing on the High Seas and the New International Law of the Sea', 3 *Georgetown International Environmental Law Review* 265 (1991); M. R. Islam, 'The Proposed "Driftnet Free Zone" in the South Pacific and the Law of the Sea Convention', 40 *International and Comparative Law Quarterly* 184 (1991); T. Burke, M. Freeburg and E. Miles, 'UN Resolutions on Driftnet Fishing: An Unsustainable Precedent for High Seas and Coastal Fisheries Management', 25 *Ocean Development and International Law* 127 (1994); R. J. Smith, 'The Driftnet Dilemma', in R. J. Smith, *Negotiating Environment and Science: An Insider's View of International Agreements, from Driftnets to the Space Station* (2009), 19; R. Caddell, 'Caught in the Net: Driftnet Fishing Restrictions and the European Court of Justice', 22 *Journal of Environmental Law* 301 (2010).

⁶⁴² Cited in C. Stone, *The Gnat Is Older Than Man* (1993), 7–8.

⁶⁴³ Wellington, 23 November 1989, in force 17 May 1991, 29 ILM 1454 (1990); thirteen states are party. On the 1986 Noumea Convention, see p. 486, below.

⁶⁴⁴ Art. 1(b). ⁶⁴⁵ Art. 1(c). ⁶⁴⁶ Art. 3(1). ⁶⁴⁷ Art. 3(2). Parties may also take stricter measures: Art. 3(3).

⁶⁴⁸ Arts. 5–9. ⁶⁴⁹ Art. 10.

whose nationals or fishing vessels fish within the Convention Area, and requires them, *inter alia*, to prohibit the use of driftnets by their nationals or vessels.⁶⁵⁰ Protocol II is open to states that are contiguous with or adjacent to the Convention Area, and also requires them, *inter alia*, to prohibit the use of driftnets by their nationals or vessels.⁶⁵¹

In 1989, the UN General Assembly took up the issue, and in 1991 adopted a resolution calling on all members of the international community to ensure that a global moratorium on all large-scale pelagic driftnet fishing was fully implemented on the high seas, including enclosed seas and semi-enclosed areas, by 31 December 1992.⁶⁵² The resolution is addressed to 'all members of the international community', rather than to states or to members of the United Nations, and was adopted despite strong lobbying by commercial interests. The resolution also appears to implement the precautionary principle by shifting the burden of proof in decision-making: its Preamble notes that some members of the international community had reviewed the best available scientific data on the impact of driftnet fishing and failed to conclude that the practice had no adverse impacts on the conservation and sustainable management of marine living resources. The resolution is not itself legally binding, but the fact that it was adopted by consensus, that its terms are clear, and that it has received support from a very large number of states since its adoption, suggests that it may now reflect a rule of customary international law.⁶⁵³

Since adoption of this resolution, the UN General Assembly has reaffirmed its call to end driftnet fishing on an almost yearly basis. In 2000, it included a specific item on 'large-scale pelagic drift-net fishing' in the agenda for the General Assembly's yearly resolution on 'Ocean and the Law of the Sea', and later on in the so-called 'Sustainable Fisheries Resolutions'.⁶⁵⁴ Since then, the General Assembly has reaffirmed the importance it attaches to compliance with Resolution 46/125 and urged states and entities to enforce its provisions fully. In its resolution of 2011, the General Assembly issued a more forceful call to states. It expressed concern that the practice of large-scale pelagic driftnet fishing remains a threat to marine living resources and urged states, individually and through RFMOs, to 'implement and enforce the present global moratorium on the use of large-scale pelagic driftnets on the high seas'.⁶⁵⁵

Bottom trawling⁶⁵⁶

In the early 2000s attention was drawn to the harmful impact of deep-sea bottom trawling, a fishing activity aimed at taking bottom species, such as groundfish and prawns, and which is considered to pose a threat to the biodiversity of vulnerable deep-sea habitats and ecosystems given that deep-sea trawls can remove all forms of deep-sea life from the sea floor. Seamounts

⁶⁵⁰ Noumea, New Caledonia, 20 October 1990, not yet in force, 29 ILM 1462 (1990), Arts. 2 and 7.

⁶⁵¹ *Ibid.*, Arts. 2 and 7.

⁶⁵² UNGA Res. 46/215 (1991); also UNGA Res. 44/225 (1989); and UNGA Res. 45/197 (1990).

⁶⁵³ Agenda 21 declares that 'states should fully implement' Res. 46/215: para. 17.54.

⁶⁵⁴ UNGA Res. 55/8 (2000). See also earlier the resolutions, Res. 49/116, Res. 118 (1994), Res. 50/25 (1995), Res. 51/36 (1996), Res. 52/29 (1997), Res. 53/33 (1998) and Res. 55/8 (2000); and the later resolutions, Res. 57/142 (2003), Res. 58/14 (2004), Res. 59/25 (2005), Res. 60/31 (2006), Res. 61/105 (2007), Res. 62/177 (2008), Res. 63/112 (2009) and Res. 64/72 (2010).

⁶⁵⁵ UNGA Res. 65/38 (2011), paras. 75–8.

⁶⁵⁶ M. Gianni, *High Seas Bottom Trawl Fisheries and Their Impacts on the Biodiversity of Vulnerable Deep-Sea Ecosystems: Options for International Action* (IUCN, 2004); K. Tetzlaff, 'Bottom Trawling on the High Seas: Protection under International Law from Negative Effects?', *New Zealand Journal of Environmental Law* 239 (2005).

and deep-sea corals are regarded as being particularly fragile. Until recently, there was no specific international regulation of this type of fishing, but as a result of calls from the UN General Assembly to protect deep-sea areas and regulate bottom fishing some developments have taken place. Current rules are discussed below, in the context of addressing the conservation of marine biodiversity.⁶⁵⁷

Illegal, unreported and unregulated (IUU) fishing⁶⁵⁸

A significant proportion of fishing activities is carried out in contravention of existing domestic or international regulations. In addition, there are important ocean areas, species and activities that are not regulated, either by individual states or by international agreements, such as those establishing RFMOs, as called for by UNCLOS and by the 1995 Fish Stocks Agreement. These practices have been acknowledged to result in direct and indirect economic losses, and to have socio-economic impacts and environmental impacts. Known environmental impacts include: overfishing as a result of uncontrolled fishing activity; damage to habitats by using prohibited gear and fishing in protected areas; and by-catch of non-targeted and threatened or endangered species, such as turtles, sharks or marine mammals.⁶⁵⁹ It is difficult to make an estimate of ongoing illegal fishing, but, according to research published in 2009, estimates of the total current losses due to illegal and unreported fishing worldwide are between US\$9 billion and US\$24 billion, with greater losses identified in developing countries. It is estimated that in western Africa total catches from illegal and unreported fishing could be 40 per cent higher than reported catches.⁶⁶⁰

RFMOs began turning their attention to the problem of illegal fishing during the 1990s, as awareness increased about the fact that these practices were undermining the management efforts of regional bodies. CCAMLR was the first organisation to refer to this situation as 'illegal, unreported and unregulated (IUU) fishing' in 1997. Shortly thereafter, the FAO paid attention to this issue and developed, and finally adopted in 2001, the 'International Plan of Action to Prevent, Deter and Eliminate Illegal Unreported and Unregulated Fishing' (IPOA-IUU).⁶⁶¹ The

⁶⁵⁷ See pp. 439–40, below.

⁶⁵⁸ High Seas Task Force, *Closing the Net: Stopping Illegal Fishing on the High Seas*. Governments of Australia, Canada, Chile, Namibia, New Zealand and the United Kingdom, WWF, IUCN and the Earth Institute at Columbia University (2006); R. J. Baird, *Aspects of Illegal, Unreported, and Unregulated Fishing in the Southern Ocean* (2006); E. J. Molenaar, 'Port State Jurisdiction: Towards Mandatory and Comprehensive Use', in D. Freestone, R. Barnes and D. Ong (eds.), *The Law of the Sea: Progress and Prospects* (2006), 192; K. W. Riddle, 'Illegal, Unreported, and Unregulated Fishing: Is International Cooperation Contagious?', *37 Ocean Development and International Law* 265 (2006); J. Swan, 'Port State Measures to Combat IUU Fishing: International and Regional Developments', *7 Sustainable Development Law and Policy* 38 (2006); P. Bender, 'A State of Necessity: IUU Fishing in the CCAMLR Zone', *13 Ocean and Coastal Law Journal* 233 (2008); M. A. Palma, M. Tsamenyi and W. Edeson, *Promoting Sustainable Fisheries: The International Legal and Policy Framework to Combat Illegal, Unreported and Unregulated Fishing* (2010); T. M. Ndjaye, 'Illegal, Unreported and Unregulated Fishing: Responses in General and in West Africa', *10 Chinese Journal of International Law* 373 (2011).

⁶⁵⁹ Marine Resources Assessment Group, *Review of Impacts of Illegal, Unreported and Unregulated Fishing on Developing Countries* (2005), www.dfid.gov.uk/pubs/files/illegal-fishing-mrag-report.pdf.

⁶⁶⁰ D. J. Agnew, J. Pearce, G. Pramod *et al.*, 'Estimating the Worldwide Extent of Illegal Fishing', *PLoS ONE* 4(2): e4570. doi:10.1371/journal.pone.0004570.

⁶⁶¹ International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (IPOA-IUU), approved by the FAO Committee on Fisheries by consensus on 2 March 2001. See also the later 2005 Rome Declaration on Illegal, Unreported and Unregulated Fishing, Adopted by the FAO Ministerial Meeting on Fisheries, Rome, 12 March 2005. See J. Swan, *International Action and Responses by Regional Fishery Bodies or Arrangements to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing*, FAO Fisheries Circular No. 996 (2004), 1–2.

IPOA-IUU, elaborated within the framework of the FAO Code of Conduct for Responsible Fisheries, establishes the responsibility for all states, and particularly flag states, to take legislative, control and enforcement measures against IUU fishing. The plan of action provides the most generally accepted definition of 'illegal', 'unreported' and 'unregulated' fishing, which defines 'unregulated' fishing as including fishing activities

in areas or for fish stocks in relation to which there are no applicable conservation or management measures and where such fishing activities are conducted in a manner inconsistent with State responsibilities for the conservation of living marine resources under international law.

This provision opens up the possibility for states to apply restrictive measures to activities that may not be specifically prohibited but that states regard as contravening, for example, the obligation to 'protect and preserve the marine environment' established by UNCLOS.⁶⁶²

Since 2001, the UN General Assembly has acknowledged in its yearly resolutions that IUU fishing 'remains one of the greatest threats to marine ecosystems and continues to have serious and major implications for the conservation and management of ocean resources'. It has supported the adoption and then the implementation of the IPOA-IUU. Since 2003, it has dedicated a special section of its 'Sustainable Fisheries' resolutions to the topic of IUU fishing, in which it has urged states to take a number of measures to end these practices, such as complying with flag state responsibilities, strengthening international co-operation and having RFMOs take measures in this regard.⁶⁶³ The Johannesburg Plan of Implementation also called upon states to develop national and regional plans of action to implement the FAO Plan by 2004.⁶⁶⁴

Since 2001, steps have been taken to implement the IPOA-IUU at the domestic, regional and global levels. In 2007, the EU adopted a new strategy to prevent, deter and eliminate IUU fishing, which was followed by ambitious legislation that would keep out of the EU market all fish that cannot be certified as not resulting from IUU operations.⁶⁶⁵ In the framework of RFMOs, a number of initiatives have taken place since the mid-2000s to strengthen monitoring, control and surveillance efforts; introduce catch certification schemes to ensure the legality of catches of valuable stocks, such as toothfish and bluefin tuna; and adopt lists of vessels engaged in IUU fishing, to which RFMOs apply restrictions, such as the prohibition to land or transship in ports of RFMO members.

2009 Agreement on Port State Measures

Primary responsibility to ensure compliance by fishing vessels with international measures on the high seas rests with the flag state. However, lack of effective control by some flag states, including the proliferation of 'flags of convenience' where there is no genuine link between the

⁶⁶² Para. 3.3.2; and for a definition of IUU fishing, see more generally para. 3 of the IPOA-IUU.

⁶⁶³ See UNGA Resolution on 'Oceans and the Law of the Sea' (2001-4); and UNGA Resolutions on 'Sustainable fisheries, including through the 1995 Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, and related instruments' (2003-2010). See also UNGA Res. 57/141.

⁶⁶⁴ Para. 31(d).

⁶⁶⁵ Strategy for the Community to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing, COM (2007) 601 final, not published in the *Official Journal*; Council Regulation (EC) No. 1005/2008; Commission Regulation (EC) No. 1010/2009, and amending legislation.

state of registry and the vessel,⁶⁶⁶ prompted international support for the strengthening of the role of port states in fisheries enforcement. In 2005, the FAO adopted the Port State Model Scheme,⁶⁶⁷ which is a non-binding international instrument that describes basic and minimum port state measures that should be applied by responsible port states and RFMOs, individually or through the adoption of regional agreements. In 2006, the UN Review Conference on the 1995 Fish Stocks Agreement called for the implementation of the measures of the Port State Model Scheme and for the prompt adoption of a new international treaty setting minimum standards for port state measures.⁶⁶⁸ In 2009, after a year-and-a-half of negotiations, the FAO Conference adopted the Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (PSMA).⁶⁶⁹

This Agreement recognises the rights of the port states, but also establishes a number of port state obligations to take measures against vessels identified as being engaged in IUU fishing or fishing related activities. Under the PSMA, the port state can be required to deny port entry, landing and transshipment, and access to port services to vessels for which there is sufficient proof of engagement in IUU fishing. Port states are required to carry out an adequate number of vessel inspections and report to other states and international organisations on their findings.⁶⁷⁰ The PSMA introduces, for the first time, a definition of IUU fishing in a binding agreement of a global nature,⁶⁷¹ and establishes the need for a global information-sharing system for the exchange of information relevant to the PSMA.

CONSERVATION OF MARINE BIODIVERSITY⁶⁷²

The conservation of marine biodiversity and ecosystems is intimately related to the prevention of marine pollution and the sustainable management of marine living resources, reviewed above. Success in pollution abatement and sustainable fisheries practices can ensure that marine ecosystems and biodiversity remain healthy. At the same time, international environmental law has recognised the conservation of marine biodiversity as a regulatory goal in and of itself.

⁶⁶⁶ See M. Gianni and W. Simpson, *The Changing Nature of High Seas Fishing: How Flags of Convenience Provide Cover for Illegal, Unreported and Unregulated Fishing* (Australian Department of Agriculture, Fisheries and Forestry, International Transport Workers' Federation, and WWF International, 2005).

⁶⁶⁷ FAO Council, 128th Session, Rome, 20–25 June 2005, Doc. CL128/7, para. 25.

⁶⁶⁸ Review Conference on the Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, *Compilation of the Recommendations Adopted at the Review Conference in 2006 and Information on the Extent to Which the Recommendations Have Been Implemented by States and Regional Fisheries Management Organizations and Arrangements*, UN Doc. A/CONF.210/2010/INF/1.

⁶⁶⁹ Approved by the FAO Conference at its 36th Session on 22 November 2009, through Res. No. 12/2009, under Art. XIV(1) of the FAO Constitution; not in force.

⁶⁷⁰ See in particular Arts. 9, 11 and 12.

⁶⁷¹ It incorporates the definition of the 2001 FAO International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (IPOA-IUU).

⁶⁷² E. J. Molenaar, 'Managing Biodiversity in Areas Beyond National Jurisdiction', 22 *International Journal of Marine and Coastal Law* 89 (2007); L. A. de la Fayette, 'A New Regime for the Conservation and Sustainable Use of Marine Biodiversity and Genetic Resources Beyond the Limits of National Jurisdiction', 24 *International Journal of Marine and Coastal Law* 221 (2009); E. J. Goodwin, *International Environmental Law and the Conservation of Coral Reefs* (2011).

After UNCED, and more so after the WSSD, international arrangements began to introduce progressively an ecosystem approach to their regimes, and therefore to consider the impacts that different activities had on oceans as a whole. This allowed greater linkage between efforts to abate pollution and measures to manage living resources sustainably and, more generally, to 'conserve biological diversity' in the sense called for by the Convention on Biological Diversity. In this regard, initiatives such as the ones adopted in the framework of the OSPAR and HELCOM, as well as in a number of UNEP Regional Seas Agreements, provide illustrations of the integration of conservation concerns into agreements not initially designed with this objective in mind. Greater co-operation among international organisations with competence over a similar or connected geographical area but with different mandates is also indicative of growing efforts towards greater integration.⁶⁷³

The international legal framework⁶⁷⁴

UNCLOS and the 1995 Fish Stocks Agreement

Under UNCLOS, 'states have the obligation to protect and preserve the marine environment'. This obligation is established in Article 192, which opens Part XII on 'Protection and Preservation of the Marine Environment', and is not limited to the duties to combat pollution that follow in Part XII. However, UNCLOS does not offer much more: Article 194(5), when establishing states' obligations to prevent, reduce and control pollution, adds that 'the measures taken in accordance with this Part shall include those necessary to protect and preserve rare or fragile ecosystems as well as the habitat of depleted, threatened or endangered species and other forms of marine life'. With regard to fisheries, UNCLOS, when establishing the rights of coastal states over living resources, establishes a general obligation for coastal states to co-operate with competent international organisations and specifies that the coastal state, in determining its conservation and management measures, shall take into account a number of factors, including 'fishing patterns, the interdependence of stocks, and any generally recommended international minimum standards, whether sub-regional, regional or global'.⁶⁷⁵

The 1995 Fish Stocks Agreement, which, as explained above, supplements the provisions of UNCLOS on the conservation of marine species, incorporates ecosystem and precautionary approaches. Further, in Article 5, the Agreement expressly establishes that coastal states and states fishing on the high seas shall 'protect biodiversity in the marine environment'.⁶⁷⁶

Convention on Biological Diversity

The provisions of the Convention on Biological Diversity (CBD) also extend to marine biodiversity, and are not overridden by UNCLOS as long as they are consistent with the 'general principles and objectives' of the Convention.⁶⁷⁷ The CBD does not contain a general obligation to protect biodiversity, as in the 1995 Fish Stocks Agreement, but it establishes the responsibility of states 'to ensure that activities within their jurisdiction *or control* do not cause damage to the environment of other States or of areas beyond the limits of national

⁶⁷³ See e.g. pp. 436–7, below.

⁶⁷⁴ P. Birnie, A. Boyle and C. Redgwell, *International Law and the Environment* (2009, 3rd edn), 744–52.

⁶⁷⁵ Art. 61(3). ⁶⁷⁶ On the 1995 Fish Stocks Agreement, see pp. 408–10, above.

⁶⁷⁷ P. Birnie, A. Boyle and C. Redgwell, *International Law and the Environment* (2009, 3rd edn), 750.

jurisdiction'.⁶⁷⁸ Since the first Conference of the Parties to the CBD, marine issues have consistently been part of the CBD agenda. At the second meeting, in 1995, parties adopted the Jakarta Mandate on Marine and Coastal Biological Diversity,⁶⁷⁹ which led to expert meetings (the first one in 1997) and to the development of a work plan which set objectives and priority activities within the five key programme elements: implementation of integrated marine and coastal area management; marine and coastal living resources; marine and coastal protected areas; mariculture; and invasive alien species.⁶⁸⁰ The work plan was reviewed in 2010. The Conference of the Parties has taken decisions on a number of issues, including decisions relating to the conservation and sustainable use of deep seabed genetic resources beyond the limits of national jurisdiction;⁶⁸¹ implementation of integrated marine and coastal area management; and options for co-operation for the establishment of marine protected areas in marine areas beyond the limits of national jurisdiction.⁶⁸²

Agenda 21 and the Johannesburg Plan of Implementation

Agenda 21 called for more integrated approaches to marine and coastal area management and development, and, among other objectives, it established that coastal states should undertake measures to maintain biological diversity and productivity of marine species and habitats under national jurisdiction through research and the establishment of marine protected areas.⁶⁸³

The Johannesburg Plan of Implementation supports the implementation of Chapter 17 of Agenda 21, and establishes specific objectives concerning the conservation of the oceans to:

- (a) Maintain the productivity and biodiversity of important and vulnerable marine and coastal areas, including in areas within and beyond national jurisdiction;
- (b) Implement the work programme arising from the Jakarta Mandate on the Conservation and Sustainable Use of Marine and Coastal Biological Diversity of the Convention on Biological Diversity, including through the urgent mobilisation of financial resources and technological assistance and the development of human and institutional capacity, particularly in developing countries;
- (c) Develop and facilitate the use of diverse approaches and tools, including the ecosystem approach, the elimination of destructive fishing practices, the establishment of marine protected areas consistent with international law and based on scientific information, including representative networks by 2012 and time/area closures for the protection of nursery grounds and periods, proper coastal land use and watershed planning and the integration of marine and coastal areas management into key sectors;
- (d) Develop national, regional and international programmes for halting the loss of marine biodiversity, including in coral reefs and wetlands;
- (e) Implement the Ramsar Convention including its joint work programme with the Convention on Biological Diversity, and the programme of action called for by the International Coral Reef Initiative to strengthen joint management plans and international networking for wetland ecosystems in coastal zones, including coral reefs, mangroves, seaweed beds and tidal mud flats.⁶⁸⁴

⁶⁷⁸ Art. 3 (emphasis added). ⁶⁷⁹ Decision II/10 (1995). ⁶⁸⁰ Decision VII/5 (2005).

⁶⁸¹ See further Chapter 10, pp. 463–4, below. ⁶⁸² Decisions VIII/21, VIII/22 and VIII/24 (2006).

⁶⁸³ Agenda 21, paras. 17.1, 17.7, 17.8 and 17.86.

⁶⁸⁴ Plan of Implementation, para. 32. On the Ramsar Convention, see further Chapter 10, pp. 492–4, below.

Resolutions of the United Nations General Assembly

UN General Assembly resolutions are not binding, but in the field of protection of marine biodiversity have played a particularly influential role in the progressive development of international measures for the conservation of marine biodiversity and ecosystems. As mentioned earlier, the resolutions of the General Assembly to end driftnet fishing had a positive impact in substantially reducing the use of this gear. Since 2002, the UN General Assembly has called for the protection of deep-sea ecosystems and its resolutions have prompted RFMOs and states to take precautionary approaches in the regulation of bottom fishing, particularly bottom trawling, and to protect vulnerable marine ecosystems.⁶⁸⁵

Since 1997, the UN General Assembly has adopted, on an annual basis, a resolution on the topic of 'Oceans and the Law of the Sea'. From 2002, these resolutions called upon states to implement the objective of the Johannesburg Plan of Implementation to establish marine protected areas. In addition, in 1999, the UN General Assembly established the United Nations Open-Ended Informal Consultative Process on Oceans and the Law of the Sea (also known as UNICPOLOS) to review on an annual basis the developments in ocean affairs and the law of the sea, choosing a particular theme for each yearly meeting.⁶⁸⁶

In 2005, the General Assembly established the 'Ad Hoc Open-Ended Informal Working Group to study issues relating to the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction' (also known as BBNJ), with the objective to improve understanding on these issues and to promote international co-operation in this regard.⁶⁸⁷

Regional arrangements

Most regional seas agreements, whether concluded under the umbrella of UNEP or independently of it, contain at least one provision aimed at ensuring the conservation of special habitats and species. Half of UNEP Regional Seas Agreements state, in very similar formulations, that contracting parties shall

individually or jointly take all appropriate measures to protect and preserve rare or fragile ecosystems, as well as the habitat of depleted, threatened or endangered species in the Convention Area. To this end the Contracting Parties shall endeavour to establish [or establish] protected areas.⁶⁸⁸

The 1992 Black Sea Convention introduces a different objective, stating that parties, when taking measures to abate pollution, shall 'pay particular attention to avoiding harm to marine life and living resources, in particular by changing their habitat'.⁶⁸⁹ The more

⁶⁸⁵ See pp. 439–42, below. See generally the yearly resolutions on 'Sustainable Fisheries, Including Through the 1995 Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, and Related Instruments'.

⁶⁸⁶ UNGA Res. 54/33. ⁶⁸⁷ UNGA Res. 59/24, 4 February 2005. See further Chapter 10, pp. 463–4, below.

⁶⁸⁸ Barcelona Convention, Art. 10; Noumea Convention, Art. 14; Nairobi Convention, Art. 10; Cartagena Convention, Art. 10; Abidjan Convention, Art. 11. See pp. 355–8, above.

⁶⁸⁹ Art. XIII.

recent 2002 Antigua Convention for the North East Pacific region establishes a number of objectives related to the protection of marine biological diversity, and requires parties to adopt measures which include the identification of areas to be protected and the rehabilitation of degraded habitats and ecosystems; the identification and protection of endangered species of flora and fauna; and the identification of marine coastal areas vulnerable to man-made activities.⁶⁹⁰

A number of the regional agreements have been complemented by a specific protocol concerning the establishment of protected areas and/or the protection of habitats and species. Examples include: the 1982 Geneva Protocol Concerning Mediterranean Specially Protected Areas (1982 Geneva SPA Protocol);⁶⁹¹ the 1985 Nairobi Protocol Concerning Protected Areas and Wild Fauna and Flora (1985 Nairobi Fauna and Flora Protocol);⁶⁹² the 1989 Paipa Protocol for the Conservation and Management of Protected Marine and Coastal Areas of the South-East Pacific (1989 Paipa SPA Protocol);⁶⁹³ the 1990 Kingston Protocol Concerning Specially Protected Areas and Wildlife in the Wider Caribbean Region (1990 Kingston SPA Protocol);⁶⁹⁴ the 2002 Black Sea Biodiversity and Landscape Conservation Protocol;⁶⁹⁵ the 2005 Protocol Concerning the Conservation of Biological Diversity and the Establishment of a Network of Protected Areas in the Red Sea and Gulf of Aden; and the 2008 Protocol on Integrated Coastal Zone Management in the Mediterranean.⁶⁹⁶

Some of these regional arrangements have established programmes on biodiversity protection. Of these, a number are quite well developed, as in the Caribbean region, and particularly in the Mediterranean, with the Specially Protected Areas Regional Activity Centre (SPA/RAC) and under the OSPAR and the Baltic Sea agreements. In 2003, parties to these latter agreements established the 'Joint Target of HELCOM and OSPAR to complete by 2010 an Ecologically Coherent Network of Well Managed Marine Protected Areas', and have developed specific strategies to this end.⁶⁹⁷ Other regional agreements have made less progress in this regard, although some regimes, such as that of the Abidjan Convention, agreed in 2011 to develop a protocol on marine protected areas.⁶⁹⁸

⁶⁹⁰ Art. 6.2(c), (d), (f) and (g). See also Art. 10 on integrated coastal management.

⁶⁹¹ Geneva, 3 April 1982, in force 23 March 1986, IELMT 982:26; twenty-one states and the EU are party. Revised in Barcelona on 9–10 June 1995 as the Protocol Concerning Specially Protected Areas and Biological Diversity in the Mediterranean (SPA and Biodiversity Protocol), in force 12 December 1999, OJ L322, 14 December 1999, 3.

⁶⁹² Nairobi, 21 June 1985, not in force, IELMT 985:47.

⁶⁹³ Paipa, 21 September 1989, in force 1994, IELMT 989:71.

⁶⁹⁴ Kingston, 18 January 1990, in force 18 June 2000, 1 *Yearbook of International Environmental Law* 441 (1990); nine states are party.

⁶⁹⁵ Sofia, 14 June 2002, available at www.blacksea-commission.org, not in force; four states are party.

⁶⁹⁶ Madrid, 21 January 2008, in force 24 March 2011.

⁶⁹⁷ See e.g. 'Towards the Joint Target of HELCOM and OSPAR to Complete by 2010 an Ecologically Coherent Network of Well Managed Marine Protected Areas, Implementation Report on Status and Ecological Coherence of the HELCOM BSPA Network as of February 2010', HELCOM, Doc. HOD 31/2010, April 2010; Ministerial Statement, OSPAR Commission, Annex 49 (Ref. M6.2), September 2010. On the outcomes of the OSPAR strategy on MPAs, see pp. 446–7, below.

⁶⁹⁸ On regional initiatives to establish marine protected areas, see pp. 444–7, below.

Protection of deep-sea ecosystems⁶⁹⁹

The deep sea is perceived as the last frontier for the expansion of marine fisheries.⁷⁰⁰ Particularly since the mid-1990s, greater pressure has been placed on deep-sea fisheries, mainly as a result of the reduction of fish stocks inside EEZs and technological advances that have allowed vessels to reach all corners of oceans (also, it should be noted, with the assistance of continued subsidies to bottom trawl fleets).⁷⁰¹ Deep-sea fisheries are considered to encompass fishing below 400 metres and down to 2,000 metres. Bottom trawling is the fishing method used by nearly 70 per cent of vessels engaged in these fisheries,⁷⁰² which involves the trawl making bottom contact for several hours. Bottom trawls take with them, in addition to targeted species, non-targeted species, and damage vulnerable habitats and species such as corals and sponges.⁷⁰³ Some of the principal targeted fisheries are: roundnose grenadier, orange roughy, northern prawns, Greenland halibut and American plaice.

There is limited data on the levels of biodiversity in the deep sea but there is general agreement that the diversity of bottom dwelling species in the deep ocean areas is high. Little is also known about the impacts of bottom fishing on deep-sea habitats and species. However, it is thought that impacts may be felt on the functional aspects of the ecosystem as a result of the removal of species from the ecosystems in which they play a role, and also on the structural elements of the ecosystem as a result of the physical impact of fishing on rare or fragile organisms attached to the seabed, which are keystone species and/or shape the basic structure of the benthic ecosystems in which many of these fisheries are found. With regard to the physical impact of fishing, the International Council for the Exploration of the Sea (ICES) concluded in 2002, with reference to deep-sea fishing in the North Atlantic, that 'there is sufficient information to suggest that the most effective way of mitigating the effect of [deep-water] trawling on these habitats is to close such areas to fishing'.⁷⁰⁴

⁶⁹⁹ M. Gianni, *High Seas Bottom Trawl Fisheries and Their Impacts on the Biodiversity of Vulnerable Deep-Sea Ecosystems: Options for International Action* (IUCN, 2004); M. W. Lodge, 'Improving International Governance in the Deep Sea', 19 *International Journal of Marine and Coastal Law* 299 (2004); S. A. Bonney, 'Bioprospecting, Scientific Research and Deep Sea Resources in Areas Beyond National Jurisdiction: A Critical Legal Analysis', 10 *New Zealand Journal of Environmental Law* 41 (2006); K. M. Gjerde, 'Ecosystems and Biodiversity in Deep Waters and the High Seas', UNEP Regional Seas Reports and Studies No. 178 (2006); D. K. Leary, *International Law and the Genetic Resources of the Deep Sea* (2007); E. J. Molenaar, 'Managing Biodiversity in Areas Beyond National Jurisdiction: Existing and New Rights to Conserve Marine Biodiversity', in *Law, Science and Ocean Management* (2007); P. K. Probert, S. Christiansen, K. M. Gjerde, S. Gubbay and R. S. Santos, 'Management and Conservation of Seamounts', in T. J. Pitcher, T. Morato and P. J. B. Hart *et al.* (eds.), *Seamounts: Ecology, Fisheries and Conservation* (2008); A. Bensch, M. Gianni, D. Gréboval, J. S. Sanders and A. Hjort, *Worldwide Review of Bottom Fisheries in the High Seas*, FAO Fisheries and Aquaculture Technical Paper No. 522, Rev.1. (2009); A. R. Bemm, P. P. Weaver, D. S. M. Billet, S. van den Hove and A. P. Murdock, 'Human Activities on the Deep Seafloor in the North East Atlantic: An Assessment of Spatial Extent', PLoS ONE 5(9): e12730. doi:10.1371/journal.pone.0012730.

⁷⁰⁰ FAO, *Deep-Sea Fisheries in the High Seas* (2009), 2.

⁷⁰¹ U. R. Sumaila, A. Khan, L. Teh, R. Watson, P. Tyedmers and D. Pauly, 'Subsidies to High Seas Bottom Trawl Fleets and the Sustainability of Deep-Sea Demersal Fish Stocks', 34 *Marine Policy* 495 (2010). On the question of fisheries subsidies and their relationship with the rules of international trade, see Chapter 19, pp. 805–6, below.

⁷⁰² FAO, *Deep-Sea Fisheries in the High Seas* (2009), 4.

⁷⁰³ M. Gianni, *High Seas Bottom Trawl Fisheries and Their Impacts on the Biodiversity of Vulnerable Deep-Sea Ecosystems: Options for International Action* (IUCN, 2004), 10.

⁷⁰⁴ M. Gianni, *High Seas Bottom Trawl Fisheries and Their Impacts on the Biodiversity of Vulnerable Deep-Sea Ecosystems: Options for International Action* (IUCN, 2004), 16. See also *ibid.*, pp. 4–8 and 12–17, for a review of deep-sea ecosystems and the impacts of bottom fisheries.

UNCLOS and the 1995 Fish Stocks Agreement

International law does not regulate high seas deep-sea fisheries specifically. However, UNCLOS, the 1995 Fish Stocks Agreement and the Convention on Biological Diversity, whose principal provisions have been explained above, provide a basic legal framework for approaching the issues raised. UNCLOS determines fishing rights on a territorial basis: it establishes the rights of the coastal state to fish within its EEZ, including its deep sea (Articles 56 and 61) and to exploit the resources of its continental shelf also beyond the limits of the EEZ, although this is limited to 'living organisms belonging to sedentary species' (Article 77). Under this regime, exploitation of non-sedentary species over the continental shelf beyond 200 nautical miles from the baseline is part of the freedom to fish on the high seas established in Article 87 of the Convention, subject to the conservation and co-operation requirements established in Part V and Part VII(2) and to the general obligation 'to protect and preserve the marine environment' set out in Article 192.

The 1995 Fish Stocks Agreement implements and develops these provisions in light of the precautionary and ecosystem approaches, among other measures. In particular, it requires states to prevent overfishing, assess the impact of fishing, minimise the impact of fishing and apply precaution to new and exploratory fisheries.⁷⁰⁵

Resolutions of the UN General Assembly

In the face of growing concerns over deep-sea fisheries and their potential for considerable destructive impact, the UN General Assembly has begun to consider the issue. Since 2004, it has adopted resolutions that have urged improvements in the protection of deep-sea ecosystems. In Resolution 59/25, the General Assembly called upon states to 'take action urgently' and consider

the interim prohibition of destructive fishing practices, including bottom trawling that has adverse impacts on vulnerable marine ecosystems, including seamounts, hydrothermal vents and cold water corals located beyond national jurisdiction, until such time as appropriate conservation and management measures have been adopted in accordance with international law.⁷⁰⁶

It also called upon members of RFMOs with no competence over bottom fisheries to expand their competence in this regard.

Despite these efforts, a 2006 report from the UN Secretary General concluded that little action had been taken to protect deep-sea ecosystems on the high seas from the adverse impacts of bottom fisheries.⁷⁰⁷ Following calls from several countries, the General Assembly adopted in the same year Resolution 61/105. This resolution, adopted by consensus,

⁷⁰⁵ M. Gianni, *High Seas Bottom Trawl Fisheries and Their Impacts on the Biodiversity of Vulnerable Deep-Sea Ecosystems: Options for International Action* (IUCN, 2004), 67–70.

⁷⁰⁶ UNGA Res. 59/25 (2004), para. 66. See also paras. 67–9.

⁷⁰⁷ *Impacts of Fishing on Vulnerable Marine Ecosystems: Actions Taken by States and Regional Fisheries Management Organizations and Arrangements to Give Effect to Paragraphs 66 to 69 of General Assembly Resolution 59/25 on Sustainable Fisheries, Regarding the Impacts of Fishing on Vulnerable Marine Ecosystems*, Report of the Secretary General, UN. Doc. A/61/154 (2006).

sets time-bound and concrete objectives for states, and particularly for RFMOs with competence, to regulate bottom fisheries. In particular, RFMOs are required to adopt and implement measures in accordance with the precautionary approach, the ecosystem approach and international law:

- (a) to assess, on the basis of the best available scientific information, whether individual bottom fishing activities would have significant adverse impacts on vulnerable marine ecosystems, and to ensure that if it is assessed that these activities would have significant adverse impacts, they are managed to prevent such impacts, or not authorised to proceed;
- (b) to identify vulnerable marine ecosystems and determine whether bottom fishing activities would cause significant adverse impacts to such ecosystems and the long-term sustainability of deep sea fish stocks, *inter alia*, by improving scientific research and data collection and sharing, and through new and exploratory fisheries;
- (c) in respect of areas where vulnerable marine ecosystems, including seamounts, hydrothermal vents and cold water corals, are known to occur or are likely to occur based on the best available scientific information, to close such areas to bottom fishing and ensure that such activities do not proceed unless conservation and management measures have been established to prevent significant adverse impacts on vulnerable marine ecosystems;
- (d) to require members of the regional fisheries management organisations or arrangements to require vessels flying their flag to cease bottom fishing activities in areas where, in the course of fishing operations, vulnerable marine ecosystems are encountered, and to report the encounter so that appropriate measures can be adopted in respect of the relevant site.⁷⁰⁸

In 2009, the UN General Assembly adopted Resolution 64/72, which called for the better implementation of Resolution 61/105 and introduced some additional requirements.⁷⁰⁹

These resolutions have had a noticeable impact on the development of measures to protect deep-sea ecosystems, particularly vulnerable marine ecosystems, and to regulate bottom fishing. A number of RFMOs have taken measures to 'implement' these resolutions. According to a 2011 independent report assessing the implementation of Resolutions 61/105 and 64/72, since the adoption of Resolution 59/25:

- two new agreements to establish RFMOs to manage deep-sea fisheries in the high seas have been negotiated;
- states and RFMOs have taken a number of measures to protect vulnerable marine ecosystems;
- the use of bottom trawls has been prohibited on the high seas in the CCAMLR area;
- NAFO, NEAFC and SEAFO have closed substantial areas in the high seas to bottom fishing; and
- the GFCM has prohibited bottom trawling below 1,000 metres.

However, the resolutions have not been fully implemented.⁷¹⁰

Food and Agriculture Organization

The FAO has contributed in recent years to improving the understanding of deep-sea fisheries, and, in 2010, provided the first review of the state of bottom fisheries worldwide, which

⁷⁰⁸ Para. 83. See also paras. 84–9. ⁷⁰⁹ UNGA Res. 64/72, paras. 119–20.

⁷¹⁰ Deep Sea Conservation Coalition, *Review of the Implementation of the Provisions of UNGA Resolutions 61/105 and 64/72 Related to the Management of High Seas Bottom Fisheries* (2011).

highlights the existence of numerous information and reporting gaps.⁷¹¹ In 2008, it adopted the International Guidelines for the Management of Deep-Sea Fisheries in the High Seas.⁷¹² The Guidelines were negotiated by FAO members and followed a series of expert consultations.⁷¹³ They are applicable to fisheries where the total catch includes species that can only sustain low exploitation rates; and where the fishing gear is likely to contact the seafloor during the normal course of fishing operations. Guided by the precautionary and ecosystem approaches, the guidelines provide a number of management considerations and steps, most notably the need to adopt conservation and management measures for deep-sea resources and to identify vulnerable marine ecosystems.⁷¹⁴

Convention on Biological Diversity

The Conference of the Parties to the Convention did not make a special reference to deep-sea ecosystems and bottom fishing in its programme of action arising from the Jakarta Mandate. However, in its review of the implementation of the programme of work on protected areas for the period 2004–6, the eighth meeting of the Conference of the Parties expressed its ‘deep concern’ over the threats to marine biodiversity beyond national jurisdiction, in particular to seamounts, cold water coral reefs and hydrothermal vents, as a result of destructive fishing practices, including bottom trawling.⁷¹⁵ In 2010, the tenth meeting of the Conference of the Parties called on high seas fishing nations to ‘fully and effectively implement’ General Assembly Resolution 64/72, and not to authorise bottom-fishing activities until such measures have been adopted and implemented.⁷¹⁶

Marine protected areas⁷¹⁷

There are about 130,000 protected areas in the world. Of these, around 5,000 are marine protected areas. Ninety per cent of marine protected areas are established within territorial waters and 10 per cent in international waters.⁷¹⁸ In 2008, 5.9 per cent of the world’s territorial

⁷¹¹ A. Mensch, M. Gianni, D. Gréboval, J. S. Sanders and A. Hjort, *Worldwide Review of Bottom Fisheries in the High Seas*, FAO Fisheries and Aquaculture Technical Paper No. 522, Rev.1 (2009). This report reviews, on a regional basis, the status of deep-sea stocks, the impacts of deep-sea fisheries on vulnerable marine ecosystems (VMEs), and the conservation and management measures adopted by RFMOs on these fisheries. See also the materials developed in expert consultations leading to the adoption of the Guidelines, note 713 below.

⁷¹² See www.fao.org/docrep/011/i0816t/i0816t00.htm.

⁷¹³ Expert Consultation on Deep-Sea Fisheries in the High Seas (Bangkok, Thailand, 21–23 November 2006); Workshop on Vulnerable Ecosystems and Destructive Fishing in Deep-Sea Fisheries (Rome, 26–29 June 2007); Expert Consultation on International Guidelines for the Management of Deep-Sea Fisheries in the High Seas (Bangkok, Thailand, 11–14 September 2007); Workshop on Knowledge and Data on Deep-Sea Fisheries in the High Seas (Rome, 5–8 November 2007); Skippers and Fleet Managers Workshop on the International Guidelines (Cape Town, South Africa, 25–29 May 2008), which discussed the trawl industry.

⁷¹⁴ Para. 22. ⁷¹⁵ Decision VIII/24 (2006). ⁷¹⁶ Decision X/29, para. 54.

⁷¹⁷ T. Scovazzi, ‘Marine Protected Areas on the High Seas: Some Legal and Policy Considerations’, 19 *International Journal of Marine and Coastal Law* 1 (2004); C. Breide and P. Saunders, *Legal Challenges for the Conservation and Management of the High Seas and Areas of National Jurisdiction* (WWF, 2005); E. T. Game, H. S. Grantham, A. J. Hobday *et al.*, ‘Pelagic Protected Areas: The Missing Dimension in Ocean Conservation’, 24 *Trends in Ecology and Evolution* 360 (2009); T. Agardy, G. N. di Sciara and P. Christie, ‘Mind the Gap: Addressing the Shortcomings of Marine Protected Areas Through Large Scale Marine Spatial Planning’, 35 *Marine Policy* 226 (2011).

⁷¹⁸ See World Database on Protected Areas, www.wdpa-marine.org.

seas were protected by nationally designated protected areas, and 0.5 per cent of protected areas were established in the high seas.⁷¹⁹ However, viewing this data globally, not even 1 per cent of the world's oceans are under such form of protection.

There is no single definition of a 'marine protected area' (MPA) in international law, although a commonly accepted notion is provided by the Convention on Biological Diversity:

any defined area within or adjacent to the marine environment, together with its overlying waters and associated flora, fauna and historical and cultural features, which has been reserved by legislation or other effective means, including custom, with the effect that its marine and/or coastal biodiversity enjoys a higher level of protection than its surroundings.⁷²⁰

For some, the notion of an MPA also encompasses other forms of protection, such as spatial and temporal closures established for fisheries management. MPAs may be regulated in many different ways: for example, some MPAs are set up whereby the water column is protected, vertically, instead of over a horizontally defined area.⁷²¹

Support for establishing MPAs stems from reasons similar to those that justify terrestrial protected areas. If properly designed and managed, MPAs can help protect, recover and maintain fish stocks, ecosystem resilience, habitat structure and biological diversity.⁷²² The 2002 Johannesburg Plan of Implementation called upon states to establish marine protected areas 'consistent with international law and based on scientific information', and to achieve representative networks of marine protected areas by 2012.⁷²³ This was reiterated in 2004 by the Conference of the Parties to the Convention on Biological Diversity, and again in 2006 and 2008.⁷²⁴ In Nagoya in 2010, the Conference of the Parties revised and updated its 'Strategic Plan for Biodiversity' for the period 2011–20. It adopted new targets – the Aichi Biodiversity Targets – for the conservation of biodiversity.⁷²⁵ Target 11 states an objective that, by 2020

⁷¹⁹ L. Coad, N. D. Burgess, B. Bomhard and C. Besancon, *Progress on the Convention on Biological Diversity's 2010 and 2012 Targets for Protected Area Coverage*, Technical Report for the IUCN International Workshop on "Looking to the Future of the CBD Programme of Work on Protected Areas", Jeju Island, Republic of Korea (2009), 7.

⁷²⁰ Decision VII/5, note 11.

⁷²¹ See K. Gjerde, 'High Seas Marine Protected Areas and Deep-Sea Fishing', Paper for the Expert Consultation on Deep-Sea Fisheries in the High Seas (2006), 141 and 143–4.

⁷²² K. Gjerde, 'High Seas Marine Protected Areas and Deep-Sea Fishing', Paper for the Expert Consultation on Deep-Sea Fisheries in the High Seas (2006), 141. The seventh Conference of the Parties to the Convention on Biological Diversity noted that marine and coastal protected areas have been proven to contribute to: (a) protecting biodiversity; (b) sustainable use of components of biodiversity; and (c) managing conflict, enhancing economic well-being and improving the quality of life: Decision VII/5. There are also views that consider that the establishment of MPAs needs to integrate social, economic and institutional dimensions to make them viable. Some other commentators consider it necessary to strengthen the scientific basis for the selection and design of MPAs, to monitor and evaluate the effectiveness of MPAs, and to study their effects in contrast to or in combination with other management tools. See generally the papers published in a special issue on MPAs, 66 *ICES Journal of Marine Science* (2009).

⁷²³ Plan of Implementation, para. 32(c).

⁷²⁴ Decisions VII/5 and VII/28 (2004); Decision VIII/24 (2006); Decision IX/18 (2008). See also *Programme of Work on Protected Areas* (2004).

⁷²⁵ See further Chapter 10, pp. 462–3, below.

10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes.⁷²⁶

The regulation of MPAs under international law differs for areas established under national jurisdiction, namely, within a state's EEZ, and for areas beyond national jurisdiction. A number of regional agreements foresee the establishment of MPAs in both EEZs and the high seas.⁷²⁷

Marine protected areas within the EEZ

Under Part V of UNCLOS, the coastal state can take measures to maintain and restore populations and to prevent over-exploitation of its resources, subject to international co-operation requirements, particularly with regard to straddling and highly migratory fish stocks.⁷²⁸ Hence, within this framework, a coastal state is entitled to establish an MPA, subject to the requirements of UNCLOS and in particular its provisions on the EEZ. Some states consider that the total closure of a marine area impinges upon their fishing and other rights under international law, and, in 2010, a dispute over the establishment of an MPA under Part V of UNCLOS reached the international arena.

On 20 December 2010, Mauritius instituted arbitral proceedings against the United Kingdom under Article 287 of UNCLOS.⁷²⁹ The dispute concerns the establishment by the United Kingdom of an MPA up to the outer limit of the EEZ of the Chagos Archipelago, in the Indian Ocean. The MPA extends over a quarter-million square miles and bans all forms of fishing in the area. It would be the largest 'no-take' MPA in the world. The Chagos Archipelago was formerly under British rule and since 1965 it forms the 'British Indian Ocean Territory' (BIOT), including the military base of Diego Garcia. Since its independence in 1968, Mauritius has claimed sovereignty over the Chagos Archipelago, on the ground that dismemberment of the territory of Mauritius was carried out in violation of international laws relating to decolonisation. Also relevant to the case is the eviction by 1973 of the entire local population of the islands, without a right of return to the Chagos Archipelago. This matter is pending before the European Court of Human Rights, in a case brought by the former inhabitants of the Archipelago.⁷³⁰

In its application, Mauritius requests the Annex VII arbitral tribunal to declare, in respect of the Chagos Archipelago, that:

⁷²⁶ Decision X/2 (2010). ⁷²⁷ See pp. 437–8, above. ⁷²⁸ See pp. 407–11, above.

⁷²⁹ On 20 December 2010, Mauritius initiated proceedings against the United Kingdom under the dispute settlement provisions of UNCLOS: see P. Prows, 'Mauritius Brings UNCLOS Arbitration Against the United Kingdom over the Chagos Archipelago', 15(8) *ASIL Insights* (April 2011), available at www.asil.org/pdfs/insights/insight110405.pdf. At the time of writing, the challenge was being considered by the tribunal. For further information, see www.pca-cpa.org/showpage.asp?pag_id=1029.

⁷³⁰ European Court of Human Rights, *Chagos Islanders v. United Kingdom*, App. No. 35622/04.

- (1) the 'MPA' is not compatible with the 1982 Convention, and is without legal effect; and/or
- (2) the United Kingdom is not a 'coastal state' within the meaning of the 1982 Convention and is not competent to establish the 'MPA'; and/or
- (3) only Mauritius is entitled to declare an exclusive zone under Part V of the 1982 Convention within which a marine protected area might be declared.⁷³¹

In addition to challenging the United Kingdom's right to exercise sovereign rights in relation to the waters around the Chagos Archipelago, the application by Mauritius also disputes whether the United Kingdom would have acted in any event in accordance with its rights and obligations as a coastal state under UNCLOS. The application states:

In establishing the 'MPA' the United Kingdom has failed *inter alia* (a) to have due regard to the rights of Mauritius and of those persons forcibly removed from the Chagos Archipelago, and (b) to act in a manner compatible with the provisions of the 1982 Convention, and (c) to seek to reach agreement with Mauritius or appropriate subregional or regional organisations, including the Indian Ocean Commission and the Indian Ocean Tuna Commission, on measures necessary to ensure conservation.⁷³²

The case may raise questions concerning the duty of the coastal state to co-operate with other states and with international organisations, which is set by UNCLOS as a limitation to the coastal state's exclusive rights over its natural resources. One question is whether this limitation can be understood as restricting practices conducive to over-exploitation of marine resources or, on the contrary, restricting practices that support their conservation.

MPAs in areas beyond national jurisdiction

With regard to establishing MPAs on the high seas, the basic legal framework is provided by the rules of UNCLOS on the freedoms of the high seas, in combination with the general duty to protect and preserve the marine environment, including the protection and preservation of rare or fragile ecosystems, and the obligation for states to co-operate, globally or regionally, to these ends, including in the conservation and management of shared living resources. The provisions of Part XI of UNCLOS are also of relevance, in particular Article 145(b), which establishes that the International Seabed Authority shall adopt measures for the protection and conservation of natural resources of the Area and the prevention of damage to the flora and fauna of the marine environment.

Essentially, there is no legal impediment to establishing MPAs on the high seas. The real challenge lies in reconciling the interests of states supporting the establishment of a protected area with those of states that prefer to make other legal uses of that area. In fact, where global or regional organisations have the competence to establish protected areas they have already done so (or begun the preparatory work to do so).⁷³³ Some of the principal developments in this regard include:

⁷³¹ Para. 11. ⁷³² Para. 4.

⁷³³ See E. J. Molenaar and A.-G. Oude Elferink, 'Marine Protected Areas in Areas Beyond National Jurisdiction: The Pioneering Efforts under the OSPAR Convention', 5 *Utrecht Law Review* 5 (2009).

- establishment of areas closed to fishing by RFMOs⁷³⁴ and of whale sanctuaries by the IWC⁷³⁵ and of cetaceans by the parties to the Barcelona Convention;⁷³⁶
- identification and protection of ‘vulnerable marine ecosystems’, as described above with regard to bottom fishing, by RFMOs;⁷³⁷
- development of a rationale and recommendations for the establishment of ‘preservation reference areas’ under the International Seabed Authority;⁷³⁸
- designation of ‘particularly sensitive sea areas’ (PSSAs) under the IMO.⁷³⁹

The greater challenge concerns the establishment of ‘integrated, multi-sectoral and multi-purpose’⁷⁴⁰ MPAs on the high seas, which require high levels of international co-ordination and a delicate balance of states’ interests. One step in this direction was taken by CCAMLR in 2009, when it designated a 94,000 square kilometre area around the South Orkney Islands southern shelf as a ‘marine protected area, to contribute towards the conservation of marine biodiversity’.⁷⁴¹ However, greater complexity arises when different international bodies and individual state interests need to converge in a specific geographical area. Efforts to establish MPAs within OSPAR provide a good illustration.

Since the 1998 Sintra Ministerial Declaration, the OSPAR Commission has taken steps towards the establishment of a network of representative marine protected areas. After some years (and despite some of its members maintaining that OSPAR lacked competence to establish and manage high seas MPAs),⁷⁴² the Commission identified eight sites as potential MPAs beyond the limits of national jurisdiction. In 2009, this process came to a halt due to other international decisions that interfered with OSPAR’s initiative. First, in 2009 another international organisation with competence in the same region, NEAFC, closed five areas – which coincided with some of OSPAR’s proposed MPAs – to bottom fishing for the purpose of protecting vulnerable marine ecosystems. Second, a number of states made during that same year submissions to the

⁷³⁴ See the examples of geographically specific high seas protection measures established by RFMOs and other arrangements in J. Ardron, K. Gjerde, S. Pullen and V. Tilot, ‘Marine Spatial Planning in the High Seas’, 32 *Marine Policy* 832 (2008).

⁷³⁵ See p. 426, above. See also R. S. Abate, ‘Marine Protected Areas as a Mechanism to Promote Marine Mammal Conservation: International and Comparative Law Lessons for the United States’, 88 *Oregon Law Review* 255 (2009).

⁷³⁶ Inscription in 2001 of the Pelagos Sanctuary for Mediterranean Cetaceans in the List of the Specially Protected Areas of Mediterranean Importance (SPAMIs). See G. Notarbartolo di Sciara, T. Agardy, D. Hyrenbach, T. Scovazzi and P. Van Klaveren, ‘The Pelagos Sanctuary for Mediterranean Marine Mammals’, 18 *Aquatic Conservation: Marine and Freshwater Ecosystem* 367 (2008).

⁷³⁷ E.g. NEAFC closed areas between 2009 and 2015 to bottom fisheries on the Mid-Atlantic Ridge to protect vulnerable marine ecosystems in the high seas of the Northeast Atlantic.

⁷³⁸ See e.g. International Seabed Authority, *Rationale and Recommendations for the Establishment of ‘Preservation Reference Areas’ for Nodule Mining in the Clarion-Clipperton Zone*, ISA Doc. ISBA/14/LTC/2, 28 March 2008.

⁷³⁹ The IMO has designated PSSAs since 1990, where special protective measures are applied. In 2005, the IMO adopted revised Guidelines for the Identification and Designation of Particularly Sensitive Sea Areas (PSSAs) (Res. A.982(24)). See H. Lefebvre-Chalain, ‘Fifteen Years of Particularly Sensitive Sea Areas: A Concept in Development’, 13 *Ocean and Coastal Law Journal* 47 (2007); K. Gjerde and D. Freestone, ‘Particularly Sensitive Sea Areas’, 9 *International Journal of Marine and Coastal Law* 431 (1994) (special issue); M. Kachel, *Particularly Sensitive Sea Areas: The IMO’s Role in Protecting Vulnerable Marine Areas* (2008).

⁷⁴⁰ E. J. Molenaar and A.-G. Oude Elferink, ‘Marine Protected Areas in Areas Beyond National Jurisdiction: The Pioneering Efforts under the OSPAR Convention’, 5 *Utrecht Law Review* 5 at 7 (2009).

⁷⁴¹ CCAMLR, Conservation Measure 91-03 (2009), Protection of the South Orkney Islands Southern Shelf. It prohibits all forms of fishing (except scientific fishing), as well as dumping and discharges from vessels. Vessel traffic is restricted.

⁷⁴² K. M. Gjerde, ‘High Seas Marine Protected Areas and Deep-Sea Fishing’ (2006), 154.

Commission on the Limits of the Continental Shelf regarding the establishment of the outer limits of their continental shelf beyond 200 nautical miles. This would have left some of the other OSPAR-identified areas within, and not beyond, national jurisdiction.⁷⁴³

Commentators have identified multiple gaps in the current international legal regime for the conservation of marine biological diversity in areas beyond national jurisdiction.⁷⁴⁴ Among the possible solutions to addressing some of the current challenges, there is discussion on the appropriateness of crafting a new agreement to implement and develop the conservation provisions of UNCLOS, as the 1995 Fish Stocks Agreement did for the sustainable management of fisheries. This discussion has reached the UN General Assembly, and some states, such as the members of the EU, are supportive of such an initiative.⁷⁴⁵

CONCLUSIONS

International law for the protection of the oceans and its resources covers large substantive areas of regulation, principally measures against pollution and for fisheries management. In past years, states have also taken steps to regulate the protection of marine species and habitats, as a result of increased awareness about their vulnerability to pollution, overfishing and destructive practices. UNCLOS, although fragmented and incomplete, has proven to be sufficiently flexible to allow important developments in ocean law in the past few decades. Existing international organisations such as the FAO and the IMO have expanded their activities in the field of ocean conservation; numerous regional bodies, competent over fisheries or over pollution-abatement, have proliferated; and international co-operation has generally increased. Particularly since UNCED, and most notably since the WSSD, states when addressing ocean protection have begun to rely on principles of international environmental law, such as the precautionary principle, the ecosystem approach, the polluter pays principle and access to environmental information.

However, these developments have not prevented the further deterioration of the oceans, the over-exploitation or depletion of marine species and the destruction of natural marine habitats. Scientists acknowledge the uncertainties surrounding predictions of future impacts from human activities on the marine environment, particularly as a result of climate change, but emphasise the importance of considering the cumulative threats posed by the combined effect of individual ocean stressors. This situation may require states to review their previous practices and search for new solutions. First steps could be taken by implementing principles of modern ocean governance more broadly than they have been until now,⁷⁴⁶ particularly by RFMOs,

⁷⁴³ OSPAR, *2009/10 Status Report on the OSPAR Network of Marine Protected Areas* (2010).

⁷⁴⁴ K. M. Gjerde, *Regulatory and Governance Gaps in the International Regime for the Conservation and Sustainable Use of Marine Biodiversity in Areas Beyond National Jurisdiction* (IUCN, 2008).

⁷⁴⁵ See Contribution to the Twelfth Meeting of the United Nations Open-Ended Informal Consultative Process on Oceans and the Law of the Sea, Submitted by the European Union, UN Doc. A/AC.259/20, 4 May 2011, para. 6. See also the report of the Secretary General in support of MPAs: 'Marine areas beyond national jurisdiction need to be carefully managed and monitored for their health and wealth in natural resources and rich biodiversity': *Oceans and the Law of the Sea: Report of the Secretary General, Addendum*, UN Doc. A/66/70/Add.1, 11 April 2011, para. 310. See also S. Hart, *Elements of a Possible Implementation Agreement to UNCLOS for the Conservation and Sustainable Use of Marine Biodiversity in Areas Beyond National Jurisdiction*, IUCN Environmental Policy and Law Papers online, Marine Series No. 4 (2008).

⁷⁴⁶ On the development of a catalogue of principles of modern ocean governance, see D. Freestone, 'Principles Applicable to Modern Oceans Governance', *23 International Journal of Marine and Coastal Law* 385 at 390-1 (2008).

which have been generally unsuccessful in fulfilling their mandate. At present, the precautionary approach and the ecosystem approach have been incorporated mainly in agreements adopted, or revised, after the WSSD. Implementation of these principles also needs to be translated into practical action and not be limited to their formal recognition. In addition, there is a generalised need for improvement in compliance with existing agreements and measures, including the establishment of strong, independent scientific and technical bodies and a well-funded and active secretariat. This needs to be coupled with greater accountability of states and international organisations, which until now have faced limited responsibility for their failures.

There are also important regulatory gaps in ocean governance that need to be addressed, most notably concerning the protection of marine biodiversity beyond areas of national jurisdiction. There is incipient consideration at the UN of the establishment of a new UNCLOS implementing agreement on the matter, and also of the regulation of access to genetic resources in areas beyond national jurisdiction. However, in addition to more and better regulation and implementation, more fundamental rethinking of the current regime for the protection of the oceans may be required. UNCLOS provided the greatest enclosure of ocean spaces ever,⁷⁴⁷ but the assumption that the establishment of EEZs would lead to better management of marine resources has generally not been proven right. At the same time, the freedom to fish on the high seas, even if increasingly limited by the principles introduced by the 1995 Fish Stocks Agreement and by international co-operation efforts through RFMOs, has resulted in a situation not so distant from the one predicted by Hardin's 'tragedy of the commons'.⁷⁴⁸

A change is needed in international law that can effectively balance sovereign rights, within and beyond national jurisdiction, with the common interest of mankind to protect and preserve the marine environment, particularly considering that oceans are one of the Earth's principal providers of ecological services. International law needs to be able to respond to the ever-increasing complexity of environmental problems affecting the oceans with holistic solutions, which rest on the implementation of an ecosystem approach, as the scientific underpinning, and on the notion of integrated management, as its policy response. But to take this integrated approach to the global level, some additional regulatory efforts are required. Some, perhaps accepting the impossibility to restrict the rights of coastal states, focus on high seas governance and suggest the need for a more 'communitarian' approach to high seas regulation.⁷⁴⁹ But the oceans are more than the high seas, and the duty of states to co-operate, to not cause damage to areas (or species) beyond national jurisdiction, and to protect and preserve the marine environment, as required by UNCLOS, apply also to coastal states. A connecting thread needs to be woven through all previously disconnected areas of regulation, overcoming some of the initial fragmentation created by UNCLOS when addressing the protection of the marine environment and its resources. Efforts in this direction have begun, particularly at the regional level, but there is much uncharted territory.

⁷⁴⁷ P. Bernal, 'For the Ocean', in G. Holland and D. Pugh (eds.), *Troubled Waters: Ocean Science and Governance* (2010), 17–18.

⁷⁴⁸ G. Hardin, 'The Tragedy of the Commons', 162 *Science* 1243 (1968).

⁷⁴⁹ R. Rayfuse and R. Warner, 'Securing a Sustainable Future for the Oceans Beyond National Jurisdiction: The Legal Basis for an Integrated Cross-Sectoral Regime for High Seas Governance for the 21st Century', 23 *International Journal of Marine and Coastal Law* 399 (2008). The article explores the applicability of the notion of 'common heritage of mankind', and of trusteeship as the legal basis for a new approach to high seas governance.

10

Biological diversity

INTRODUCTION

The term 'biodiversity' is of relatively recent usage in international law. Until the 1980s, international instruments tended to address 'wildlife' or 'wild fauna and flora',¹ and focused on species and habitats. 'Biodiversity' is a more inclusive term and can be considered in relation to three hierarchical categories which describe different aspects of living systems measured in different ways: genetic diversity; species diversity; and ecosystem diversity. Other expressions of biodiversity include the relative abundance of species, the age structure of populations, the pattern of communities in a region, and changes in community composition and structure over time.

However measured, there is a scientific consensus that biodiversity is being lost. In 2002, the parties to the 1992 Convention on Biological Diversity² adopted the 2010 Biodiversity Target 'to achieve by 2010 a significant reduction of the current rate of biodiversity loss at the global, regional and national level as a contribution to poverty alleviation and to the benefit of all life on Earth'.³ In 2010, it was acknowledged that this target had not been met, that the state of biodiversity continued to decline and that pressures on biodiversity were increasing.⁴ The 2010 Global Biodiversity Outlook (GBO) suggests that just under 130,000 square kilometres of forest were converted to other uses or were lost through natural causes each year from 2000 to 2010.⁵ It records that more than 95 per cent of North American grasslands have been lost, and that savanna and grassland have suffered severe declines elsewhere.⁶ The GBO also notes that terrestrial habitats have become highly fragmented, threatening the viability of many species and ecosystem services. The Millennium Ecosystem Assessment reports that about 20 per cent of the world's coral reefs have been destroyed and another 20 per cent degraded.⁷ In relation to species populations, the GBO suggests that the population of wild vertebrate species fell by an

¹ R. Rayfuse, 'Biological Resources', in D. Bodansky, J. Brunnée and E. Hey (eds.), *The Oxford Handbook of International Environmental Law* (2007), 365.

² See pp. 453–64, below. ³ Decision VI/26, Annex, para. 11.

⁴ Secretariat of the Convention on Biological Diversity, *Global Biodiversity Outlook 3* (2010), 17.

⁵ While this rate remains high, it actually reflects a slight decrease from losses in the 1990s. Net losses of forests have also slowed, mainly due to large-scale planting of forests in temperate regions and natural expansion of forests: Secretariat of the Convention on Biological Diversity, *Global Biodiversity Outlook 3* (2010), 32.

⁶ *Ibid.*, 34.

⁷ Millennium Ecosystem Assessment, *Ecosystems and Human Well-Being: Biodiversity Synthesis* (2005), 42.

average of 31 per cent globally between 1970 and 2006, with particularly severe declines in the tropics and in freshwater ecosystems.⁸ The IUCN Red List, which evaluates the conservation status of animal and plant species, had, by 2009, assessed 47,677 species, of which 36 per cent were considered threatened with extinction.⁹ Much remains unknown about biodiversity – only a fraction of the species thought to exist have been described,¹⁰ and, as the Millennium Ecosystem Assessment acknowledged, ‘the extent of extinctions of undescribed taxa is unknown, the status of many described species is poorly known, it is difficult to document the final disappearance of very rare species, and there are extinction lags between the impact of a threatening process and the resulting extinction’.¹¹

Against this background, the reasons for conserving nature and biodiversity are essentially threefold. First, biodiversity provides an actual and potential source of biological resources (including, for example, for use as food and feed, as well as potentially for pharmaceutical and industrial applications). Second, biodiversity contributes to the maintenance of the biosphere in a condition that supports human and other life. In current debates, such uses are referred to as ‘ecosystem services’.¹² Third, biodiversity is worth maintaining for non-scientific reasons of ethical, intrinsic and aesthetic value.

Threats to biodiversity come from several sources, both direct and indirect. The Millennium Ecosystem Assessment identifies the most significant direct drivers affecting biodiversity. These include habitat change (loss, degradation and fragmentation), climate change, invasive species, over-exploitation and unsustainable use, and pollution.¹³ However, it notes that ‘changes in biodiversity and ecosystems are almost always caused by multiple, interacting drivers’.¹⁴ The GBO cites IUCN Red List assessments showing habitat loss driven by agriculture and unsustainable forest management as the greatest cause of species moving closer to extinction. This includes, for example, the conversion of forests to oil palm plantations, partly driven by demands for biofuels.¹⁵ The destruction and loss of habitats and species bring with them anticipated and unanticipated ecological consequences: what is ultimately threatened is the ability of ecosystems to purify water, regenerate soil, protect watersheds, regulate temperature, recycle nutrients and waste, and maintain the atmosphere. The costs are not purely ecological, and extend to economic, medical and agricultural losses, and have profound moral and aesthetic implications.

The Millennium Ecosystem Assessment also identifies the key indirect drivers of changes in the status of biodiversity. These include economic activity, demographic change, socio-political factors, cultural and religious factors, and scientific and technological change.¹⁶ Legal efforts to address loss of biodiversity therefore have to focus not only on the species and habitats that might

⁸ *Ibid.*, 24.

⁹ *Ibid.*, 27; see www.iucnredlist.org. The IUCN Red List classifies species as threatened with extinction if, in accordance with criteria applied in the assessments, they are deemed to be critically endangered, endangered or vulnerable. The Lists are compiled by the IUCN’s Species Programme and its Species Survival Commission, working with a global network of partners.

¹⁰ The UNEP World Conservation Monitoring Centre suggests that the number of described species is now about 1.7 million, while estimates of the total number of species in existence ‘ranges in order of magnitude from 10 million to 100 million’. See www.unep-wcmc.org/about-biodiversity_133.html.

¹¹ Millennium Ecosystem Assessment, *Ecosystems and Human Well-Being: Biodiversity Synthesis* (2005), 43.

¹² See pp. 462–3, below.

¹³ Millennium Ecosystem Assessment, *Ecosystems and Human Well-Being: Biodiversity Synthesis* (2005), 47.

¹⁴ *Ibid.* See also Secretariat of the Convention on Biological Diversity, *Global Biodiversity Outlook 3* (2010), 55.

¹⁵ Secretariat of the Convention on Biological Diversity, *Global Biodiversity Outlook 3* (2010), 55.

¹⁶ Millennium Ecosystem Assessment, *Ecosystems and Human Well-Being: Biodiversity Synthesis* (2005), 49.

be considered as requiring priority action, but also on these root causes if they are to have any long-term effects. Underlying these root causes are defective rules of national and international law, including environmentally destructive subsidies and other aspects of the international trading system; and inadequate property rights that fail to provide incentives for conservation.¹⁷ The international legal order does not lend itself to an approach that allows the totality of the Earth's resources to be managed and used in a manner that is sustainable over the long term.¹⁸

International law¹⁹

International law for the conservation of biodiversity has a long history and is relatively well developed.²⁰ There are now in place a large number of bilateral and regional treaties, which increasingly reflect approaches contained in the 1992 Biodiversity Convention. International biodiversity conservation policy has emerged from a variety of sources. The 1972 Stockholm Declaration called for flora and fauna to be safeguarded for the benefit of present and future generations through careful planning or management; for the maintenance of the Earth's capacity to produce vital renewable resources; and for states to prevent pollution liable to harm living resources and marine life.²¹ Principle 4 declared:

Man has a special responsibility to safeguard and wisely manage the heritage of wildlife and its habitat, which are now gravely imperilled by a combination of adverse factors. Nature conservation, including wildlife, must therefore receive importance in planning for economic development.

The 1982 World Charter for Nature affirmed: that the genetic viability on Earth shall not be compromised; that population levels of all life forms 'must be at least sufficient for their survival, and to this end necessary habitats shall be safeguarded'; and that special protection shall be given to unique areas, to representative samples of all different types of ecosystem, and to the habitats of rare or endangered species.²² Chapter 15 of Agenda 21 addressed the conservation of biological diversity.²³ Other initiatives contributing to the development of international law in this area include the IUCN World Conservation Strategy (1980)²⁴ and the Action Plan for Biosphere Reserves (1984).²⁵

Classifying and arranging biodiversity conservation agreements into a coherent structure provides something of a challenge, since species and habitats have an interdependent existence. Moreover, efforts at classification might suggest the existence of an ordered and structured

¹⁷ *World Resources (1992-93)*, pp. 134-5. ¹⁸ See Chapter 1, pp. 10-13, above.

¹⁹ S. Hayden, *The International Protection of Wildlife* (1942); C. de Klemm, 'Conservation of Species: The Need for a New Approach', 9 *Environmental Policy and Law* 117 (1982); M. Bowman, 'The Protection of Animals under International Law', 4 *Connecticut Journal of International Law* 487 (1989); C. de Klemm, *Wild Plant Conservation and the Law* (1990); J. Doremus, 'Patching the Ark: Improving Legal Protection of Biological Diversity', 18 *Ecology Law Quarterly* 265 (1991); S. Bilderbeek (ed.), *Biodiversity and International Law: The Effectiveness of International Environmental Law* (1992); F. Burhenne-Guilmin and S. Casey-Lefkowitz, 'The New Law of Biodiversity', 3 *Yearbook of International Environmental Law* 43 (1992); M. Bowman, P. Davies and C. Redgwell, *Lyster's International Wildlife Law* (2010, 2nd edn); A. Gillespie, *Conservation, Biodiversity and International Law* (2011); E. Morgera and E. Tsioumani, 'Yesterday, Today and Tomorrow: Looking Afresh at the Convention on Biological Diversity', 21 *Yearbook of International Environmental Law* (2011), doi: 10.1093/yiel/yvr003.

²⁰ See generally Chapter 2, above. ²¹ Principles 2, 3 and 7. ²² Paras. 2 and 3. ²³ See Chapter 2, pp. 44-5. ²⁴ Chapter 2, p. 38, above. ²⁵ UNEP/GC.13/L.6.

legal approach to the conservation of biodiversity. The reality is otherwise: the rules of international law addressing biodiversity have developed in a piecemeal and *ad hoc* way. The interdependence of species, habitats and ecosystems necessarily means that each of the instruments addressed in this chapter and the rest of the book will have consequences for any particular habitat or species. Measures to protect the atmosphere, the marine environment and freshwater resources may also benefit biodiversity, as will those adopted to address hazardous substances and waste.

For the purposes of this chapter, international agreements and other instruments addressing the conservation and sustainable use of biodiversity are arranged in the following categories. The first category is occupied by the 1992 Convention on Biological Diversity itself. As discussed in more detail below, this Convention provides the overall framework within which international action on the conservation and sustainable use of biodiversity must now be viewed. The second category includes treaties which are potentially applicable to all species and habitats on the planet, but which address *specific threats* to biodiversity. Two instruments are addressed here: the 1973 Convention on International Trade in Endangered Species (CITES) and the 2000 Cartagena Protocol on Biosafety, which was adopted under the auspices of the 1992 Biodiversity Convention. The third category includes instruments that are applicable to all species and habitats within a particular *region*. Finally, the fourth category includes treaties and other international agreements which are applicable at the regional or global level but which have as their objective the conservation of *particular habitat or species types*; this fourth category includes international regulatory efforts which address the following: wetlands; forests; soil and land degradation; migratory species; birds; and specific animal species; and plants. In addition, this category would encompass marine biological diversity, including fish stocks and marine mammals, which are addressed separately in Chapter 9 above. Also included in this category are international efforts to address the protection of cultural and natural heritage, which can include certain natural resources as well as those that are man-made.

The various instruments addressing conservation and sustainable use of biodiversity utilise different regulatory techniques. International law has traditionally focused upon maintaining viable populations of species and the habitats on which they depend. This led to approaches based on *in situ* and *ex situ* conservation measures for wild flora and fauna, as well as measures to protect specific habitats. Accordingly, the key international regulatory techniques, which are frequently applied in global and regional agreements, include:

- (1) the establishment of protected areas;
- (2) prohibitions and/or regulations on the taking of particular species;
- (3) the establishment of seasons or other periods in which the taking of species is permitted;
- (4) regulated taking or exploitation subject to compliance with general standards limiting utilisation to that which is 'rational', or 'optimal' or 'maximal';
- (5) prohibitions and/or regulation of international trade in species;
- (6) the establishment of quotas for the taking of species;
- (7) management of habitats;
- (8) management of ecosystems;
- (9) prohibition on methods or means of taking; and
- (10) prohibition on the introduction of new or alien species.

Many of these techniques are reflected in the agreements discussed in this chapter. Other relevant measures include the utilisation of risk assessment (for example, before new organisms are introduced into the environment) and environmental impact assessment of projects that may adversely affect biodiversity.²⁶

CONVENTION ON BIOLOGICAL DIVERSITY²⁷

The 1992 Convention on Biological Diversity (1992 Biodiversity Convention) was negotiated under the auspices of UNEP and signed by 153 states and the EU at UNCED in June 1992.²⁸ It sets out provisions aimed at the comprehensive conservation and sustainable use of biological diversity, reflecting objectives of the 1980 World Conservation Strategy. In 1984, IUCN prepared principles for the conservation of wild genetic resources. Three years later, IUCN submitted draft legal Articles on a proposed convention to a UNEP Ad Hoc Working Group of Experts on Biological Diversity, and the following year, in 1988, the seventeenth General Assembly of the IUCN endorsed the proposal for a convention on biological diversity. At this early stage, the IUCN draft had been concerned solely with conservation and financing mechanisms, and it was the UNEP Governing Council decision to press ahead with a convention, and to establish a Working Group of Legal and Technical Experts which led to a broadening of the Convention's scope. The Working Group was renamed the Intergovernmental Negotiating Committee and, as such, it met seven times in 1991 and 1992 when the text of the Convention was finalised. At the time the Convention was negotiated, a number of global biodiversity-related conventions were already in place,²⁹ and it might have been expected that the new convention would be designed so as to subsume or replace them. However, this was not the case, and the Biodiversity Convention now co-exists with pre-existing global agreements.

The Convention has three objectives:

²⁶ See Chapter 14 below.

²⁷ M. A. Hermitte, 'La Convention sur la Diversité Biologique', *Annuaire Français de Droit International* 844 (1992); C. Shine and P. T. B. Kohona, 'The Convention on Biological Diversity: Bridging the Gap Between Conservation and Development', 1 *Review of European Community and International Environmental Law* 307 (1992); F. Burhenne-Guilmin and S. Casey-Lefkowitz, 'The Convention on Biological Diversity: A Hard Won Global Achievement', 3 *Yearbook of International Environmental Law* 43 (1992); C. de Klemm and C. Shine, *Biological Diversity Conservation and the Law* (1993); M. Chandler, 'The Biodiversity Convention: Selected Issues of Interest to the International Lawyer', 4 *Colorado Journal of International Law and Policy* 141 (1993); L. Glowka, F. Burhenne-Guilmin and H. Synge, *A Guide to the Convention on Biological Diversity* (1994); M. Bowman and C. Redgwell (eds.), *International Law and the Conservation of Biological Diversity* (1996); F. McConnell, *The Biodiversity Convention: A Negotiating History* (1996); T. Swanson, *Global Action for Biodiversity* (1997); P. Van Heijnsbergen, *International Legal Protection of Wild Fauna and Flora* (1997); V. Koester, 'The Biodiversity Convention Negotiating Process and Some Comments on the Outcome', 27 *Environmental Policy and Law* 175 (1997); P. Le Prestre, *Governing Global Biodiversity: The Evolution and Implementation of the Convention on Biological Diversity* (2002); 'International Biodiversity Law', 11 *Review of European Community and International Environmental Law* Issue 1 (2002) (special issue); R. Rayfuse, 'Biological Resources' and D. Tarlock, 'Ecosystems', both in D. Bodansky, J. Brunnée and E. Hey (eds.), *The Oxford Handbook of International Environmental Law* (2007).

²⁸ Rio de Janeiro, 5 June 1992, in force 29 December 1993, 31 ILM 822 (1992). As at 30 June 2011, the Convention had 193 parties; see www.biodiv.org.

²⁹ See, in particular, discussions in this chapter, pp. 472–9, 492–4, 502–4, 510–11, below, of the Convention on International Trade in Endangered Species, the Ramsar Convention on Wetlands, the Bonn Convention on Migratory Species, and the World Heritage Convention.

the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilisation of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by appropriate funding.³⁰

For some developed countries, the Convention's provisions proved problematic because they go beyond conservation and provide rules on the use of genetic resources and on the use of biotechnology. It is the latter two issues, together with the rules on financial resources, which led the United States, alone among the industrialised nations, to decide against signing the Convention at UNCED.³¹

Preamble and jurisdictional scope

The Preamble to the Biodiversity Convention affirms that the conservation of biological diversity is 'a common concern of humankind', that states have 'sovereign rights over their own biological resources', and that they are 'responsible for conserving their biological diversity and for using their biological resources in a sustainable manner'. Without expressly endorsing the precautionary approach, the Preamble provides that, where there is a threat of significant reduction or loss of biodiversity, measures should not be avoided or postponed where there is a lack of full scientific certainty, and that biodiversity should be conserved and sustainably used for the benefit of present and future generations. The Convention incorporates Principle 21 of the Stockholm Declaration into the operational part of its text rather than merely the preambular section.³²

With regard to components of biodiversity, the Convention applies within the limits of national jurisdiction.³³ For processes and activities carried out under the jurisdiction or control of a party, however, the Convention applies within areas of national jurisdiction or beyond the limits of national jurisdiction, regardless of where the effects of such processes and activities occur.³⁴

Conservation and sustainable use

Under Article 5, all parties must co-operate for the conservation and sustainable use of biodiversity, in respect of areas beyond national jurisdiction and on other matters of mutual interest.³⁵ Parties must develop national strategies, plans or programmes for the conservation and sustainable use of biodiversity, or adapt existing strategies, plans or programmes, and integrate, wherever possible and appropriate, the conservation and sustainable use of biodiversity into relevant sectoral or cross-sectoral plans, programmes and policies.³⁶ By 2011, 173 parties to the

³⁰ Art. 1. 'Biological diversity' is defined in Art. 2 as 'the variability among living organisms from all sources including, *inter alia*, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems'.

³¹ US Declaration made at the UNEP Conference for the Adoption of the Agreed Text of the Convention on Biological Diversity, 22 May 1992, 21 ILM 848 (1992). On 4 June 1993, the US signed the Convention but is yet to ratify it.

³² Art. 3; see further Chapter 6 above. ³³ Art. 4(a). ³⁴ Art. 4(b).

³⁵ Art. 5. For the definition of 'sustainable use' in Art. 2, see Chapter 6, pp. 210–13, above. ³⁶ Art. 6.

Convention had adopted national biodiversity strategies and actions plans (NBSAPs), and an initiative is underway to update these in light of the Convention's Strategic Plan for 2011–20 and the Aichi Biodiversity Targets.³⁷ Many developing countries developed their NBSAPs with support from the Global Environment Facility, under the Convention's provisions on financial resources. However, the challenge of implementing strategies and actions plans remains. It has also been widely recognised that insufficient progress has been made in integrating biodiversity considerations into other sectoral or cross-sectoral programmes and policies.

It is notable that the Convention lacks any global list of species or habitats to be subject to particular measures of protection or important for conservation and sustainable use. Such proposals were dropped during the negotiations following opposition from developing countries. Instead, each party is required, as far as possible and as appropriate, to adopt the following more specific measures: to identify components of biodiversity important for conservation and sustainable use; to monitor these components while paying particular attention to those requiring urgent conservation measures and those which offer the greatest potential for sustainable use; and to identify, and monitor the effects, processes and categories of activities which have or are likely to have significant adverse impacts on the conservation and sustainable use of biodiversity.³⁸ Where a significant adverse effect has been determined, the processes or activities must be regulated or managed. For these purposes, Annex I sets forth the following indicative list of categories of ecosystems or habitats for identification and monitoring:

- those containing a high level of diversity, large numbers of endemic or threatened species, or wilderness;
- those required by migratory species;
- those of social, economic, cultural or scientific importance; and
- those which are representative, unique or associated with key evolutionary or other biological processes.

Species and communities to be identified and monitored are:

- threatened, wild relatives of domesticated or cultivated species;
- those of medicinal, agricultural or other economic value, or of social, scientific or cultural importance; and
- those of importance for research into the conservation and sustainable use of biological diversity.

More detailed rules exist for *in situ*³⁹ and *ex situ* conservation. The Convention addresses *in situ* conservation in Article 8. Many of the provisions of this Article reflect the regulatory techniques included in some of the pre-existing conservation treaties, but some novel issues are also addressed. In relation to *in situ* conservation, each party undertakes, as far as possible and as appropriate, to establish a system of protected areas or areas where special measures are needed, and to develop guidelines for the selection, establishment and management of such areas.⁴⁰

³⁷ See pp. 461–4, below. ³⁸ Art. 7.

³⁹ '*In situ* conservation' is defined in Art. 2 as 'the conservation of ecosystems and natural habitats and the maintenance and recovery of viable populations of species in their natural surroundings and, in the case of domesticated or cultivated species, in the surroundings where they have developed their distinctive properties'.

⁴⁰ Art. 8(a) and (b). See generally A. Gillespie, *Protected Areas in International Environmental Law* (2007).

The establishment of protected areas is among the most widely and long-used conservation techniques.⁴¹ The World Database on Protected Areas had recorded over 114,000 sites by the end of 2005, covering 19 million square kilometres.⁴² While protected areas are acknowledged as critical components of conservation and sustainable use policy, a number of factors need to be taken into account to ensure positive impacts. Traditionally, boundaries of protected areas often follow a political rather than an ecological course; many such areas are too small to be effective; and conflicts may arise with competing uses of the area and its resources by local communities. Other factors limiting the effectiveness of protected areas include the effects of activities taking place outside the protected areas, ineffective management and insufficient funding. The relative failure of international efforts in this regard has spurred new approaches, including the establishment of 'buffer zones' around protected areas, which may be subject to special regulation,⁴³ and efforts to establish networks of protected areas and transboundary protected areas.⁴⁴ While protected areas may play an important role in *in situ* conservation, the Convention also requires that parties regulate and manage biological resources important for conservation and sustainable use of biological diversity whether within or outside protected areas,⁴⁵ and promote the protection of ecosystems, natural habitats and the maintenance of viable populations.⁴⁶

Parties must establish or maintain the means to regulate, manage or control risks associated with the use and release of living modified organisms (LMOs) resulting from biotechnology which are likely to have adverse environmental impacts, and to prevent the introduction of or to control or eradicate alien species which threaten ecosystems, habitats or species.⁴⁷ As noted in the introduction, alien invasive species have been identified as one of the key threats to biodiversity. Article 8 also requires that, subject to national legislation, each party is to respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles.⁴⁸ This provision reflects the important role of indigenous and local communities in the conservation and sustainable use of biodiversity, but its domestic implementation raises challenging questions. To date, these have been most explicitly considered in the context of the Convention's provisions on access to genetic resources and benefit sharing, and in relation to mechanisms for the proper protection of traditional knowledge associated with biodiversity held by such communities.⁴⁹

⁴¹ The definition of a protected area adopted by IUCN is '[a]n area of land and/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means'. Protected areas may be subject to varying degrees of protection: see IUCN Protected Area Management categories: N. Dudley (ed.), *Guidelines for Applying Protected Areas Management Categories* (IUCN, 2008).

⁴² S. Chape, M. Spalding and M. Jenkins, *The World's Protected Areas: Status, Values and Prospects in the 21st Century* (2008), 11.

⁴³ See Art. 8(e).

⁴⁴ The Conference of the Parties to the Biodiversity Convention adopted a programme of work on protected areas in Decision VII/28. In relation to protected areas, see also UNESCO's Man and Biosphere programme, which provides for the establishment of 'biosphere reserves' of which there are now 580 globally. See www.unesco.org/new/en/natural-sciences/environment/ecological-sciences/man-and-biosphere-programme. The Man and Biosphere programme also provides for regional and sub-regional collaboration in transboundary reserves; see, for example, A. Michelot, with B. Ouedraogo, *Transboundary Protected Areas: Legal Framework for the W Transboundary Reserve (Benin, Burkina Faso, Niger)*, IUCN Environmental Policy and Law Paper No. 81 (2009).

⁴⁵ Art. 8(c). ⁴⁶ Art. 8(d). ⁴⁷ Art. 8(g) and (h). ⁴⁸ Art. 8(j).

⁴⁹ In May 1998, the fourth Conference of the Parties established an *ad hoc* working group on Art. 8(j) to provide advice on forms of protection for traditional knowledge and to develop a programme of work for implementation at the national and international level (see Decision IV/9, para. 1). See also the text and accompanying notes on access to genetic resources and benefit sharing at pp. 457–60, below.

Ex situ conservation is predominantly to be complementary to *in situ* conservation.⁵⁰ Each party must take measures that will conserve components of biological diversity; establish and maintain facilities for conservation of and research on plants, animals and micro-organisms; and ensure the recovery and rehabilitation of threatened species and their reintroduction into natural habitats under appropriate conditions.⁵¹

The Convention requires components of biodiversity to be used sustainably.⁵² It provides for the conduct of environment impact assessment of proposed projects likely to have significant adverse effects, and requires parties to ensure the minimisation of adverse impacts.⁵³ The Convention provides for notification, exchange of information and consultation on activities likely to have a significant adverse effect on the biological diversity of other states or areas beyond national jurisdiction. Notification is required in cases of imminent or grave danger or damage, and emergency responses must be promoted for activities or events that present a grave and imminent danger to biodiversity.⁵⁴ Under Article 14(2), the Conference of the Parties is to examine the development of rules on liability and redress, for damage to biological diversity, including restoration and compensation.⁵⁵

Access to genetic resources and benefit sharing⁵⁶

The Convention includes novel international rules on access to genetic resources, access to and transfer of technology, and the handling of biotechnology and the distribution of its benefits. These were controversial to the extent that they were perceived by some countries to threaten the stability of existing intellectual and other property rights. The context for the negotiation of Article 15 was the concern among developing countries that developed country corporations and institutions could obtain biological resources for scientific research, and potentially for commercial development, without the consent of provider countries and without committing to share any benefits deriving from the access to and any utilisation of those resources. Examples of commercially valuable pharmaceuticals developed from natural products exacerbated these concerns,⁵⁷ which were further heightened by the possibility that traditional knowledge held by local and indigenous communities might be used as a basis for the initial identification of

⁵⁰ '*Ex situ* conservation' is defined in Art. 2 as 'the conservation of components of biological diversity outside their natural habitats'.

⁵¹ Art. 9(a), (b) and (c). ⁵² Art. 10. ⁵³ Arts. 10 and 14. ⁵⁴ Art. 14(1)(c)–(e).

⁵⁵ By Decision VI/11, at its sixth meeting, the Conference of the Parties requested the Secretariat to convene a group of legal and technical experts to review information related to aspects of Art. 14(2). The most recent decision on this issue is Decision IX/23. Under the multi-year programme of work for the Conference of the Parties adopted by Decision X/9 in 2010, the issue may be revisited at the twelfth meeting of the Conference of the Parties in 2014 or early 2015.

⁵⁶ M. Coughlin, 'Using the Merck-INBio Agreement to Clarify the Convention on Biological Diversity', 31 *Columbia Journal of Transnational Law* 337 (1993); K. ten Kate and S. Laird, *The Commercial Use of Biodiversity: Access to Genetic Resources and Benefit-Sharing* (1999); C. McManis (ed.), *Biodiversity and the Law: Intellectual Property, Biotechnology and Traditional Knowledge* (2007); F. Francioni and T. Scovazzi, *Biotechnology and International Law* (2007); S. Laird and R. Wynberg, *Access and Benefit Sharing in Practice: Trends in Partnerships Across Sectors*, CBD Technical Series, No. 38 (2008); E. Kamau and G. Winter (eds.), *Genetic Resources, Traditional Knowledge and the Law* (2009); J. Curci, *Protection of Biodiversity and Traditional Knowledge in the International Law of Intellectual Property* (2009); G. Singh Nijar, 'Incorporating Traditional Knowledge in an International Regime on Access to Genetic Resources and Benefit Sharing: Problems and Prospects', 21(2) *European Journal of International Law* 457 (2010).

⁵⁷ For example, ten Kate and Laird reported that, in 1997, taxol, a drug developed from the Pacific yew tree, *Taxus brevifolia*, was the thirtieth top-selling drug in the world with sales of US\$941 million. The original collections of

potentially useful genetic resources. Against this background, Article 15 of the Convention recognises the sovereign rights of states over natural resources, and provides that the authority to determine access to genetic resources rests with national governments and is subject to national legislation.⁵⁸ Such access is to be on mutually agreed terms, and subject to the prior informed consent of the party providing such resources.⁵⁹ Parties are also to take measures with the aim of sharing in a fair and equitable way benefits arising from the commercial or other use of genetic resources with the party that has provided such resources.⁶⁰ Each party is to facilitate access to genetic resources for environmentally sound uses by other parties, and must not impose restrictions that run counter to the Convention's objectives.⁶¹ Article 15(2) provides that genetic resources referred to in Articles 15, 16 and 19 are 'only those that are provided by Contracting Parties that are countries of origin of such resources or by Parties that have acquired the genetic resources in accordance with this Convention'. Thus, the provisions on access and benefit sharing do not apply to genetic resources acquired before the Convention's entry into force.

These provisions are seen to allow possible claims to a share of any profits arising from the exploitation and development of genetic resources by companies and institutions based in developed country parties. In essence, they require consideration of benefit sharing arrangements before access to genetic resources is granted.

Article 16 establishes rules on access for and transfer between parties of technologies, including biotechnologies, relevant to the conservation and sustainable use of biodiversity or which make use of genetic resources and do not cause significant damage to the environment. Access to and transfer of technology is to be on 'fair and most favourable terms'. Where technology is subject to patent and other intellectual property rights, access and transfer are to be provided on terms that recognise and are consistent with the adequate and effective protection of intellectual property rights.⁶² Under Article 16(3), parties are required to take measures to give those parties which provide genetic resources, particularly developing countries, access to technology (including technologies protected by patent and other intellectual property rights) which makes use of those resources, on mutually agreed terms and in accordance with international law. Additional measures will be required to ensure that parties' private sectors facilitate access to, joint development of, and transfer of these technologies for the benefit of governmental institutions and the private sectors of developing countries.⁶³ They must co-operate, subject to national legislation and international law, to ensure that patents and other intellectual property rights 'are supportive of and do not run counter to' the objectives of the Convention.⁶⁴ Regarding the relationship between the Convention and other international conventions, including those relating to patents and other intellectual property rights, the Convention

shall not affect the rights and obligations of any contracting party deriving from any existing international agreement, except where the exercise of those rights and obligations would cause a serious damage or threat to biological diversity.⁶⁵

Taxus brevifolia were made in the 1960s in the Pacific Northwest of the United States. K. ten Kate and S. Laird, *The Commercial Use of Biodiversity: Access to Genetic Resources and Benefit Sharing* (1999), 73.

⁵⁸ Art. 15(1). ⁵⁹ Art. 15(4) and (5). ⁶⁰ Art. 15(7). ⁶¹ Art. 15(2).

⁶² Art. 16(2). ⁶³ Art. 16(4). ⁶⁴ Art. 16(5). ⁶⁵ Art. 22(1).

The language used is sufficiently broad to allow an interpretation that the Convention could, in certain circumstances, prevail over patent and intellectual property rights protected by other international agreements.⁶⁶

Given the novelty of the provisions of Article 15 and 16 of the Convention, the Conference of the Parties moved to develop further guidance on their implementation, with developing countries particularly keen to ensure that the Convention's provisions were elaborated and clarified. Particular uncertainty and controversies surrounded mechanisms for the implementation and enforcement of the provisions of Article 15. For example: How could countries of origin of genetic resources regulate access and ensure benefit sharing, especially once such resources had been taken from their territory? What role should countries using genetic resources play in the implementation and enforcement of access and benefit sharing arrangements? What was the relationship between access and benefit sharing and intellectual property regimes? How should traditional knowledge related to genetic resources be protected, and benefits be shared with holders of such knowledge?⁶⁷ While a number of examples of national legislation and contractual arrangements emerged, there were strong calls for more detailed and binding international rules.

In 2002, the sixth meeting of the Conference of the Parties adopted the 'Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of the Benefits Arising out of Their Utilization, Access and Benefit Sharing', to assist parties in developing an overall access and benefit sharing strategy, which may be part of their national biodiversity strategy and action plan, and in identifying the steps involved in the process of obtaining access to genetic resources and sharing benefits.⁶⁸ The Bonn Guidelines address the following elements: roles and responsibilities in access and benefit sharing; participation of stakeholders; steps in the access and benefit sharing process, including in relation to prior informed consent and mutually agreed terms; and other provisions, including in relation to incentives, accountability, monitoring, verification and settlement of disputes. The Bonn Guidelines were explicitly stated to be voluntary.⁶⁹ While they were recognised as a useful step in advancing international rules on access and benefit sharing, already in 2002 there were demands for the development of additional legally binding measures. At the Johannesburg World Summit for Sustainable Development, governments called for the elaboration of an international regime on benefit sharing.⁷⁰ In 2004, the parties to the Convention initiated⁷¹ the further negotiations that led, in October 2010, to the adoption of the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization.⁷² The Protocol is discussed further below and in Chapter 16.⁷³ The development of rules on access to genetic resources under the Convention should also be seen in the context of the evolution of the International Treaty on Plant Genetic Resources for Food and Agriculture.⁷⁴

⁶⁶ Chapter 16, pp. 683–5, below. For a discussion of the concerns of the United States on these provisions, see M. Chandler, 'The Biodiversity Convention: Selected Issues of Interest to the International Lawyer', 4 *Colorado Journal of International Law and Policy* 141 (1993).

⁶⁷ See Art. 8(j). ⁶⁸ Decision VI/24, Section A, Annex, para. 12.

⁶⁹ Decision VI/24, Section A, Annex, para. 7.

⁷⁰ Plan of Implementation of the World Summit on Sustainable Development, para. 44(o), A/CONF.199/20/Corr.1.

⁷¹ Decision VII/19.

⁷² Decision X/1. The Nagoya Protocol was opened for signature on 2 February 2011, and will enter into force ninety days after the date of deposit of the fiftieth ratification (Nagoya Protocol, Art. 33).

⁷³ See Chapter 16, pp. 684–5, below. ⁷⁴ See pp. 507–9, below.

Biotechnology and living modified organisms

The regulation of genetically modified organisms and biotechnology is among the most contentious issues currently subject to international regulation. The subject caused considerable difficulties during the negotiation of the Biodiversity Convention and in the preparations for UNCED. The main issue was the appropriate balance to be struck between the objectives of ensuring, on the one hand, that developments in the field of biotechnology do not cause adverse effects for human health and the environment and, on the other hand, that new international regulatory arrangements do not place undue limits on the development, dissemination and use of biotechnology. The concern expressed about excessive regulation was reflected in the written statement submitted by the United States at UNCED, specifically in reference to Chapter 16 of Agenda 21, which set out its understanding that 'biotechnology is in no way an intrinsically unsafe process'.⁷⁵ As noted above, Article 8(g) of the Convention, in relation to *in situ* conservation, provides that parties shall, as far as possible and as appropriate, establish or maintain means to regulate, manage and control risks associated with the use and release of living modified organisms (LMOs) resulting from biotechnology. In relation to transboundary movement of LMOs, the Convention requires each party to provide to any other party into whose territory living modified organisms are to be introduced any available information on the use and safety regulations it requires in handling living modified organisms, and on the potential adverse impact of the specific organisms concerned. Article 19(3) requires parties to 'consider the need for and modalities of a protocol setting out appropriate procedures, including ... advance informed agreement, for the safe transfer, handling and use of [LMOs] resulting from biotechnology that may have adverse effects on the conservation and sustainable use of biological diversity'.⁷⁶ At its second meeting in 1995, the Conference of the Parties established an Open-Ended Ad Hoc Working Group on Biosafety to negotiate a protocol.⁷⁷ While the negotiations were fraught with difficulty, the Conference of the Parties eventually adopted the Cartagena Protocol on Biosafety in January 2000, and it entered into force in September 2003. The Cartagena Protocol is discussed further below.⁷⁸

Financial resources and mechanism

Articles 20 and 21 provide for the provision of financial resources and establish a financial mechanism to provide new and additional financial resources to enable developing country parties to meet the agreed full incremental costs to them of implementing the Convention.⁷⁹ The Convention's financial mechanism is operated by the Global Environment Facility.

Institutions and other mechanisms

The institutional arrangements to oversee implementation of the Convention comprise the Conference of the Parties, which keeps the implementation of the Convention under

⁷⁵ Report of UNCED, A/CONF.151/26/Rev.1 (vol. II), 19 (1993).

⁷⁶ Art. 19(3). ⁷⁷ Decision II/5. ⁷⁸ See pp. 466–71, below. ⁷⁹ Chapter 16, p. 678, below.

review;⁸⁰ a Subsidiary Body on Scientific, Technical and Technological Advice, to provide scientific, technical and technological advice to the Conference of the Parties;⁸¹ various working groups established on an *ad hoc* basis; and a secretariat.⁸² Among the other functions, the Conference of the Parties may formulate and adopt protocols to the Convention.

The Convention provides for settlement of disputes concerning the interpretation or application of the Convention, including by negotiation, the use of good offices, and mediation. Parties may declare that they accept, as compulsory, arbitration in accordance with the procedures in Part 1 of Annex II to the Convention, and/or submission of disputes to the International Court of Justice. Where parties to a dispute have not accepted the same or any procedure, the dispute is to be submitted to conciliation in accordance with Part 2 of Annex II unless they otherwise agree.⁸³ The Convention's dispute settlement provisions have not yet been formally invoked.

Evolution of the Biodiversity Convention

While, as evidenced in the remainder of this chapter,⁸⁴ there are a large number of international and regional biodiversity-related agreements, the Biodiversity Convention today provides the principal framework and paradigm within which the development and implementation of rules on biodiversity conservation and sustainable use take place. The Conference of the Parties to the Convention has undertaken a wide-ranging programme of work since the Convention's entry into force in 1994. In this sense, the Convention has the character of a framework convention, providing a basis and institutional mechanisms for the elaboration of its provisions, through decisions of the Conference of the Parties, as well as the development of supplementary legal instruments. In addition to the adoption of the Cartagena and Nagoya Protocols, discussed further below, work has been undertaken on almost all aspects of the Convention in order to develop understandings and promote implementation of the Convention's provisions, and to ascertain and agree upon additional action required to meet the Convention's objectives. It is clear from a brief survey of the Convention's scope and provisions above that much of the work conducted by the Conference of the Parties requires co-operation with and consideration of the proper relationships with other international agreements. These include not just the other global, so-called 'biodiversity-related conventions',⁸⁵ but also World Trade Organization agreements, agreements established under the auspices of the FAO, intellectual property agreements, UNCLOS and the climate change regime. In relation to the latter, of growing importance in discussions under the Convention are the impacts of climate change, and climate change response measures, on biological diversity.⁸⁶ Among the key issues here are the incorporation of biodiversity consideration in policies and rules related to REDD+ under the climate change regime,⁸⁷ as well as consideration of the potential adverse impacts on the biodiversity of, for example, ocean acidification and biofuels production.

⁸⁰ Art. 23. ⁸¹ Art. 25.

⁸² Art. 24. Between entry into force of the Convention and the first meeting of the Conference of the Parties, the secretariat was provided by the Executive Director of UNEP: Art. 40.

⁸³ Art. 27. ⁸⁴ See also Chapter 9, pp. 423 *et seq.*, above.

⁸⁵ CITES, the Bonn Convention, the Ramsar Convention and the World Heritage Conventions, all discussed in this chapter, below.

⁸⁶ See E. Morgera, 'Far Away, So Close: A Legal Analysis of the Increasing Interaction Between the Convention on Biological Diversity and Climate Change Law', 2(1) *Climate Law* 85 (2011).

⁸⁷ See Chapter 7, pp. 295–6, above.

While some of the efforts of the Conference of the Parties have focused on specific provisions of the Convention,⁸⁸ attention has also been devoted to developing and implementing specific and wide-ranging work programmes on major biomes. Thus, there are now work programmes under the Convention on: marine and coastal biodiversity, forest biodiversity; agricultural biodiversity; island biodiversity; inland waters biodiversity; dry and sub-humid land biodiversity; and mountain biodiversity. The Conference of the Parties has strongly endorsed the 'ecosystem approach' as the primary framework for action under the Convention.⁸⁹

In 2002, the Conference of the Parties adopted the 2010 Biodiversity Target 'to achieve by 2010 a significant reduction of the current rate of biodiversity loss at the global, regional and national level as a contribution to poverty alleviation and to the benefit of all life on Earth'.⁹⁰ The adoption of the 2010 target led to a number of national and regional actions, as well as international co-operation among intergovernmental and non-governmental institutions to develop indicators to measure progress towards the target. However, in 2010, it was acknowledged that this target had not been met, that the state of biodiversity continued to decline and that pressures on biodiversity continued to increase.⁹¹ In October 2010, the Conference of the Parties adopted a revised and an updated strategic plan for the Convention for the period 2011–20, including the Aichi Biodiversity Targets.⁹² There are twenty such targets, organised under the following five strategic goals: (A) addressing the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society; (B) reducing the direct pressures on biodiversity and promote sustainable use; (C) improving the status of biodiversity by safeguarding ecosystems, species and genetic diversity; (D) enhancing the benefits to all from biodiversity and ecosystem services; and (E) enhancing implementation through participatory planning, knowledge management and capacity-building. It is important to note that these are not designed as national targets, to be achieved by individual parties, but are established as global targets to be achieved by the Convention. Nonetheless, the Conference of the Parties has urged parties to set their own targets within this framework, taking into account national needs and priorities, while also bearing in mind national contributions to the achievement of the global targets.⁹³ In order to promote action towards achievement of the Aichi Biodiversity Targets, increased emphasis is focused on the concept of 'ecosystem services': the notion that biodiversity underpins ecosystem functioning and the provision of ecosystem services vital to

⁸⁸ See, for example, Decision VII/12 (Addis Ababa Principles and Guidelines for the Sustainable Use of Components of Biological Diversity); Decision VIII/28 (Voluntary Guidelines on Biodiversity-Inclusive Impact Assessment); Decision VI/23 (Guiding Principles for the Prevention, Introduction and Mitigation of Impacts of Alien Species that Threaten Ecosystems, Habitats or Species); Decision VII/16 (Akwé: Kon Voluntary Guidelines for the conduct of cultural, environmental and social impact assessments regarding developments proposed to take place on, or which are likely to impact on, sacred sites and on lands and waters traditionally occupied or used by indigenous and local communities).

⁸⁹ Decision V/6. The ecosystem approach is defined as a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way. According to Decision V/6, the ecosystem approach is based on the application of appropriate scientific methodologies focused on levels of biological organization, which encompass the essential structure, processes, functions and interactions among organisms and their environment. It recognises that humans, with their cultural diversity, are an integral component of many ecosystems.

⁹⁰ Decision VI/26, Annex, para. 11.

⁹¹ Secretariat of the Convention on Biological Diversity, *Global Biodiversity Outlook 3* (2010), 17.

⁹² Decision X/2. ⁹³ *Ibid.*, para. 3(b).

human well-being, related to, *inter alia*, water, health and livelihoods.⁹⁴ Such emphasis is likely to lead to enhanced efforts to identify economic values for the services 'provided' by biodiversity.

Recent efforts have also been directed at improving the so-called 'science-policy interface' for biodiversity – to improve mechanisms for the provision of scientific information as a basis for policy-making. While the Biodiversity Convention, and many other of the biodiversity-related conventions mentioned in this chapter, have their own scientific and technical advisory bodies, the creation of a new Intergovernmental Platform on Biodiversity and Ecosystem Services is envisaged. The modalities of operation of this body, and its relation to the various treaties discussed in this chapter and their scientific advisory mechanisms, have yet to be developed, with further discussions due to take place in 2012.⁹⁵

A number of issues related to marine biodiversity beyond areas of national jurisdiction also pose legal challenges. These include the specific question of the legal status of genetic resources of the seabed beyond areas of national jurisdiction, and the legal regime that should apply to the use of such resources and any benefits arising from their use. While the Convention affirms the sovereignty of states over genetic resources within their jurisdiction, and contains provisions addressing access to such resources and the sharing of benefits from their use,⁹⁶ it does not specifically address genetic resources beyond areas of national jurisdiction.⁹⁷ With the realisation that potentially valuable genetic resources may be located in the seabed area,⁹⁸ the question has arisen whether these may, or should, be regulated in accordance with provisions of the Biodiversity Convention or, alternatively, under the provisions of UNCLOS applicable to the deep seabed beyond national jurisdiction (which themselves are stated to apply only to mineral resources). This has given rise to a policy debate both within the Biodiversity Convention and in the International Seabed Authority, which has yet to yield a definitive outcome.

The broader question of addressing the conservation and sustainable use of marine biodiversity beyond areas of national jurisdiction has also garnered attention. While the Conference of the Parties to the Biodiversity Convention has considered the issue on a number of occasions, generally within discussions on protected areas and on marine and coastal biodiversity,⁹⁹

⁹⁴ See Decision X/2, Annex, para. 3, stating that: 'Biological diversity underpins ecosystem functioning and the provision of ecosystem services essential for human well-being. It provides for food security, human health, the provision of clean air and water; it contributes to local livelihoods, and economic development, and is essential for the achievement of the Millennium Development Goals, including poverty reduction.' On the concept of 'ecosystem services', see, for example, Millennium Ecosystem Assessment, *Ecosystems and Human Well-Being: Biodiversity Synthesis* (2005), 19: 'Biodiversity represents the foundation of ecosystems that, through the services they provide, affect human well-being. These include provisioning services such as food, water, timber, and fibre; regulating services such as the regulation of climate, floods, disease, wastes, and water quality; cultural services such as recreation, aesthetic enjoyment, and spiritual fulfilment; and supporting services such as soil formation, photosynthesis and nutrient cycling.'

⁹⁵ See UNGA Res. 65/162 (2010), para. 17; UNEP Governing Council Decision 26/4 (2010); Decision X/11 of the Conference of the Parties to the Biodiversity Convention.

⁹⁶ Now elaborated in the Nagoya Protocol discussed at pp. 464–6, below.

⁹⁷ Questions have also arisen concerning access to genetic resources and benefit sharing in relation to Antarctica, a matter which has been discussed at recent Antarctic Treaty Consultative Meetings. For example, see *Final Report of the Thirty-Second Antarctic Treaty Consultative Meeting*, 6–17 April 2009, paras. 291–319. See also Chapter 13, p. 583, below. See D. Lohan and S. Johnston, *Bioprospecting in Antarctica* (2005).

⁹⁸ See, for example, S. Arico and C. Salpin, *Bioprospecting of Genetic Resources of the Deep-Sea-Bed: Scientific, Legal and Policy Aspects* (United Nations University, Institute of Advanced Studies, 2005).

⁹⁹ For example, the seventh meeting of the Conference of the Parties, in 2004, established an *ad hoc* working group on protected areas, and asked this group, *inter alia*, to explore options for co-operation for the establishment of

the primary forum for this debate is now an *ad hoc* open-ended working group established by the UN General Assembly¹⁰⁰ in 2004 to explore possible options and approaches to promote international co-operation and co-ordination for the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction. In June 2011, the working group recommended to the General Assembly that a process be initiated to consider the legal framework for the conservation and sustainable use of marine biodiversity in areas beyond national jurisdiction, including through the implementation of existing instruments and the possible development of a multilateral agreement through UNCLOS. It recommended that this process should address marine genetic resources, including benefit sharing questions, and measures such as area-based management tools, including marine protected areas, environmental impact assessments, capacity-building, and the transfer of marine technology.¹⁰¹ This recommendation is likely to be considered by the General Assembly under the agenda item on Oceans and the Law of the Sea at its 2011 session.

2010 Nagoya Protocol

The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from Their Utilization was adopted in 2010 (2010 Nagoya Protocol).¹⁰² The objective of the Nagoya Protocol is:

the fair and equitable sharing of the benefits arising from the utilization of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, and by appropriate funding, thereby contributing to the conservation and sustainable use of biological diversity and the sustainable use of its components.¹⁰³

The Protocol applies to genetic resources within the scope of Article 15 of the CBD, and also to traditional knowledge associated with such resources.¹⁰⁴ ‘Utilization of genetic resources’ is defined as ‘to conduct research and development on the genetic and/or biochemical composition of genetic resources, including through the application of biotechnology as defined in

marine protected areas beyond the limits of national jurisdiction, consistent with international law including UNCLOS, and based on scientific information (Decision VII/28, para. 29(a)). At its eighth meeting, it urged parties to increase collaborative activities to protect ecosystems in marine areas beyond the limits of national jurisdiction (Decision VIII/24, para. 11) and further addressed the question of marine protected areas in such areas (*ibid.*, paras. 35 *et seq.*). At its tenth meeting, in 2010, the Conference of the Parties noted the slow progress in establishing marine protected areas in areas beyond national jurisdiction and the absence of a global process for designating such areas, and encouraged further work on this issue through the General Assembly process (Decision X/29, paras. 4 and 13). The Conference of the Parties has also addressed the issue of biodiversity beyond areas of national jurisdiction in the context of the broader work programme on marine and coastal biodiversity.

¹⁰⁰ Ad Hoc Open-Ended Working Group to study issues relating to the conservation and sustainable use of biological diversity beyond areas of national jurisdiction. See UNGA Res. 59/24, para. 73, A/RES/59/24, 4 February 2005.

¹⁰¹ Recommendations of the Ad Hoc Open-Ended Informal Working Group to Study Issues Relating to the Conservation and Sustainable Use of Marine Biological Diversity Beyond Areas of National Jurisdiction and Co-Chairs’ Summary of Discussions’, UNGA, 66th Session, Agenda item 77(a), UN Doc. A/66/119 (30 June 2011), Annex, para. 1.

¹⁰² Chapter 16, pp. 684–5, below. See M. Buck and C. Hamilton, ‘The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from Their Utilization to the Convention on Biological Diversity’, 20(1) *Review of European Community and International Environmental Law* 47 (2011).

¹⁰³ Art. 1. ¹⁰⁴ Art. 3. See also Art. 8(j) of the Biodiversity Convention.

Article 2 of the Convention'.¹⁰⁵ The Protocol restates and elaborates upon some of the principles reflected in Article 15 of the CBD. Benefits arising from utilisation and commercialisation of genetic resources are to be shared, on mutually agreed terms, with countries of origin of such resources or parties that have acquired such resources in accordance with the Convention. Benefit sharing commitments are also established in relation to indigenous and local communities that hold genetic resources, but only 'in accordance with domestic legislation regarding the established rights of these indigenous and local communities over these genetic resources'. Benefits arising from the use of traditional knowledge associated with genetic resources should also be shared with indigenous and local communities holding such knowledge.¹⁰⁶ As in the Bonn Guidelines, it is recognised that benefits may include both monetary and non-monetary benefits, and an indicative list of such benefits is contained in Annex I to the Protocol. Parties are required to 'encourage' users and providers of genetic resources to direct benefits arising from the utilisation of such resources towards the conservation of biological diversity and the sustainable use of its components.¹⁰⁷

The Protocol provides that parties requiring prior informed consent shall take measures to provide information on how to apply for such consent, and provide for the issuance of a permit or equivalent as evidence of a decision to grant such consent and of the establishment of mutually agreed terms.¹⁰⁸ A permit or equivalent issued in this manner constitutes 'an internationally recognized certificate of compliance' serving as evidence that the genetic resource which it covers has been accessed in accordance with the relevant domestic legislation.¹⁰⁹ Significantly, the Nagoya Protocol requires that parties in whose territories genetic resources accessed from other parties are used should take measures to monitor the utilisation of such resources and to check that the requirements for prior informed consent have been complied with. Thus, parties are to take measures to provide that genetic resources *utilised* within their jurisdiction have been accessed in accordance with prior informed consent and mutually agreed terms, i.e. to check that domestic access and benefit sharing legislation or regulatory requirements of the party providing such resources have been met.¹¹⁰ For the purposes of monitoring the utilisation of genetic resources, parties are required to establish 'checkpoints' to collect or receive from users of genetic resources information on prior informed consent, sources of genetic resources, the establishment of mutually agreed terms and/or utilisation of genetic resources, and parties must take appropriate, effective and proportionate measures to address situations of non-compliance.¹¹¹ Where the same genetic resources are found *in situ* within the territory of more than one party, the Protocol calls for co-operation between those parties, with the involvement of indigenous and local communities concerned.¹¹² The Protocol also calls for consideration of the need for and modalities of a global multilateral benefit sharing mechanism to address benefit sharing where genetic resources and traditional knowledge occur in trans-boundary situations or for which it is not possible to grant or obtain prior informed consent.¹¹³

¹⁰⁵ Art. 2(c). Under Art. 2 of the Convention, 'biotechnology' includes technological applications using biological systems, living organisms or *derivatives* thereof to make or modify products or processes for specific use. A 'derivative' is defined in Art. 2(e) of the Protocol as 'a naturally occurring biochemical compound resulting from the genetic expression or metabolism of biological or genetic resources, even if it does not contain functional units of heredity'.

¹⁰⁶ Art. 5(2) and (5). See further, Chapter 16, pp. 696–7, below. ¹⁰⁷ Art. 9. ¹⁰⁸ Art. 6(3).

¹⁰⁹ Art. 17(2) and (3). The content of such certificates of compliance is specified in Art. 17(4). ¹¹⁰ Art. 15.

¹¹¹ Art. 17(1). ¹¹² Art. 11. ¹¹³ Art. 10.

Like the Cartagena Protocol, the Nagoya Protocol establishes institutional and financial arrangements linked to the Convention on Biological Diversity. The Conference of the Parties to the Convention is to serve as the Meeting of the Parties to the Protocol, with decisions under the Protocol to be taken only by those that are parties to it.¹¹⁴ The financial mechanism of the Convention is also the financial mechanism of the Protocol.¹¹⁵ The Protocol contains a detailed provision on capacity development in developing country parties in Article 22. In order to prepare for the Protocol's entry into force and its first Meeting of the Parties, an Open-Ended Intergovernmental Committee has been established, with meetings scheduled in 2011 and 2012.

GLOBAL INSTRUMENTS ADDRESSING SPECIFIC THREATS TO BIODIVERSITY

Two global instruments have been adopted which address specific potential threats posed to biodiversity by certain activities or organisms. As noted above, the Cartagena Protocol on Biosafety addresses risks associated with the transboundary movement and release into the environment of living modified organisms. The Convention on International Trade in Endangered Species, as its title suggests, addresses risks to the conservation status of species of wild fauna and flora posed by their international trade. While these instruments address quite different types of threat and are quite different in nature, it might be noted that they utilise some common mechanisms, including a reliance on issuance of permits or authorisations by national authorities, scientific assessments and control of transboundary movements through border controls and related measures. They highlight the critical importance of domestic capacity in these areas for effective implementation.

Cartagena Protocol on Biosafety¹¹⁶

The Cartagena Protocol on Biosafety was adopted on 29 January 2000 and entered into force on 11 September 2003.¹¹⁷ Article 1 sets forth its objective:

¹¹⁴ Art. 26. Subsidiary bodies under the Convention may also serve the Protocol, and the Convention secretariat serves as secretariat to the Protocol, with any distinct costs of secretariat services to the Protocol to be met by the parties to it. Arts. 27 and 28.

¹¹⁵ Art. 25.

¹¹⁶ P.-T. Stoll, 'Controlling the Risks of GMOs: The Cartagena Protocol on Biosafety and the SPS Agreement', 10 *Yearbook of International Environmental Law* 82 (1999); B. Eggers and R. Mackenzie, 'The Cartagena Protocol on Biosafety', 3 *Journal of International Economic Law* 525 (2000); M. Scheyli, 'Das Cartagena-Protokoll über biologische Sicherheit zur Biodiversitätskonvention', 60 *ZaöRV* 771 (2000); L. Boisson de Chazournes and U. Thomas, 'The Biosafety Protocol: Regulatory Innovation and Emerging Trends', *Revue Suisse de Droit International* 513 (2000); A. H. Qureshi, 'The Cartagena Protocol on Biosafety and the WTO: Coexistence or Incoherence?', 49 *International and Comparative Law Quarterly* 835 (2000); V. Koester, 'A New Hot Spot in the Trade-Environment Conflict', 31 *Environmental Policy and Law* 82 (2001); D. Katz, 'The Mismatch Between the Biosafety Protocol and the Precautionary Principle', 13 *Georgetown International Environmental Law Review* 949 (2001); C. Bail, R. Falkner and H. Marquard (eds.), *The Cartagena Protocol on Biosafety* (2002); J. Bourrinet and S. Maljean-Dubois (eds.), *Le Commerce International des Organismes Génétiquement Modifiés* (2002); R. Mackenzie, F. Burhenne-Guilmin, T. La Vina and J. Werksman, *An Explanatory Guide to the Cartagena Protocol on Biosafety* (2003).

¹¹⁷ 39 ILM 1027 (2000), in force 11 September 2003. By 30 June 2011, there were 161 parties to the Cartagena Protocol.

In accordance with the precautionary approach contained in Principle 15 of the Rio Declaration on Environment and Development, the objective of this Protocol is to contribute to ensuring an adequate level of protection in the field of the safe transfer, handling and use of living modified organisms resulting from modern biotechnology that may have adverse effects on the conservation and sustainable use of biological diversity, taking also into account risks to human health, and specifically focusing on transboundary movements.

Parties must ensure that the development, handling, transport, use, transfer and release of any living modified organisms are undertaken in a manner that prevents or reduces the risks to biological diversity, taking also into account risks to human health.¹¹⁸ They are free to take action that is more protective of biological diversity provided that such action ‘is consistent with the objective and the provisions of [the] Protocol and is in accordance with [the] Party’s other obligations under international law’.¹¹⁹

The Biosafety Protocol applies to ‘the transboundary movement, transit, handling and use of all living modified organisms that may have adverse effects on the conservation and sustainable use of biological diversity, taking also into account risks to human health’ (Article 4). However, LMOs which are pharmaceuticals for humans are excluded from the Protocol’s scope if they are covered by another international arrangement or agreement.

The Preamble reaffirms the parties’ commitment to the ‘precautionary approach’ contained in Principle 15 of the Rio Declaration, expresses their awareness of growing public concern over potential adverse effects on biological diversity and human health, and recognises the ‘great potential’ of biotechnology. Given that the Protocol controls the transboundary movement, including trade, of LMOs, the relationship with parties’ obligations under international trade agreements¹²⁰ was a matter of great controversy during the negotiations. Reflecting the lack of consensus on this point, the Protocol’s Preamble contains three paragraphs that do not conclusively settle the question:

Recognizing that trade and environment agreements should be mutually supportive with a view to achieving sustainable development,

Emphasizing that this Protocol shall not be interpreted as implying a change in the rights and obligations of a Party under any existing international agreements,

Understanding that the above recital is not intended to subordinate this Protocol to other international agreements ...

The central regulatory mechanism established by the Protocol is the advance informed agreement (AIA) procedure. This procedure applies to the first intentional transboundary movement of an LMO into a party of import for intentional introduction into the environment of that

¹¹⁸ Art. 2(1) and (2). ¹¹⁹ Art. 2(4).

¹²⁰ The relationship between the Cartagena Protocol and the WTO agreements was raised in the *EC – Biotech Products* case in the WTO, but was not addressed in substance by the panel given that the complainants, United States, Canada and Argentina, were not parties to the Protocol. See further, Chapter 19, pp. 844–6, below.

party. The scope of the AIA procedure was the subject of intense negotiation during the elaboration of the Protocol. The Protocol provides that the procedure does not apply to LMOs in transit¹²¹ or to LMOs destined for 'contained use' in the party of import.¹²² Significantly, in addition, the AIA procedure does not apply to LMOs 'intended for direct use as food or feed, or for processing' (LMO-FFPs).¹²³ This exclusion removes from the Protocol's AIA procedure, *inter alia*, shipments of grains from genetically modified crops, which might otherwise fulfil the definition of an LMO in the Protocol. Such shipments are subject to a specific procedure in Article 11 of the Protocol. Finally, the Protocol's governing body may decide to exempt from the AIA procedure other LMOs identified as not likely to have adverse effects on the conservation and sustainable use of biodiversity, taking also into account risks to human health.¹²⁴

Under the AIA procedure, prior to the first intentional transboundary movement of an LMO, the party of export or the exporter must notify the national authority of the importing party.¹²⁵ The party of export must ensure that there is a legal requirement for the accuracy of information provided by the exporter.¹²⁶ On receipt of the notification, the importing party must provide a written acknowledgment to the notifier within ninety days, informing the notifier whether to proceed in accordance with the domestic regulatory framework of the importing party (which must be consistent with the Protocol) or with the decision procedure specified in Article 10.¹²⁷ If the importing party proceeds in accordance with Article 10, it must inform the notifier, in writing, within ninety days of the receipt of the initial notification, whether the intentional transboundary movement may proceed: (a) only after the importing party has given its written consent; or (b) after no less than ninety days without a subsequent written consent.¹²⁸ If the importing party informs the notifier that import can only proceed with the importing party's consent, the importing party has a period of 270 days from the initial notification in which to make a decision on import. The decision must be notified to the exporter and to the Biosafety Clearing-House established as part of the clearing-house mechanism under Article 18(3) of the Protocol.¹²⁹ Before making a decision on import of an LMO, the importing party must ensure that a risk assessment is carried out 'in a scientifically sound manner, in accordance with Annex III and taking into account recognised risk assessment techniques'.¹³⁰ Following the risk assessment, the importing party may approve the import, with or without conditions, or may prohibit it. The importing party may also request additional relevant information in accordance with its domestic regulatory framework or Annex I, or

¹²¹ Art. 6(1). Parties may nonetheless decide to regulate the transit of LMOs through their territory.

¹²² Art. 6(2). 'Contained use' is defined in Art. 3(b) as 'any operation, undertaken within a facility, installation or other physical structure, which involves living modified organisms that are controlled by specific measures that effectively limit their contact with, and their impact on, the external environment'. Parties are nonetheless entitled to subject LMOs destined for contained use to risk assessment prior to import and to set standards for contained use within their jurisdiction.

¹²³ Art. 7(2). ¹²⁴ Art. 7(4). This power has not been exercised to date.

¹²⁵ Pursuant to Art. 19(1), each party must designate one or more competent national authorities. The information includes, *inter alia*, contact details for the exporter and importer, the name and identity of the LMO and its genetic characteristics, a description of the modification, details of the intended use of the LMO and suggested methods for safe handling, storage, transport and use of the LMO.

¹²⁶ Art. 8. ¹²⁷ Art. 9(1)–(3). ¹²⁸ Art. 10(2). ¹²⁹ Art. 10(3).

¹³⁰ Art. 15(1). Annex III sets forth general principles of risk assessment, the methodology to be used and points to consider in the assessment. The risk assessment may be undertaken by the importing party, or the exporter can be required to carry out the risk assessment: Art. 15(2) and (3).

extend the decision-making period by a defined period of time.¹³¹ Provision is made for the application of a precautionary approach by the importing party in Article 10(6), which provides:

Lack of scientific certainty due to insufficient relevant scientific information and knowledge regarding the extent of the potential adverse effects of a living modified organism on the conservation and sustainable use of biological diversity in the Party of import, taking also into account risks to human health, shall not prevent that Party from taking a decision, as appropriate, with regard to the import of the living modified organism in question ... in order to avoid or minimize such potential adverse effects.

While this allows for precaution in the context of decision-making on imports, it has been suggested that the provision is limited insofar, *inter alia*, that the reference to the 'extent of potential adverse effects' suggests that the pathways by which the LMOs in question could cause harm is not in doubt.¹³²

An alternative decision-making procedure applies in respect of LMO-FFPs. Under Article 11, parties taking a final decision regarding domestic use, including placing on the market, of an LMO that may be subject to transboundary movement for direct use as food or feed, or for processing, are required to inform other parties through the Biosafety Clearing-House within fifteen days of making the decision. A party may take decisions on the import of LMO-FFPs in accordance with its domestic regulatory framework, provided this framework is consistent with the objective of the Protocol.¹³³ Alternatively, developing country parties, or parties with economies in transition, which lack a domestic regulatory framework, may declare through the Biosafety Clearing-House that decisions prior to the first import of an LMO-FFP will be taken following a risk assessment undertaken in accordance with Annex III and within a predictable timeframe, not exceeding 270 days.¹³⁴ Again, lack of scientific certainty will not prevent a party from taking a decision designed to avoid or minimise the potential adverse effects of the LMO-FFP on the environment or human health.¹³⁵

Article 26 allows parties, in making decisions on the import of LMOs, to take into account 'socio-economic considerations' arising from the impact of LMOs on the conservation and sustainable use of biological diversity, provided such consideration is consistent with the party's international obligations.

New scientific evidence permits an importing party to review a previous decision regarding an intentional transboundary movement. The revised decision and accompanying reasons must be notified to any exporters that have previously notified movements of the LMO referred to in the decision, as well as to the Biosafety Clearing-House.¹³⁶ A party of export or a notifier may also seek a review of an importing party's decision in respect of an LMO import if it considers that a change in circumstances has occurred that may influence the outcome of the risk assessment upon which the decision was based or if additional relevant scientific or technical information has become available.¹³⁷

Article 14 of the Protocol permits parties to enter into bilateral, regional and multilateral agreements and arrangements regarding intentional transboundary movements of LMOs which

¹³¹ Art. 10(3).

¹³² J. Peel, *Science and Risk Regulation in International Law* (2010), 305.

¹³³ Art. 11(4).

¹³⁴ Art. 11(6).

¹³⁵ Art. 11(8).

¹³⁶ Art. 12(1).

¹³⁷ Art. 12(2).

are consistent with the objective of the Protocol and do not result in a lower level of protection than that provided for by the Protocol. This would appear to include, for example, regulatory arrangements within the European Union applicable to LMOs. The Protocol does not prohibit transboundary movements of LMOs between parties and non-parties, provided they are 'consistent with the objective' of the Protocol.¹³⁸ Parties may enter into bilateral, regional and multilateral agreements and arrangements with non-parties regarding such transboundary movements of LMOs.¹³⁹ Parties entering into bilateral agreements with non-parties are required, however, to 'encourage' non-parties to adhere to the Protocol and to contribute appropriate information to the Biosafety Clearing-House on LMOs released in, or moved into or out of, areas within their national jurisdictions.¹⁴⁰ The issue of trade with non-parties was a significant factor in negotiations as the United States is not a party to the Convention on Biological Diversity and thus cannot become a party to the Cartagena Protocol. It was also anticipated that other major exporters of LMOs and/or LMO-FFPs might not join the Protocol. The provisions of Article 24 are relevant to the present situation of a state such as Mexico that is party to the Protocol, while also a member of the North American Free Trade Agreement with two non-parties, Canada and the United States. The difficulty of the Protocol's provisions on trade with non-parties lies in determining in what precise circumstances transboundary movements of LMOs will be deemed 'consistent with the objective' of the Protocol.

Where risks to biological diversity or human health are identified in the risk assessment process under the Protocol, the parties agree to establish and maintain appropriate mechanisms, measures and strategies to regulate, manage and control those risks.¹⁴¹ Measures based on risk assessment must be imposed 'to the extent necessary to prevent adverse effects of the living modified organism on the conservation and sustainable use of biological diversity, taking also into account risks to human health, within the territory of the Party of import'.¹⁴²

Article 18 requires parties to take the necessary measures to require that LMOs that are subject to intentional transboundary movement within the scope of the Protocol are handled, packaged and transported under conditions of safety, taking into consideration relevant international rules and standards.¹⁴³ During the negotiations for the Protocol, the most controversial aspect of Article 18 was its provisions relating to documentation requirements for exports of various types of LMOs, particularly LMO-FFPs. The compromise agreed upon provides for parties to require that documentation accompanying LMO-FFPs clearly identifies that they 'may contain' living modified organisms.¹⁴⁴ The Meeting of the Parties was required to take a decision on detailed requirements for this purpose within two years of the Protocol's entry into force.¹⁴⁵

Article 20 establishes a Biosafety Clearing-House. Its functions are to facilitate the exchange of scientific, technical, environmental and legal information on, and experience with, LMOs, and to assist parties (especially developing countries, countries with economies in transition and countries that are centres of origin and centres of genetic diversity) in implementing the Protocol. Subject to commercial confidentiality requirements (under Article 21), parties must

¹³⁸ Art. 24(1). ¹³⁹ *Ibid.* ¹⁴⁰ Art. 24(2). ¹⁴¹ Art. 16(1). ¹⁴² Art. 16(2). ¹⁴³ Art. 18(1).

¹⁴⁴ Art. 18(2)(a); on labelling, see Chapter 15, pp. 658–9, below.

¹⁴⁵ This issue was addressed in Decision BS-III/10 of the Conference of the Parties serving as the Meeting of the Parties to the Protocol, in 2006, with a view to adopting a further decision on Art. 18(2)(a) at the sixth Meeting of the Parties. By Decision BS-V/8, this decision was deferred to the seventh Meeting of the Parties, likely to be held in 2014 or early 2015.

provide the Biosafety Clearing-House with specified information, which is publicly accessible.¹⁴⁶ As noted above, the Biosafety Clearing-House plays an important role in the way the Protocol addresses the transboundary movement of LMOs intended for direct use as food or feed, or for processing.

Under Article 17, parties must take appropriate measures to notify affected or potentially affected states, the Biosafety Clearing-House and international organisations of a release that leads, or may lead, to an unintentional transboundary movement of an LMO that is likely to affect biological diversity or human health.¹⁴⁷ Under Article 25, transboundary movements of LMOs carried out in contravention of a party's domestic measures implementing the Protocol are deemed to be illegal, and the affected party may request the party of origin to dispose of the LMO in question by repatriation or destruction, as appropriate.¹⁴⁸

The limited capacity of developing countries with respect to known and potential risks associated with LMOs was an important factor in the adoption of the Protocol. Article 22 requires parties to co-operate in the development and/or strengthening of human resources and institutional capacities in biosafety within developing countries. Financial assistance may be provided for capacity-building through the financial mechanism established under Article 21 of the Convention, and the needs of parties with economies in transition are also to be taken into account for capacity-building.¹⁴⁹

Another extremely controversial issue in the negotiation of the Protocol was the question of liability and redress for any damage caused by LMOs. Most developing states wished to have provisions on liability and redress included within the text of the Protocol. Opposition from most developed states, and the complexity of the issue, resulted in a form of enabling provision being included in the Protocol. Article 27 required the first Meeting of the Parties to adopt 'a process with respect to the appropriate elaboration of international rules and procedures in the field of liability and redress for damage resulting from transboundary movements of living modified organisms'. This formulation appeared to leave open a number of important issues, such as the scope of such rules and procedures and their legal form. The first Meeting of the Parties set out a mandate for an open ended *ad hoc* working group of legal and technical experts to address the issue,¹⁵⁰ and, in 2010, the fifth Meeting of the Parties to the Protocol adopted the Nagoya–Kuala Lumpur Supplementary Protocol on Liability and Redress.¹⁵¹ A full discussion of the Liability Protocol is deferred to Chapter 17, below.

The Protocol utilises the institutional arrangements established under the Biodiversity Convention, with the Conference of the Parties serving as the Meeting of the Parties to the Protocol.¹⁵² The Meeting of the Parties is to keep the implementation of the Protocol under regular review and may consider and adopt, as required, amendments to the Protocol and its Annexes, as well as any additional Annexes, which are deemed necessary for the implementation of the Protocol.¹⁵³ The Protocol required the first Meeting of the Parties to establish a non-compliance mechanism,¹⁵⁴ and this mechanism was adopted in 2004.¹⁵⁵

¹⁴⁶ Art. 20(3). See <http://bch.cbd.int>. ¹⁴⁷ Art. 17(1). ¹⁴⁸ Art. 25(1) and (2).

¹⁴⁹ Art. 22(2) (the financial mechanism established in Art. 21 of the Convention is designated as the financial mechanism for the Protocol: Art. 28(2)); see Chapter 16, pp. 677–8, below. The adoption of the Protocol gave rise to a significant focus on capacity-building, with finance through the Global Environment Facility to enable developing countries to develop national biosafety laws and regulations to implement the Protocol.

¹⁵⁰ Decision BS-I/8. ¹⁵¹ Decision BS-V/11. See further Chapter 17, pp. 764–6, below. ¹⁵² Arts. 29–31.

¹⁵³ Art. 29(4). ¹⁵⁴ Art. 34. ¹⁵⁵ Decision BS-I/7.

Convention on International Trade in Endangered Species¹⁵⁶

In 1973, twenty-one countries signed the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).¹⁵⁷ Thousands of species of plants and animals are subject to its regulations, which are designed to protect endangered species of flora and fauna from over-exploitation by regulating or prohibiting their international trade. The adoption of CITES was the culmination of a process beginning in 1960 at the Seventh General Assembly of the IUCN, and incorporating a 1963 IUCN General Assembly resolution calling for an international convention, and a first draft of a treaty in 1964. In 1972, the Stockholm Conference adopted Recommendation 99.3 which led to the convening of a plenipotentiary conference in Washington in February and March 1973 and the adoption of the Convention.¹⁵⁸

CITES works through the listing on Appendices of species of wild flora and fauna whose conservation status is threatened by international trade. The level of protection accorded to the species depends upon which Appendix of CITES it is listed. Once listed, imports and exports of the species concerned are subject to a permit system implemented by national management and scientific authorities. Thus, CITES depends for its implementation upon a working system of national regulatory authorities, and for its enforcement on, *inter alia*, working inspection and border controls to ensure imports and exports of listed species only take place subject to the required permits.

Institutions

The Conference of the Parties meets every two to three years¹⁵⁹ to consider and adopt amendments to Appendices I and II, to review the progress of restoration and conservation of listed species, and to make recommendations for improving the effectiveness of the Convention.¹⁶⁰ Non-governmental organisations participate as observers in meetings of the

¹⁵⁶ L. H. Kosloff and M.C. Trexler, 'The Convention on International Trade in Endangered Species: No Carrot, But Where's the Stick?', 17 *Environmental Law Review* 10,222 (1987); D. S. Favre, *International Trade in Endangered Species* (1989); P. Sands and A. Bedecarré, 'Convention on International Trade in Endangered Species: The Role of Public Interest Non-Governmental Organisations in Ensuring the Effective Enforcement of the Ivory Trade Ban', 17 *Boston College Environmental Affairs Law Review* 799 (1990); V. Karno, 'Protection of Endangered Gorillas and Chimpanzees in International Trade: Can CITES Help?', 14 *Hastings International and Comparative Law Review* 989 (1991); P. Sand, 'Whither CITES? The Evolution of a Treaty Regime on the Borderland of Trade and Environment', 8 *Journal of Environmental Law* 29 (1997); M. Bowman, 'CITES: Trade Conservation and Animal Welfare', 2 *Journal of International Wildlife Law and Policy* 9 (1999); J. Hutton and B. Dickson (eds.), *Endangered Species, Threatened Convention: The Past, Present and Future of CITES, the Convention on International Trade in Endangered Species of Wild Fauna and Flora* (2000); R. Reeve, *Policing International Trade in Endangered Species: The CITES Treaty and Compliance* (2002); M. Bowman, P. Davies and C. Redgwell, *Lyster's International Wildlife Law* (2010, 2nd edn), Chapter 15; W. Wijnstekers, *The Evolution of CITES* (2011, 9th edn).

¹⁵⁷ Washington, 3 March 1973, in force 1 July 1975, 993 UNTS 243; CITES has 175 parties. Amending Protocols were adopted in Bonn on 22 June 1979 (in force 13 April 1987) and in Gaborone on 30 April 1983 (not yet in force). For a detailed guide to the Convention and its history, see W. Wijnstekers, *The Evolution of CITES* (2011, 9th edn), available at www.cites.org.

¹⁵⁸ Wijnstekers, *ibid.*, pp. 31–2.

¹⁵⁹ CITES provides, in Art. XI(2), that the Secretariat shall convene regular meetings of the Conference of the Parties at least once every two years, unless the Conference of the Parties decides otherwise. After 2004, for budgetary reasons, the Conference of the Parties decided that its meetings should be held every three years. There is also the possibility of holding extraordinary meetings at any time on the written request of at least one-third of the parties [Art. XI(2)].

¹⁶⁰ Art. XI(3)(b), (c) and (e). The conference also approves the CITES Secretariat's budget and considers any reports presented by the Secretariat or any party. Art. XI(3)(a) and (d).

Conference of the Parties, although they cannot vote.¹⁶¹ To date, the Conference of the Parties has met fifteen times, most recently in Doha in March 2010. In addition to amendments to the Appendices to CITES, the Conference of the Parties has adopted numerous resolutions through which the provisions of CITES have evolved and been elaborated. The provisions of the Convention thus have to be read in light of the interpretations and guidance contained in these resolutions.¹⁶² The main intersessional committees established by the Conference of the Parties are the Standing Committee, the Animals Committee and the Plants Committee.¹⁶³ The Conference of the Parties may appoint additional committees as needed, and it or the Standing Committee may establish working groups to address specific issues. Numerous working groups have been established, addressing, for example, mahogany, bushmeat, the transport of live specimens, and export quotas. Such working groups are generally established for a limited duration, which may be reviewed and renewed by the Conference of the Parties.¹⁶⁴ A permanent secretariat located in Geneva, Switzerland, oversees the application of the CITES system, although, as noted above, the day-to-day operation is a matter for the national authorities of the parties.¹⁶⁵

Preamble and definitions

The Preamble recognises that ‘wild fauna and flora in their many beautiful and varied forms are an irreplaceable part of the natural systems of the earth which must be protected for this and the generations to come’, and indicates the primary purpose of the Convention as international co-operation to protect wild fauna and flora against over-exploitation through international trade. A ‘species’ is any ‘species, sub-species, or geographically separate population thereof’;¹⁶⁶ a specimen is defined as:

- (i) any animal or plant, whether alive or dead;
- (ii) in the case of an animal: for species included in Appendices I and II, any readily recognisable part or derivative thereof; and for species included in Appendix III, any readily recognisable part or derivative thereof specified in Appendix III in relation to the species; and
- (iii) in the case of a plant: for species included in Appendix I, any readily recognisable part or derivative thereof; and for species included in Appendices II and III, any readily recognisable part or derivative thereof specified in Appendices II and III in relation to the species.¹⁶⁷

Appendices I, II and III and international trade

As noted above, the level of protection afforded to the species under CITES depends upon which Appendix, if any, a species is listed on. Parties are free to introduce stricter domestic measures.¹⁶⁸ Appendix I includes ‘all species threatened with extinction which are or may be

¹⁶¹ Art. XI(7). NGOs may, however, be refused admittance upon the objection of at least one-third of the parties present.

¹⁶² Wijnstekers, *The Evolution of CITES* (2011, 9th edn), provides a comprehensive guide to these resolutions. The Conference of the Parties regularly reviews, amends and ‘retires’ resolutions. An updated list of resolutions that are in effect is maintained on the CITES website at www.cites.org.

¹⁶³ Res. Conf. 11.1 (Rev. CoP15). The tasks of the former Nomenclature Committee were assigned to the Animal and Plants Committees in 2004, by Res. Conf. 11.1 (Rev. CoP15).

¹⁶⁴ Res. Conf. 11.1 (Rev. CoP15). ¹⁶⁵ Art. XII. ¹⁶⁶ Art. I(a). ¹⁶⁷ Art. I(b).

¹⁶⁸ Art. XIV(1). Art. XIV(2)–(4) includes provisions on the relationship with other treaties or international agreements, including those relating to marine species.

affected by trade'.¹⁶⁹ Except in very limited circumstances, CITES prohibits all trade in Appendix I species;¹⁷⁰ any trade must not be 'detrimental to the survival of the species', must not be for 'primarily commercial purposes',¹⁷¹ and cannot be in relation to a species obtained in contravention of the laws of the exporting state.¹⁷² Dependent upon these and other inquiries, CITES requires the exporting and importing parties to issue permits for proposed trade in Appendix I specimens.¹⁷³ Certificates are also required for re-export of specimens and for any specimen introduced from the sea.¹⁷⁴

Appendix II lists 'all species which although not necessarily threatened with extinction may become so unless trade in specimens is subject to strict regulation in order to avoid utilisation incompatible with their survival'.¹⁷⁵ Commercial trade in Appendix II specimens is allowed if it is not 'detrimental to the survival of that species', and the specimen was not obtained in contravention of the law of the exporting state.¹⁷⁶ No import permit is required, but the importer must present an export permit or re-export certificate before entry is allowed.¹⁷⁷ Otherwise, the conditions on trade in Appendix II specimens are similar to those for Appendix I specimens.

Appendix III includes 'all species which any party identifies as being subject to regulation within its jurisdiction for the purpose of preventing or restricting exploitation, and as needing the co-operation of other parties in the control of trade'.¹⁷⁸ Appendix III allows parties to assist each other in enforcing their domestic wildlife legislation, and species originally listed in Appendix III often make their way into Appendix II.¹⁷⁹ The management authority of the exporting state must issue an export permit for Appendix III specimens based upon somewhat less stringent standards than those for Appendices I and II species.¹⁸⁰

Amendments to Appendices

The most important task of the Conference of the Parties is to consider and adopt amendments to Appendices I and II.¹⁸¹ Article XV sets out the basic principles and procedures for amending Appendices to include or remove species and to move species from one Appendix to another. Amendments at meetings of the Conference of the Parties are adopted by two-thirds majority of those present and voting and enter into force ninety days after that meeting for all parties that have not entered a reservation.¹⁸² Amendments may also be adopted between meetings.¹⁸³

¹⁶⁹ Art. II(1).

¹⁷⁰ Art. II(1). 'Trade' is defined as 'export, re-export, import and introduction from the sea': Art. I(c). For a detailed account of the rules governing trade in specimens of species in Appendix I, see Wijnstekers, *The Evolution of CITES* (2011, 9th edn), 123–34.

¹⁷¹ For a definition of this term, see Res. Conf. 5.10 (Rev. CoP15).

¹⁷² Art. III(2)(a) and (b) and (3)(c). The determination of these factors is made by a scientific authority in the state of export: *ibid.* According to Art. IX of CITES, each party must designate one or more 'Scientific Authorities' to determine the consequences of import/export transactions and one or more 'Management Authorities' to grant trade permits: Art. III(3)(c) (determination is made by the scientific or management authority of the importing state).

¹⁷³ Art. III(2) and (3). ¹⁷⁴ Art. III(4) and (5).

¹⁷⁵ Art. II(2). Art. II(2)(b) provides that other species also must be subject to regulation if necessary to effectively regulate an Appendix II species.

¹⁷⁶ Art. IV(2)(a) and (b). For a detailed account of the rules regulating trade in specimens of species in Appendix II, see Wijnstekers, *The Evolution of CITES* (2011, 9th edn), 135–51.

¹⁷⁷ Art. IV(4). ¹⁷⁸ Art. II(3). ¹⁷⁹ Art. V.

¹⁸⁰ Art. V(2). For an account of the rules regulating trade in specimens of species in Appendix III, see Wijnstekers, *The Evolution of CITES* (2011, 9th edn), 152–5.

¹⁸¹ Art. XI(3). ¹⁸² Art. XV(1). ¹⁸³ Art. XV(2).

The first meeting of the Conference of the Parties adopted more detailed criteria for listing and de-listing species, known as the 'Berne criteria'.¹⁸⁴ These criteria were the source of some controversy, in part because of their perceived protectionist requirements for removing or downlisting species. In the context of the attempts to uplist the African elephant to Appendix I in 1989, the opponents of such an amendment argued that the African elephant did not meet the Berne criteria for threatened extinction 'at the species level'.¹⁸⁵

Revised listing criteria were adopted at the ninth meeting of the Conference of the Parties.¹⁸⁶ They require that, when considering any proposal to amend Appendix I or II, the parties 'shall apply the precautionary principle so that scientific uncertainty should not be used as a reason for failing to act in the best interest of the conservation of the species'.¹⁸⁷ Under the revised criteria, for listing on Appendix I or II, a species must meet certain biological and trade criteria. To qualify for Appendix I, a species must be currently threatened with extinction, and will be considered to be so if it meets specific criteria laid out in the Resolution.¹⁸⁸ With regard to its trade status, a species that meets the biological criteria should be listed in Appendix I if it 'is or may be affected by trade'. This includes where the species is known to be in trade and that trade has or may have a detrimental effect on the status of the species, and where the species is suspected to be in trade or there is demonstrable potential international demand for the species, which may be detrimental to its survival in the wild.¹⁸⁹

For Appendix II listing, the species need not currently be threatened with extinction, but it must be known, inferred or projected that either the regulation of trade in the species is necessary to avoid it becoming eligible for inclusion in Appendix I in the near future, or that regulation of trade in the species is required to ensure that the harvest of specimens from the wild is not reducing the wild population to a level at which its survival might be threatened by continued harvesting or other influences.¹⁹⁰ There is also provision to list, on Appendix II, species, specimens of which are traded in a form that resembles specimens of other species listed in Appendix I or II, such that enforcement officers may not be able to distinguish them. Other species may be included in Appendix II where there are compelling reasons for their inclusion in order to ensure effective control of trade in currently listed species.¹⁹¹ Annex 4

¹⁸⁴ Res. Conf. 1.1 (1976) (Criteria for the Addition of Species and Other Taxa to Appendices I and II and for the Transfer of Species and Other Taxa from Appendix II to Appendix I).

¹⁸⁵ CITES Secretariat, 'Views of the CITES Secretariat on Potential Problems Raised by the Inclusion of the African Elephant on Appendix I', in *Proceedings of the Seventh Meeting of the Conference of the Parties* (1989). This argument relied on the existence of large, well-managed stocks of elephants in several southern African nations. Given that healthy herds of elephants exist in some places, so the argument went, it did not matter that the species might be extinguished elsewhere. The Conference of the Parties rejected this argument and voted to move the African elephant from Appendix II to Appendix I by a vote of seventy-six to eleven, with four abstentions: Doc. Plen. 7.4, in *Proceedings of the Seventh Meeting of the Conference of the Parties* (1989). However, the issue of elephants and ivory has continued to challenge the Conference of the Parties and the CITES system. While the African elephant remains on Appendix I of CITES, the elephant populations of Botswana, Namibia, Zimbabwe and South Africa are now listed on Appendix II, subject to certain conditions and controls. Much of the debate since 1997 has centred on limited sales of ivory stockpiles from these countries. See Res. Conf. 10.9 and 10.10 (Rev. CoP15); and Wijnstekers, *Evolution of CITES* (2011, 9th edn), 613–46. Most recently, at the fifteenth meeting of the Conference of the Parties in 2010, proposals to transfer elephant populations of Tanzania and Zambia to Appendix II and to allow one-off sales of ivory stockpiles from these countries, subject to conditions, were rejected.

¹⁸⁶ Res. Conf. 9.24 (Rev. CoP15).

¹⁸⁷ Res. Conf. 9.24 (Rev. CoP15); B. Dickinson, 'The Precautionary Principle in CITES: A Critical Assessment', 39 *Natural Resources Journal* 211 (1999).

¹⁸⁸ Res. Conf. 9.24 (Rev. CoP15), Annex I. ¹⁸⁹ *Ibid.*, Annex 5. ¹⁹⁰ *Ibid.*, Annex 2a. ¹⁹¹ *Ibid.*, Annex 2b.

to Resolution 9.24¹⁹² sets out precautionary measures for the consideration of a proposal to transfer a species from Appendix I to Appendix II or to delete a species from Appendix II.

Reservations

CITES permits parties to make reservations to the Convention in respect of any species listed in Appendix I, II or III or any parts or derivatives specified in relation to an Appendix III species either at the time at which that state becomes a party,¹⁹³ or upon amendment to an Appendix.¹⁹⁴ In the case of additions to Appendices I and II, a reserving party has ninety days after the amendment to register its reservation with Switzerland, the depositary government,¹⁹⁵ whereas reservations to Appendix III listings may be taken at any time.¹⁹⁶ Reserving parties are treated as non-parties with regard to trade in the designated species or its parts or derivatives,¹⁹⁷ which allows them to trade with actual non-parties and with other parties taking matching reservations unfettered by CITES requirements.¹⁹⁸ The reservation clauses seem contradictory to the general goals of CITES, and there seems little doubt that their operation has detrimental effects on listed endangered species. Determining the effect of a reservation to an amendment uplisting a species from Appendix II to Appendix I has presented a problem in CITES enforcement. On a literal reading of the Convention, a party that was following the strict requirements applicable to trade in Appendix II specimens prior to an uplisting becomes almost completely unregulated after entering a reservation to such an amendment. In response to this flaw in CITES regulation, the fourth meeting of the Conference of the Parties recommended that parties taking reservations on transfers from Appendix II to Appendix I should continue to treat that species as if it were included in Appendix II for all purposes, including documentation and control.¹⁹⁹

Exemptions and special provisions

CITES incorporates several exemptions. First, the trade provisions do not apply to the transit or transshipment of species.²⁰⁰ Second, subject to certain exceptions, the trade provisions do not apply to specimens that are personal or household effects.²⁰¹ Third, Article VII(2) provides that, when the management authority of a state of export or re-export determines that a specimen was acquired before the provisions of CITES applied to that specimen, the restrictions of Articles III, IV and V do not apply; in these circumstances, the exporting state's management authority issues a 'pre-Convention specimen' certificate so that the specimen may be traded. This section exempts 'pre-Convention specimens' from the restrictions relating to a listing on

¹⁹² Res. Conf. 9.24 (Rev. CoP15). ¹⁹³ Art. XXIII(2).

¹⁹⁴ Arts. XV(3) (Appendices I and II species); Art. XVI(2) (Appendix III species); see Res. Conf. 4.25 (Rev. CoP14) on Reservations; and Res. Conf. 11.3 (Rev. CoP15) on Compliance and Enforcement, which notes that reservations made by importing countries allow loopholes through which specimens illegally acquired in the countries of origin can find legal markets without any control.

¹⁹⁵ Art. XV(3). ¹⁹⁶ Art. XVI(2). ¹⁹⁷ Arts. XV(3), XVI(2) and XXIII(3).

¹⁹⁸ Art. X imposes requirements on trade between parties and non-parties such as 'comparable documentation issued by the competent authorities' in the non-party state, which 'substantially conforms' with CITES requirements.

¹⁹⁹ Res. Conf. 4.25 (Rev. CoP14). The resolution also calls upon all parties having entered reservations to keep and report trading statistics for species under reservations so that international trade in specimens of these species can be monitored.

²⁰⁰ Art. VII(1); see also Res. Conf. 9.7 (Rev. CoP15).

²⁰¹ Art. VII(3). This has been one of the more complicated provisions to apply: see Wijnstekers, *The Evolution of CITES* (2011, 9th edn), 217–26. See Res. Conf. 13.7 (Rev. CoP14).

Appendix I, II or III, notably regarding permits, and it has caused certain difficulties requiring consideration by the Conference of the Parties.²⁰²

A fourth exemption applies to non-commercial trade between scientists or scientific institutions in certain specimens.²⁰³ Another may be applied in respect of certain specimens forming part of a travelling zoo, circus or other travelling exhibition.²⁰⁴ Special provisions apply to specimens of animal species listed in Appendix I that are bred in captivity for commercial purposes and to artificially propagated plants.²⁰⁵

While not formally provided as exemptions under CITES, a number of other rules have emerged as practice through the work of the Conference of the Parties as the Convention has developed. First, rules have been developed to address the practice of 'ranching'. While Article VII(4) contains an exemption from the prohibition on trade in Appendix I species for captive bred specimens, the definition of 'bred in captivity' adopted by the Conference of the Parties excluded any commercial trade in any specimens of Appendix I species taken from the wild.²⁰⁶ The definition of 'ranching' is 'the rearing in a controlled environment of animals taken as eggs or juveniles from the wild, when they would otherwise have had a very low probability of surviving to adulthood'.²⁰⁷ Rules and criteria are established by a resolution of the Conference of the Parties, under which parties may be permitted to transfer a population of an Appendix I species to Appendix II for ranching.²⁰⁸ In certain circumstances, this enables specimens of young animals or eggs to be taken from the wild and reared until they are commercially exploitable.

Second, although CITES does not contain express provisions on the establishment of export quotas for Appendix I species, the Conference of the Parties has in resolutions adopted a number of quota systems.²⁰⁹ Quotas may also be established by annotation of the Appendices.²¹⁰

Export quotas may also be set by each party individually provided that the scientific authority of the state has advised that the proposed export would not be detrimental to the survival of the species.²¹¹ A party setting its own national export quotas for CITES species should inform the Secretariat,²¹² which in turn informs the other parties through notifications, and by listing the quotas on the Secretariat's website.²¹³

CITES includes provisions concerning the adoption of rules on the marking of specimens, to assist identification,²¹⁴ and further resolutions have applied special marking requirements to specimens from ranching operations or species subject to quotas.

²⁰² See now Res. Conf. 13.6. ²⁰³ Art. VII(6); Res. Conf. 11.15 (Rev. CoP12).

²⁰⁴ Art. VII(7); see Res. Conf. 12.3 (Rev. CoP15), Part VI, regarding certificates for travelling exhibitions.

²⁰⁵ Art. VII(4) and (5); see Wijnstekers, *The Evolution of CITES* (2011, 9th edn), 493–512. See Res. Conf. 10.16 (Rev.); Res. Conf. 9.19 (Rev. CoP15); and Res. Conf. 12.10 (Rev. CoP15).

²⁰⁶ The definition was originally contained in Res. Conf. 2.12; see now Res. Conf. 10.16 (Rev.).

²⁰⁷ Res. Conf. 11.16 (Rev. CoP15). ²⁰⁸ *Ibid.*

²⁰⁹ Quota systems have now been adopted for a number of species and specimens, including: leopard trophies and skins (Res. Conf. 10.14 (Rev. CoP14)); markhor hunting trophies (Res. Conf. 10.15 (Rev. CoP14)); black rhinoceros hunting trophies (Res. Conf. 13.5 (Rev. CoP14)).

²¹⁰ For example, quotas in respect of certain populations of African elephant have been adopted in this manner, as well as for the African spurred tortoise.

²¹¹ Res. Conf. 14.7 (Rev. CoP15). ²¹² Res. Conf. 12.3 (Rev. CoP15).

²¹³ See the list of national export quotas maintained on the CITES Secretariat website at www.cites.org.

²¹⁴ Art. VI(7); see Wijnstekers, *The Evolution of CITES* (2011, 9th edn), 195 *et seq.*

Introduction from the sea under CITES

As noted above, the definition of 'trade' in endangered species under CITES covers not only import, export and re-export, but also 'introduction from the sea'.²¹⁵ This is defined as 'transportation into a state of specimens of any species which were taken in the marine environment not under the jurisdiction of any state'.²¹⁶ Introduction from the sea of a species listed on Appendix I requires prior grant of a certificate from the national management authority of the state of introduction, which can only be granted when certain conditions are met. These include that the scientific authority of the state of introduction advises that the introduction will not be detrimental to the survival of the species involved; and that the management authority is satisfied that the specimen is not to be used for primarily commercial purposes.²¹⁷ The introduction from the sea of Appendix II species also requires a certificate from the management authority of the state of introduction, which again may only be granted if specific conditions are met.²¹⁸ Since 2000, the Conference of the Parties, the Standing Committee and a working group on introduction from the sea established by the Standing Committee, have undertaken work to address the interpretation and implementation of these provisions. In 2007, the Conference of the Parties adopted a definition of 'the marine environment not under the jurisdiction of any state'.²¹⁹ Much of the discussion now focuses on determining whether the flag state or port state constitutes the 'state of introduction' for the purpose of issue of the requisite certificate under the Convention.²²⁰

These discussions take place within a broader and much contested debate as to the proper role of CITES in the regulation of endangered, or potentially endangered, commercial fishery species.²²¹ While a number of marine species are listed on the CITES Appendices,²²² divisions over the issue of commercial fisheries were sharply illustrated by the proposal by Monaco at the fifteenth Conference of the Parties in 2010 to list the Atlantic bluefin tuna on Appendix I of CITES.²²³

Enforcement²²⁴

The enforcement provisions of CITES are relatively detailed compared to many other environmental treaties, yet compliance and enforcement remain enormous challenges to the effectiveness of the Convention.²²⁵ CITES relies for its implementation upon the proper functioning of national management and scientific authorities, as well as effective border controls to ensure

²¹⁵ Art. I(c). ²¹⁶ Art. I(e). ²¹⁷ Art. III(5). ²¹⁸ Art. IV(6). See also Art. XIV(4) and (5).

²¹⁹ Res. Conf. 14.6 (Rev. CoP15).

²²⁰ SC61 Doc.32, *Introduction from the Sea* (document prepared for the 61st session of the Standing Committee, 15–19 August 2011).

²²¹ See Chapter 9, pp. 396–418, above. Such fisheries are regulated, *inter alia*, under the provisions of UNCLOS, the 1995 Fish Stocks Agreement and under regional fisheries management organisations.

²²² See e.g. the listings of whale, dolphin and porpoise species, as well as marine turtles on Appendix I. Res. Conf. 11.4 (Rev. CoP12) addresses conservation of cetaceans, trade in cetacean specimens and the relationship with the International Whaling Commission.

²²³ The Atlantic bluefin tuna fishery is regulated through the International Commission for the Conservation of Atlantic Tuna, but efforts under the Commission had failed to arrest the decline in stocks. For a discussion of the CITES proposal, see R. Martin-Nagle, 'Unsuccessful Attempt to List Atlantic Bluefin Tuna in CITES Appendix I', 25 *International Journal of Marine and Coastal Law* 609 (2010).

²²⁴ On regional enforcement of CITES, see 1994 Lusaka Agreement on Co-operative Enforcement Operations Directed at Illegal Trade in Wild Fauna and Flora, p. 478, below.

²²⁵ See R. Reeve, *Policing International Trade in Endangered Species: The CITES Treaty and Compliance* (2002).

that any trade in specimens of endangered species take place in accordance with the Convention's requirements. All parties must take appropriate measures to enforce the Convention and prohibit trade in specimens in violation of its provisions, including by penalising trade and possession, and providing for confiscation or return to the state of export.²²⁶ The Conference of the Parties has adopted various resolutions aimed at improving compliance.²²⁷ Resolutions have also been adopted to improve enforcement and compliance relating to specific species.²²⁸

In 2000, the Conference of the Parties urged the parties, intergovernmental organisations and non-governmental organisations to provide additional financial support for the enforcement of the Convention. The Secretariat was directed, *inter alia*, to pursue closer international liaison between the Convention's institutions, national enforcement agencies and existing intergovernmental bodies, particularly the World Customs Organization and ICPO-Interpol.²²⁹ The CITES Secretariat is now part of the International Consortium on Combating Wildlife Crime,²³⁰ to support national wildlife law enforcement agencies.

GENERAL INSTRUMENTS OF REGIONAL AND SUB-REGIONAL APPLICATION

The third category of biodiversity conservation rules are those adopted at the regional level which are, broadly speaking, of potential application to all species in the given region. The regional approach has been justified as allowing the environmental needs and concerns of different regions to be addressed. It also seeks to ensure that the powers attached to the responsibility for managing international environmental affairs are devolved to the most appropriate level of governance, whether at the regional, sub-regional or bilateral level.

The earliest regional agreement was the 1900 London Convention. Regional arrangements have been adopted for parts of Africa, the Americas and the Caribbean, the Pacific islands region, Europe and Southeast Asia. In some instances, these are stand-alone agreements; in other cases, they have been adopted within the framework of regional economic co-operation arrangements.²³¹ Some agreements focusing on marine and coastal ecosystems have been adopted within the context of Regional Seas Agreements.²³² Numerous other agreements of regional application have now also been adopted under the auspices of the Bonn Convention on

²²⁶ Art. VIII(1). ²²⁷ Res. Conf. 8.4 (Rev. CoP15); Res. Conf. 9.9; Res. Conf. 11.3 (Rev. CoP15).

²²⁸ For example, Res. Conf. 11.9 (Rev. CoP13) (freshwater turtles and tortoises); Res. Conf. 11.8 (Rev. CoP13) (Tibetan antelope); Res. Conf. 13.4 (great apes); Res. Conf. 12.5 (Rev. CoP15) (tigers and other Appendix I Asian big cat species).

²²⁹ Res. Conf. 11.3 (2000) (compliance and enforcement).

²³⁰ The other participating organisations are: Interpol, the UN Office on Drugs and Crime, the World Bank and the World Customs Union.

²³¹ See, for example, the 1999 Wildlife Conservation and Law Enforcement Protocol to the Treaty Establishing the Southern African Development Community, Maputo, 18 August 1999, in force 30 November 2003, www.sadc.int/fanr/naturalresources/wildlife/index.php; East African Community Protocol on Environment and Natural Resources Management, not yet in force, www.eac.int/environment.

²³² For regional seas agreements addressing biodiversity, see Chapter 9 above. Examples include: 1985 Protocol Concerning Protected Areas and Wild Fauna and Flora in the Eastern African Region to the 1985 Nairobi Convention, Nairobi, 21 June 1985, in force 30 May 1996; 2005 Protocol Concerning the Conservation of Biological Diversity and the Establishment of a Network of Protected Areas in the Red Sea and Gulf of Aden, Jeddah, 12 December 2005, not yet in force; Protocol concerning Specially Protected Areas and Wildlife to the Cartagena Convention for the Protection and Development of the Wider Caribbean Region, Kingston, 18 January 1990, in force 18 June 2000.

Conservation of Migratory Species.²³³ The agreements governing the Antarctic region, and the emerging principles applicable to the Arctic, are considered in Chapter 13 below.

Africa²³⁴

Flora and fauna on the African continent were the subject of the earliest nature conservation agreements, adopted by colonial powers in the first part of the twentieth century. The first treaty was the 1900 London Convention for the Protection of Wild Animals, Birds and Fish in Africa,²³⁵ which was adopted by the colonial powers of the region (Great Britain, Italy, Portugal, Spain and France) to 'prevent the uncontrolled massacre and to ensure the conservation of diverse wild animal species in their African possessions which are useful to man or inoffensive'.²³⁶ The 1900 London Convention was replaced by the 1933 London Convention Relative to the Preservation of Flora and Fauna in Their Natural State.²³⁷ Both agreements included provisions and techniques for international conservation that are still found in modern treaties, including a system of annexes to list protected species, and the use of trade regulations as an instrument of environmental protection. The 1933 Convention required parties to take all necessary measures within their power to ensure 'a sufficient degree of forest country and the preservation of the best native indigenous forest species',²³⁸ and recognised a link between conservation and economic development, although the emphasis was on encouraging 'the domestication of wild animals susceptible of economic utilisation'.²³⁹

1968 African Nature Convention

The 1933 London Convention was superseded in 1968 with the adoption of the African Convention on the Conservation of Nature and Natural Resources (1968 African Nature Convention), which was negotiated under the auspices of the Organization of African Unity (OAU) by the governments of newly independent African states.²⁴⁰ The Convention includes broad objectives: except for atmospheric protection, the Convention applies to all environmental media, committing parties to a comprehensive approach including research, conservation education, development plans and national conservation services.²⁴¹ It requires parties to take measures which are reconcilable with customary rights 'to ensure conservation, utilisation and development of soil, water, flora and faunal resources in accordance with scientific principles and with due regard to the best interests of the people'.²⁴² The 1968 Convention contains provisions for the protection of soil from erosion through the development of land-use plans, and agricultural practices and agrarian reforms that ensure long-term productivity.²⁴³

²³³ See pp. 502–4, below.

²³⁴ See also, for example, Agreement on Joint Regulations on Fauna and Flora (Enugu, 3 December 1977) (Lake Chad); Convention for the Sustainable Management of Lake Tanganyika, Dar Es Salaam, 12 June 2003 (Burundi, Democratic Republic of Congo, Tanzania, Zambia).

²³⁵ London, 19 May 1900, 4 IPE 1607.

²³⁶ Preamble; cited in M. Bowman, P. Davies and C. Redgwell, *Lyster's International Wildlife Law* (2010, 2nd edn), 262.

²³⁷ London, 8 November 1933, in force 14 January 1936, 172 LNTS 241.

²³⁸ Art. 7(5). ²³⁹ Art. 7(8). ²⁴⁰ Algiers, 15 September 1968, in force 16 June 1969, 1001 UNTS 3.

²⁴¹ Arts. XII–XV.

²⁴² Arts. II and XI. Art. XVII allows certain exceptions to the Convention, including the 'paramount interest of the state', *force majeure* and defence of human life.

²⁴³ Art. IV.

It promotes water conservation policies and protection of flora by scientifically based conservation measures which take into account social and economic needs.²⁴⁴ The Convention subjects fauna to 'conservation, wise use and development ... within the framework of land-use planning and of economic and social development', and to that end wildlife populations must be managed in designated areas with the aim of achieving an 'optimum sustainable yield'.²⁴⁵ Hunting, capture and fishing are subject to the grant of properly regulated permits, and certain methods are prohibited.²⁴⁶

The 1968 Convention makes use of an annex system. Class A species are totally protected throughout the territory of the party, while Class B species may be hunted, killed, captured or collected under special authorisation granted by the competent national authority.²⁴⁷ Parties may add additional species to Class A or B according to their own specific requirements.²⁴⁸ The 1968 Convention regulates trade in listed and unlisted species, in particular by making export of the former subject to authorisation, and import and transit subject to presentation of the export authorisation.²⁴⁹

However, the Convention lacks any institutional arrangements for its implementation, which has contributed to its limited effectiveness. In 1985, the OAU convened a meeting to discuss possible revision of the Convention, and, although draft amendments were prepared with the assistance of IUCN, they were not formally adopted. However, in the late 1990s, the OAU requested assistance from IUCN, UNEP and the UN Economic Commission for Africa to revise the Convention in light of developments in international environmental law and scientific knowledge.²⁵⁰ Following further initiatives in the late 1990s, the review of the Convention was undertaken, and the revised Convention was adopted in Maputo, Mozambique, on 11 July 2003 (2003 Revised African Nature Convention).

2003 Revised African Nature Convention

The objectives of the 2003 Revised African Nature Convention²⁵¹ are: to enhance environmental protection; to foster the conservation of nature and natural resources; and to harmonise and coordinate policies in these fields.²⁵² Action to achieve these objectives is to be guided by principles including the right of all peoples to a satisfactory environment favourable to their development; the duty of states to ensure enjoyment of the right to development and the duty of states to ensure that developmental and environmental needs are met in a sustainable, fair and equitable manner.²⁵³ As in the original 1968 Convention, the 2003 Convention addresses land and soil degradation,²⁵⁴ management of water resources,²⁵⁵ and vegetation cover.²⁵⁶ It requires parties to maintain and enhance species and genetic diversity, and, to that end, to establish and implement policies for conservation and sustainable use of such resources, particularly where they are threatened and of social, economic or ecological value, or where

²⁴⁴ Arts. V and VI. ²⁴⁵ Art. VII(1). ²⁴⁶ Art. VII(2). ²⁴⁷ Art. VIII(1) and Annex.

²⁴⁸ Art. VIII(2). ²⁴⁹ Art. IX.

²⁵⁰ IUCN, 'An Introduction to the Revised African Convention on the Conservation of Nature and Natural Resources' (IUCN Environmental Policy and Law Paper No. 56 Rev., 2006, 2nd edn), 5.

²⁵¹ Not yet in force. The text of the 2003 Revised African Nature Convention is available at www.au.int/en/content/african-convention-conservation-nature-and-natural-resources-revised-version. See IUCN, *An Introduction to the Revised African Convention on the Conservation of Nature and Natural Resources* (2006, 2nd edn); M. Bowman, P. Davies and C. Redgwell, *Lyster's International Wildlife Law* (2010, 2nd edn), Chapter 9 ('The African Convention on the Conservation of Nature and Natural Resources').

²⁵² Art. II. ²⁵³ Art. III. ²⁵⁴ Art. VI. ²⁵⁵ Art. VII. ²⁵⁶ Art. VIII.

they are only represented in areas under the jurisdiction of one party.²⁵⁷ Parties are further required to ensure conservation of species and habitats within land-use planning and sustainable development policy. A series of more specific obligations concerning species and habitat management is defined, which reflect to some extent provisions of the Convention on Biological Diversity, including measures related to access to genetic resources and benefit sharing.²⁵⁸ The 2003 Convention provides for special protection for threatened species²⁵⁹ and habitats necessary for their survival.²⁶⁰ It notes that, where a species is represented only in areas under the jurisdiction of one party, that party has a particular responsibility for its protection, but also notes the need to develop and maintain concerted protection measures for threatened species throughout Africa.²⁶¹ While the 2003 Convention contains no list of threatened species and habitats, it provides that annexes addressing protected species and habitats could be adopted by the Conference of the Parties.²⁶² It also provides that parties shall regulate trade in, and the transport and possession of specimens²⁶³ or products of plants, animals or micro-organisms to ensure that such specimens or products have been taken or obtained in conformity with domestic and international obligations concerning trade in species.²⁶⁴

The 2003 Convention requires parties to establish, maintain and extend conservation areas.²⁶⁵ In this regard, parties should particularly consider conservation areas in order to: conserve ecosystems representative of and peculiar to areas under their jurisdiction, or those characterised by a high degree of biological diversity; ensure the conservation of all species, especially those which are only represented in areas under their jurisdiction or which are threatened or of special scientific or aesthetic value; and ensure conservation of habitats critical for the survival of such species. 'Conservation areas', as defined in Article V, include a range of different types of protected area, with definitions and management objectives elaborated in Annex II.

The 2003 Convention requires parties to ensure that conservation and management of natural resources are integrated into national and local development plans, and that full consideration is given to ecological, as well as economic, social and cultural, factors to promote sustainable development.²⁶⁶ Reflecting the Biodiversity Convention, the 2003 Convention also addresses the issue of traditional rights of local and indigenous communities, providing that parties shall take measures to ensure that traditional rights and intellectual property rights of local communities are respected, and that access to indigenous knowledge and its use is subject to prior informed consent. Parties are also to enable active participation by local communities in the planning and management of natural resources with a view to creating local incentives for conservation and sustainable use of resources.²⁶⁷ The 2003 Convention contains further provisions addressing procedural rights in relation to the environment including dissemination and access of the public to environmental information, and access to justice.

²⁵⁷ Art. IX(1). ²⁵⁸ See Art. IX(2).

²⁵⁹ 'Threatened species' are defined in Art. V, by reference to further definitions and criteria in Annex I to the 2003 Convention concerning 'critically endangered', 'endangered' and 'vulnerable' species. These broadly reflect the definitions of these categories utilised in the IUCN Red List: IUCN, *IUCN Red List Categories and Criteria, Version 3.1* (2001).

²⁶⁰ Art. X(1). ²⁶¹ Art. XI(1) and (2). ²⁶² Art. IX(2).

²⁶³ 'Specimens' are defined in Art. V as 'any animal or plant or micro organisms, alive or dead'. 'Products' are defined as 'any part or derivative of a specimen'.

²⁶⁴ Art. XI(1). ²⁶⁵ Art. XII. ²⁶⁶ Art. XIV. ²⁶⁷ Art. XVII.

The 2003 Convention provides for the adoption of a compliance procedure,²⁶⁸ as well as rules on liability and compensation of damage related to matters covered by the Convention.²⁶⁹ It establishes a Conference of the Parties as the decision-making body for the Convention, as well as a secretariat.²⁷⁰ There is also a provision addressing financial resources, requiring parties to make every effort to ensure that adequate financial resources are available for implementation of the Convention, and to seek, individually or jointly to mobilise further financial resources including through improvement of national, bilateral and multilateral funding mechanisms.²⁷¹ It is envisaged that the Conference of the Parties may establish a conservation fund constituted from voluntary contribution by parties or from other sources.²⁷² Disputes under the 2003 Convention are to be settled by agreement. If the parties to a dispute fail to settle it in this manner, then either party may, within twelve months, refer the dispute to the Court of Justice of the African Union for a final decision.²⁷³

The 2003 Convention will enter into force thirty days after the fifteenth ratification is deposited. Since its adoption in July 2003, fifty-three states have signed the Convention and eight have ratified it. One factor in the failure to secure sufficient ratifications for entry into force to date may be that, while the 2003 Convention reflects provisions and approaches of 'modern' multilateral environmental agreements such as the Biodiversity Convention, it must also compete with those other agreements for human and financial resources at the national level.

1994 Lusaka Agreement

At a ministerial meeting in September 1994, the governments of seven African states adopted the Lusaka Agreement on Co-operative Enforcement Operations Directed at Illegal Trade in Wild Fauna and Flora.²⁷⁴ The objective of the Agreement is to reduce and ultimately eliminate illegal trade in wild fauna and flora within the territories of the states parties.²⁷⁵ Article 5 of the Agreement provides for the establishment of a Task Force for Co-operative Enforcement Operations Directed at Illegal Trade in Wild Fauna and Flora, which is composed of a Director, field officers and an intelligence officer. The Director and the field officers are drawn from national law enforcement authorities and liaise with 'National Bureaus' in each of the member states to co-ordinate enforcement operations directed at illegal wildlife trade.²⁷⁶ The functions of the Task Force include: facilitating co-operative activities among the National Bureaus in carrying out investigations pertaining to illegal trade; investigating violations of national laws pertaining to illegal trade at the request of the National Bureaus or with the consent of the parties concerned; collecting, processing and disseminating information on activities that pertain to illegal trade, including establishing and maintaining databases; and providing, upon request of the parties concerned, information related to the return to the country of original export, or country of re-export, of confiscated wild fauna and flora.²⁷⁷ The Task Force was officially launched and commenced operational activities on 1 June 1999.²⁷⁸ The operations of the Task Force are overseen by a Governing Council composed of representatives from each of the parties.²⁷⁹

²⁶⁸ Art. XXIII. ²⁶⁹ Art. XXIV. ²⁷⁰ Arts. XXVI and XXVII.

²⁷¹ See generally Chapter 16 below. ²⁷² Art. XXVIII. ²⁷³ Art. XXX.

²⁷⁴ Lusaka, 8 September 1994, in force 10 December 1996, UNEP Doc. No. 94/7929; six states are party: Republic of Congo, Kenya, Uganda, Zambia, Lesotho and Tanzania. All African states are eligible to become parties: Art. 12(3). South Africa, Swaziland and Ethiopia are also signatories.

²⁷⁵ Art. 2. ²⁷⁶ Art. 6. ²⁷⁷ Art. 5(9). ²⁷⁸ See www.lusakaagreement.org. ²⁷⁹ Art. 7.

The Americas and the Caribbean

There are a number of regional and sub-regional agreements of relevance to the conservation and sustainable use of biodiversity in the Americas and the Caribbean, including the 1940 Western Hemisphere Convention, the 1978 Amazonian Treaty and the 1990 Kingston Protocol.²⁸⁰ Several bilateral agreements have also been adopted which include general provisions on flora and fauna.

1940 Western Hemisphere Convention

The 1940 Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere (1940 Western Hemisphere Convention), negotiated under the auspices of the Pan American Union (now the Organization of American States (OAS)), was in many respects a visionary agreement.²⁸¹ The primary objectives of the Convention are to:

protect and preserve in their natural habitat representatives of all species and genera of their native flora and fauna, including migratory birds, in sufficient numbers and over areas extensive enough to assure them from becoming extinct through any agency within man's control.²⁸²

The nineteen parties to the Convention, which is only open to member states of the OAS, agree to explore the possibility of establishing national parks, national reserves, nature monuments and strict wilderness reserves as defined by the Convention.²⁸³ National parks are absolutely protected against exploitation for commercial profit, and there is to be no hunting, killing or capturing of fauna or collecting of flora in national parks except by or under the direction or control of the park authorities, or for authorised scientific investigations.²⁸⁴ Strict wilderness reserves are to be maintained, as far as practicable, 'inviolable' except for authorised scientific investigations or other uses consistent with the purposes for which the area was established.²⁸⁵

The Western Hemisphere Convention also requires parties to protect and preserve all other flora and fauna, to engage in scientific co-operation, to protect migratory birds, and to protect species listed in the single Annex to the Convention 'as completely as possible'.²⁸⁶ The Convention has general provisions establishing trade restrictions: the import, export and transit of protected fauna and flora is to be controlled and regulated by the issuing of export and transit authorisation certificates.²⁸⁷ The great weakness of the Convention is the absence of any institutions to oversee and ensure its implementation. Initiatives in the 1970s and 1990s to amend the Convention did not bear fruit. While it remains legally binding on its parties, it has been described as a 'sleeping convention' that is of limited practical value in most parties.²⁸⁸

²⁸⁰ See also the Convention for the Conservation of the Biodiversity and the Protection of Wilderness Areas in Central America, Managua, 5 June 1992, in force 20 December 1994. On the 1990 Kingston Protocol Concerning Specially Protected Areas and Wildlife to the Cartagena de Indias Convention, see Chapter 9, p. 438, above.

²⁸¹ Washington, 12 October 1940, in force 1 May 1942, 161 UNTS 193; nineteen states are party.

²⁸² Preamble. ²⁸³ Art. II(1). ²⁸⁴ Art. III. ²⁸⁵ Art. IV.

²⁸⁶ Arts. V–VIII. The Annex comprises a compilation of the national lists of the parties, rather than an agreed list of general application, and has not been revised since 1967.

²⁸⁷ Art. IX.

²⁸⁸ M. Bowman, P. Davies and C. Redgwell, *Lyster's International Wildlife Law* (2010, 2nd edn), 242. Other forms of co-operation in the wider western hemisphere do exist, including, in particular, the Western Hemispheric Migratory

1978 Treaty for Amazonian Cooperation

The conservation of biodiversity is an important secondary objective of the 1978 Treaty for Amazonian Cooperation (1978 Amazonian Treaty).²⁸⁹ Its primary objective is to promote the harmonious development of the parties' Amazonian territories; the secondary objective is to ensure that these joint actions produce equitable and mutually beneficial results 'and achieve also the preservation of the environment, and the conservation and rational utilisation of the natural resources of those territories'.²⁹⁰ The 1978 Amazonian Treaty is mainly concerned with economic development, as reflected in the language stating that the use of natural resources is 'a right inherent in the sovereignty of each state' which may only be restricted by international law.²⁹¹ This provision reflects the concern that evidently existed, even at this relatively early period in the development of international environmental law, about interference from countries outside the region seeking to influence future development in the Amazon forest. The 1978 Treaty is silent as to the limitations that might be established by international law on environmental grounds. Measures of environmental protection required under the Treaty, which are designed to maintain the 'ecological balance' of the region and to preserve species in the context of rationally planned exploitation of flora and fauna, are limited simply to promoting scientific research and exchanging information.²⁹² The Treaty's institutional arrangements comprise *ad hoc* meetings of the parties' ministers of foreign affairs, annual meetings of the Amazonian Cooperation Council, a secretariat, Permanent National Commissions, and Special Commissions which may be set up to study specific problems or matters.²⁹³ The right of any state to exercise a veto on important questions is guaranteed: decisions taken by the ministers or the Council are taken by unanimous vote of all parties, although decisions by the Special Commissions are adopted by unanimous vote only of those parties participating.²⁹⁴

In 1989, the parties to the 1978 Amazonian Treaty adopted the Amazon Declaration, which reiterated support for the preservation of Amazonian resources for present and future generations and declared that the defence of the Amazonian environment was one of the essential objectives of the Treaty.²⁹⁵ It provides little guidance, however, as to how that objective is to be attained, or what it means in practice. The emphasis is rather on linking environmental protection and economic development, especially by denouncing the burden of foreign debts owed by countries of the region. The Amazonian Declaration objects to conditionalities imposed in the allocation of international resources, and emphasises the need for the concerns of the North over the Amazon region to be translated into financial and technological support and assistance.

In 1998, the parties to the 1978 Amazonian Treaty adopted an amending Protocol providing for the establishment of the Amazonian Cooperation Treaty Organization, which was established following the Protocol's entry into force in 2002.²⁹⁶ The 1978 Treaty thus provides a basis for numerous co-operative activities in the Amazon region aimed at conservation and sustainable use of biodiversity.

Species Initiative established, *inter alia*, to improve communication on conservation issues of common interest, and to build country capacity to conserve and manage migratory species. See www.oas.org/dsd/WHMSI/English/Indexv2.htm.

²⁸⁹ Brasilia, 3 July 1978, in force 2 August 1980, 17 ILM 1045 (1978); eight states are party.

²⁹⁰ Art. I. ²⁹¹ Art. IV. ²⁹² Art. VII. ²⁹³ Arts. XX–XXIV. ²⁹⁴ Art. XXV.

²⁹⁵ Manaus, Brazil, 6 May 1989, 28 ILM 1303 (1989).

²⁹⁶ Amendment Protocol, Caracas, 14 December 1998, see www.otca.info/portal.

Pacific islands region

The states of the Pacific region have adopted a number of treaties aimed at conserving and protecting their flora and fauna. Apart from the 1985 Rarotonga Treaty, which prohibits nuclear activities in the region,²⁹⁷ and the 1995 Waigani Convention on hazardous and radioactive wastes,²⁹⁸ the main regional instruments are the 1976 Convention on the Conservation of Nature in the South Pacific (1976 Apia Convention)²⁹⁹ and a Regional Seas Agreement, the 1986 Noumea Convention.³⁰⁰

The Apia Convention seeks to contribute to the 'maintenance of the capacity of the earth to produce essential renewable natural resources' and to safeguard 'representative samples of natural ecosystems, and ... the heritage of wildlife and its habitat', while providing for 'customary use of areas and species in accordance with traditional cultural practices'.³⁰¹ Parties must establish 'protected areas' (national parks and national reserves).³⁰² The established size of the national parks may only be altered after the 'fullest examination', and they may only be exploited commercially after such examination.³⁰³ Fauna and flora in national parks, including migratory species, are protected from 'unwise exploitation and other threats that may lead to their extinction'.³⁰⁴ National reserves are, as far as practicable, to be maintained as 'inviolate'.³⁰⁵ Each party is to establish its own list of fauna and flora threatened with extinction, which it is to protect 'as completely as possible as a matter of special urgency and importance', and to carefully consider the introduction of new species.³⁰⁶

The Apia Convention did not establish mechanisms for Meetings of the Parties, and the secretariat functions have been provided by the secretariat of the South Pacific Regional Environment Programme (SPREP).³⁰⁷ The first Meeting of the Parties to the Apia Convention was held in 1991. However, only five states in the region became parties to the Apia Convention. In 2006, at the eighth joint Meeting of the Parties to the Apia and Noumea Conventions, it was proposed to suspend the operation of the Apia Convention in light of, *inter alia*, the overlap with the Biodiversity Convention, and particularly the programme of work on island biodiversity³⁰⁸ adopted thereunder.³⁰⁹ All the parties to the Apia Convention are parties to the Biodiversity Convention. Thus, at present, the Apia Convention has not been terminated or denounced, but in effect its operation has been suspended, and further Meetings of the Parties have not been held since 2006.

Overall co-ordination of nature conservation activities in the Pacific islands region now rests with SPREP, which was established as an autonomous regional organisation in 1993 under the Agreement Establishing the South Pacific Regional Environment Programme.³¹⁰

²⁹⁷ See Chapter 11, p. 545, below. ²⁹⁸ See Chapter 12, pp. 572–3, below.

²⁹⁹ Apia, 12 June 1976, in force 28 June 1990, IELMT 976:45; five states are party.

³⁰⁰ See Chapter 9, p. 359, above. Art. 14 of the Noumea Convention addresses specially protected areas and the protection of wild flora and fauna.

³⁰¹ Preamble and Art. VI. ³⁰² Art. II(1). ³⁰³ Art. III(1) and (2). ³⁰⁴ Arts. III(3) and V(1).

³⁰⁵ Art. IV. ³⁰⁶ Art. V(2)–(4).

³⁰⁷ Art. VIII. They were originally provided by the South Pacific Commission.

³⁰⁸ See Convention on Biological Diversity, Decision VIII/1.

³⁰⁹ SPREP, *Report on the Joint Eighth Conference of the Parties to the Apia and Noumea (SPREP) Conventions*, 7, 10 and 13 September 2006, 8–11.

³¹⁰ Apia, 16 June 1993, in force 31 August 1995, ATS No. 24, 1995; eighteen states are party.

Europe

Under the auspices of the Council of Europe, a number of treaties and other international agreements addressing the conservation of biological diversity have been adopted and implemented which establish general principles and rules. Treaties and other agreements addressing specific species, including migratory species, are considered subsequently in this chapter. While EU law lies outside the scope of this book, for EU member states secondary legislation in the EU constitutes an important framework for action on biodiversity, as well as on biosafety.³¹¹

1979 Berne Convention

The Berne Convention on the Conservation of European Wildlife and Their Natural Habitats (1979 Berne Convention) was negotiated under the auspices of the Council of Europe.³¹² Initially, the Convention had mostly developed country parties, including the EU, but membership now includes four non-members of the Council of Europe in Africa. It has three objectives: to conserve wild flora and fauna and their habitats; to promote co-operation between states; and to give particular attention to endangered and vulnerable species, including endangered and vulnerable migratory species.³¹³ It applies to all species and their habitats, regardless of their scarcity, and is applicable to visiting migratory species that are not confined to Europe and to European species of flora and fauna found outside the European continent. To give effect to the objectives, the parties are required to take protective measures

to maintain the population of wild flora and fauna at, or adapt it to, a level which corresponds in particular to ecological, scientific and cultural requirements while taking account of economic and recreational requirements and the needs of sub-species, varieties or forms at risk locally.³¹⁴

More generally, parties must: promote national conservation policies; have regard to conservation in regional planning policies and pollution abatement; promote education and the dissemination of information; co-ordinate research; and encourage the reintroduction of species while strictly controlling the introduction of non-native species.³¹⁵

The 1979 Berne Convention includes specific obligations. Parties must take special measures to ensure the conservation of habitats of wild flora and fauna species which are listed as strictly protected in Appendices I and II, and give 'special attention' to the protection of areas of importance to migratory species specified in Appendices II and III.³¹⁶ The deliberate picking,

³¹¹ See especially: Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora, OJ L206, 22 July 1992, 7; Council Directive 79/409/EEC on the conservation of wild birds, OJ L103, 25 April 1979, 1; Regulation (EC) No. 1946/2003 of 15 July 2003 on transboundary movement of genetically modified organisms, OJ L287, 5 November 2003, 1.

³¹² Berne, 19 September 1979, in force 1 June 1982, UKTS No. 56 (1982), Cmnd 8738. See generally the Explanatory Report Concerning the Convention on the Conservation of European Wildlife and Natural Habitats (Council of Europe, 1979), www.nature.coe.int/english/cadres/bern.htm. By 30 June 2011, the Convention had fifty parties. It should be noted that numerous parties have attached reservations in relation to the Convention's Appendices to their acceptance of the Convention, as permitted under Art. 22.

³¹³ Art. 1; 'endangered and vulnerable' is broader than 'threatened' and brings the Convention into line with the 1973 CITES.

³¹⁴ Art. 2; this provision is very similar to Art. 2 of the 1979 EC Wild Birds Directive.

³¹⁵ Arts. 2, 3 and 11. ³¹⁶ Arts. 4 and 10.

collecting, cutting or uprooting of species of wild flora listed in Appendix I is prohibited, and their possession or sale is prohibited.³¹⁷ The deliberate capture, keeping, killing, damage, destruction or disturbance of wild fauna species listed in Appendix II is also prohibited, as is the possession of and internal trade in these species or their parts.³¹⁸ Listed fauna species are to be protected, and their exploitation regulated to keep them out of danger. All indiscriminate means of capture and killing, including those listed in Appendix IV, and all means capable of causing local disappearance or serious disturbance to populations are prohibited.³¹⁹ The parties are free to adopt stricter conservation measures.³²⁰

Under Article 9, the Convention permits exceptions to the prohibitions set out in Articles 4–8, although they are subject to the fulfilment of general and specific conditions. The general conditions require that there must be ‘no other satisfactory solution’ and that ‘the exception will not be detrimental to the survival of the population concerned’.³²¹ The specific conditions only permit exceptions:

- for the protection of flora and fauna;
- to prevent serious damage to crops, livestock, forests, fisheries, water and other forms of property;
- in the interest of public health and safety, air safety or overriding public interests;
- for research and education, of repopulation, of reintroduction and for necessary breeding; and
- to permit, under strictly supervised conditions, on a selective basis and to a limited extent, the taking, keeping or other judicious exploitation of certain wild animals and plants in small numbers.³²²

These provisions include numerous ambiguities. For example, in Article 6(b), does the reference to ‘deliberate’ damage or destruction exclude damage or destruction caused by activities that do not have such damage or destruction as their primary purpose, or is it sufficient that such damage or destruction should be a reasonably foreseeable consequence of those activities? The former interpretation would exclude activities such as road-building which are not deliberately intended to cause damage or destruction but will often have that effect as a matter of course. With regard to the exceptions, what is meant by ‘other overriding public interests’, and do such interests include economic interests? The Explanatory Report provides some guidance, suggesting that all construction works would be included within the definition of ‘deliberate’ damage or destruction, and stating that exceptions may be made for construction works subject to the fulfilment of the conditions in Article 9 and the provisions in Article 3(2) concerning planning and development policies.³²³

Implementation of the 1979 Berne Convention is entrusted to a Standing Committee composed of a representative of each party, with a range of functions, including the power to recommend measures and make proposals for improving the effectiveness of the Convention.³²⁴ It reports to the Committee of Ministers of the Council of Europe, and may adopt amendments to the Appendices by a two-thirds majority of the parties, which enter into force for all parties that have not notified objections, provided that less than one-third of parties have entered such objections.³²⁵ The Standing Committee meets regularly and has amended the

³¹⁷ Art. 5. ³¹⁸ Art. 6. ³¹⁹ Arts. 7 and 8. ³²⁰ Art. 12. ³²¹ Art. 9(1). ³²² Art. 9(1).

³²³ Explanatory Report, note 312 above, para. 41; cf. Art. 16(1) of the 1992 EU Habitats Directive, where derogations for imperative reasons of overriding public interest include those of a social or economic nature.

³²⁴ Arts. 13 and 14. ³²⁵ Arts. 15 and 17.

Appendices on several occasions.³²⁶ The Convention has in place a 'case files' systems for complaints about possible violations of the Convention, under which some 121 complaints had been initiated by 2011.³²⁷

1982 Benelux Convention

The Benelux Convention on Nature Conservation and Landscape Protection (1982 Benelux Convention) provides a framework for concerted action and co-operation in the conservation, management and rehabilitation of the natural environment and landscapes.³²⁸ It goes beyond the 1979 Berne Convention by requiring the *harmonisation* of policy principles, instruments, laws and regulations, information exchange, information and education campaigns, and 'co-ordinated implementation of agreements concluded within a wider international framework'. The Convention calls for effective protection activities, including, *inter alia*, the development of 'protection and management concepts for transboundary natural areas and landscapes of value' and the establishment of inventories of such areas, as well as reciprocal consultation on development projects that might adversely affect such transboundary areas.³²⁹ It recognises that natural resources and ecosystems do not respect national boundaries, an approach reflected in several instruments subsequently adopted.

1991 Alpine Convention

The 1991 Convention on the Protection of the Alps (1991 Alpine Convention)³³⁰ signals a move towards the international regulation of ecosystems that cross national boundaries; it was also the first international legal instrument to address the environmental issues of mountain regions.³³¹ The Convention establishes a general framework to apply the precautionary principle, the polluter pays principle and the principle of co-operation to preserve and protect the Alps, taking into account the equitable interests of all Alpine states and ensuring the sustainable use of natural resources.³³² The Convention envisages protocols and other measures to address specific issues, including: the promotion of cultural identity; the protection of air, land, soil and water; the preservation of flora and fauna and mountain forests; the conservation of energy and reduction of waste; and sustainable tourism and transport.³³³ An Alpine Conference of the Parties meets every two years to adopt measures on research and systematic observation and to adopt protocols and amendments.³³⁴ A Permanent Committee of the Alpine

³²⁶ See www.coe.int/t/dg4/cultureheritage/nature/Bern/Appendices_en.asp.

³²⁷ On compliance generally, see Chapter 5 above. See also *Register of Bern Convention Case Files*, available at www.coe.int/t/dg4/cultureheritage/nature/Bern/Case_Files_Bible.pdf.

³²⁸ Brussels, 8 June 1982, in force 1 October 1983, 2 SMTE 163; three states are party.

³²⁹ Art. 3.

³³⁰ Salzburg, 7 November 1991, in force 6 March 1995; 31 ILM 767 (1992); eight Alpine states and the EU are party. See generally T. Treves, L. Pineschi and A. Fodella (eds.), *International Law and the Protection of Mountain Areas* (2002).

³³¹ See also Agenda 21, Chapter 13, 'Managing Fragile Ecosystems: Sustainable Mountain Development'.

³³² Art. 2.

³³³ Art. 3. Nine Protocols have been adopted, dealing with nature conservation and landscape protection (1994), mountain farming (1994), regional management and sustainable development (1994), mountain forests (1996), tourism (1998), energy (1998), soil protection (1998), transport (2000) and dispute settlement (2000). The Protocol for the implementation of the Alpine Convention in the field of Nature Protection and Landscape Conservation entered into force on 18 December 2002.

³³⁴ Arts. 3, 6 and 7.

Conference is established as the executive organ, with support from a permanent secretariat (the Commission Internationale pour la Protection des Alpes).³³⁵

2003 Carpathians Convention

The Framework Convention on the Protection and Sustainable Development of the Carpathians (2003 Carpathians Convention) was adopted in 2003 and has seven parties.³³⁶ Six of the parties have also ratified a Protocol on the Conservation and Sustainable Use of Biological and Landscape Diversity.³³⁷ In relation to biodiversity and landscapes, the Convention requires parties to pursue policies aimed at conservation, sustainable use and restoration of biological and landscape diversity throughout the Carpathians, and to ensure a high level of protection and sustainable use of natural and semi-natural habitats and species of flora and fauna characteristic of the Carpathians, particularly endangered and endemic species and large carnivores. The Protocol sets out more specific measures related to these obligations, and also addresses prevention of the introduction of invasive alien species and genetically modified organisms likely to have adverse environmental impacts. It further addresses, *inter alia*, support and co-operation for the Carpathian Network of Protected Areas.

Asia

The conservation of nature and biodiversity in Asia is addressed at the regional level by only one multilateral sub-regional agreement, and that agreement is not in force. Given the large proportion of the world's population that lives in Asia, the growing economic importance of the region, and the fact that six of the seventeen 'megadiverse' countries are located in Asia, further efforts are clearly needed. The Agreement on the Conservation of Nature and Natural Resources adopted by the Association of South East Asian Nations (1985 ASEAN Agreement)³³⁸ has not yet entered into force as it has not attracted the required ratification by six of the ten members of ASEAN.³³⁹ Nevertheless, it merits some consideration since it introduces innovative legal provisions compared with earlier regional biodiversity conservation agreements, including efforts to address conservation and economic development in an integrated manner, based on a 'sustainable use' standard which relies upon an ecosystem approach and a consideration of the capacities of the parties.

The 1985 ASEAN Agreement commits the parties to adopt measures and conservation strategies

necessary to maintain essential ecological processes and life-support systems, to preserve genetic diversity, and to ensure the sustainable utilisation of harvested natural resources under their jurisdiction in accordance with scientific principles and with a view to attaining the goal of sustainable development [and to] ensure that conservation and management of natural resources are treated as an integral part of development planning at all stages and at all levels.³⁴⁰

³³⁵ Arts. 8 and 9. ³³⁶ Kiev, 22 May 2003, in force 4 January 2006.

³³⁷ Bucharest, 19 June 2008, in force 28 April 2010.

³³⁸ Kuala Lumpur, 9 July 1985, not in force, 15 *Environmental Policy and Law* 64 (1985).

³³⁹ Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand and Vietnam.

³⁴⁰ Arts. 1 and 2(1).

Chapter II ('Conservation of Species and Ecosystems') of the Agreement commits parties to 'maintain maximum genetic diversity' by acting for the conservation and survival of all species under their jurisdiction and control, to protect endangered species and to protect the habitats of endangered species listed on Appendix I.³⁴¹ The sustainable use of harvested species should be ensured by implementing management plans aimed at 'preventing decrease in the size of any harvested population to levels below those which ensure its stable recruitment', by maintaining the 'ecological relationship' between harvested, dependent and related populations, and by restoring depleted populations to levels which ensure 'stable recruitment'.³⁴² To this end, harvesting activities will be subject to a permit system, a prohibition on indiscriminate taking and use and on harvesting during certain periods, and regulated trade and possession.³⁴³ Conservation of species and ecosystems includes measures to conserve vegetation cover, especially forests, soil conservation, land rehabilitation, the conservation of underground and surface water resources, and air quality management.³⁴⁴

The 1985 ASEAN Agreement addresses forest protection by calling for the establishment of forest reserves, reforestation and afforestation plans, and by requiring parties to ensure, to the maximum extent possible, the conservation of their natural forests (particularly mangroves) and to develop forestry management plans which maintain the potential 'for optimum sustained yield and avoiding depletion of the resource capital'.³⁴⁵

Under Chapter III, parties must prevent, control and reduce degradation of the natural environment and polluting discharges and emissions. Again, the provisions on environmental degradation are innovative and progressive in addressing the need to promote environmentally sound agricultural practices and industrial processes and products, including the use of economic and fiscal incentives.³⁴⁶ Without specifically mentioning the polluter pays principle, the Agreement reflects its spirit by requiring parties to undertake,

as far as possible, to consider the originator of the activity which may lead to environmental degradation responsible for its prevention, reduction and control as well as, wherever possible, for rehabilitation and remedial measures required.³⁴⁷

Chapter IV supports land-use planning to achieve 'optimum sustainable land use' based on the 'ecological capacity' of the land, the establishment of protected areas, and environmental impact assessment.³⁴⁸ In relation to protected areas, the Agreement prohibits the use or release of toxic substances or pollutants as well as, to the maximum extent possible, activities outside the protected area that are likely to cause disturbance or damage.³⁴⁹ Chapter V of the Agreement proposes measures for scientific research, education, public participation and administrative machinery.³⁵⁰ Chapter VI envisages international monitoring, research, the exchange of data and information, and the conservation and harmonious utilisation of shared natural

³⁴¹ Arts. 3 and 5. Amendments to the Agreement and to the Appendix require consensus.

³⁴² Art. 4(1). ³⁴³ Art. 4(2). ³⁴⁴ Arts. 6–9. ³⁴⁵ Art. 6(2). ³⁴⁶ Art. 10(a)–(c). ³⁴⁷ Art. 6(d).

³⁴⁸ Arts. 12–14. ³⁴⁹ Art. 13(5)(b) and (c). ³⁵⁰ Arts. 15–17.

resources.³⁵¹ The Agreement was also the first to integrate a large part of Principle 21 of the Stockholm Declaration into the operational part of an international treaty.³⁵²

The institutional arrangements for implementing the Agreement comprise Meetings of the Parties, a secretariat, and national focal points for the co-ordination and channelling of communications.³⁵³

While the 1985 ASEAN Agreement has not yet entered into force, there are other forms of co-operation related to biodiversity within ASEAN. In 2005, an agreement was adopted to establish an ASEAN Centre for Biodiversity.³⁵⁴ The mandate of the Centre is to facilitate co-operation and co-ordination among ASEAN member states on the conservation and sustainable use of biodiversity, and fair and equitable benefit sharing, within the region.

REGULATION OF PARTICULAR HABITATS OR SPECIES

Many international environmental agreements regulate specific habitats, species or species types. Such agreements fall into two basic categories: those which have as their primary purpose the conservation and enhancement of particular habitats or biomes (wetlands; forests; plants; soil and land); and those that address species or species types (migratory species; marine living resources;³⁵⁵ birds; and other specific species). In addition, there are agreements that specifically address cultural and other heritage, including the heritage of nature and natural resources.

Wetlands³⁵⁶

The first global agreement to address the conservation of a particular habitat was the Convention on Wetlands of International Importance Especially as Waterfowl Habitat (1971 Ramsar Convention),³⁵⁷ which aims to conserve and enhance wetlands. As defined in the Ramsar Convention, wetlands are:

³⁵¹ Arts. 18 and 19. ³⁵² Art. 20(1). ³⁵³ Arts. 21–23.

³⁵⁴ Agreement on the Establishment of the ASEAN Centre for Biodiversity, Bangkok, 12 September 2005, in force 8 July 2009. See www.aseanbiodiversity.org.

³⁵⁵ See Chapter 9, pp. 396–418, above.

³⁵⁶ A. Timoshenko, 'Protection of Wetlands by International Law', 5 *Pace Environmental Law Review* 463 (1988); IUCN Environmental Law Centre and H. Synge (eds.), *Legal Aspects of the Conservation of Wetlands* (1991); C. de Klemm and I. Crétau, *The Legal Development of the Ramsar Convention* (1993); G. Matthews, *The Ramsar Convention on Wetlands: Its History and Development* (1993); M. Bowman, 'The Ramsar Convention Comes of Age', 42 *Netherlands Yearbook of International Law* 1 (1995); T. Davis, *Le Manuel de la Convention de Ramsar: Guide de la Convention Relative aux Zones Humides d'Importance Internationale, Particulièrement Comme Habitats des Oiseaux d'Eau* (1996); D. Farrier and L. Tucker, 'Wise Use of Wetlands under the Ramsar Convention: A Challenge for Meaningful Implementation of International Law', 12 *Journal of Environmental Law* 21 (2000); *The Ramsar Convention Manual: A Guide to the Convention on Wetlands* (2006, 4th edn); *Ramsar Handbooks for the Wise Use of Wetlands* (2010, 4th edn); M. Bowman, P. Davies and C. Redgwell, *Lyster's International Wildlife Law* (2010, 2nd edn), Chapter 13 ('The Ramsar Convention on Wetlands').

³⁵⁷ Ramsar, 2 February 1971, in force 21 December 1975, 996 UNTS 245 (www.ramsar.org). The Convention has 160 parties, and has been amended twice: first by the Paris Protocol of 3 December 1982, in force 10 October 1986, 22 ILM 698 (1982), and second by the Regina Amendments of 28 May 1987, in force 1 May 1994, IELMT 977:9/13. The Paris Protocol inserted a new Art. 10bis to provide for amendment of the Convention; and the Regina Amendments addressed the operation of the Convention, including the Conference of the Parties, the Standing Committee, the Secretariat and the budget.

areas of marsh, fen, peatland, or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six metres.³⁵⁸

This definition does not reflect the enormous variety of wetland types or the fact that they are dynamic, capable of changing with the seasons and over longer periods of time, and that accordingly their boundaries are often difficult to define with any degree of precision.³⁵⁹ Estimates published in 2000 suggest that globally there remain between 5.3 and 5.7 million square kilometres of wetlands including bogs, fens, swamps, marshes, floodplain and shallow lakes. They serve a variety of functions, including flood and erosion control, water purification and shoreline stabilisation.³⁶⁰ The major threats include pollution, human settlement, agricultural drainage and fishing. Wood-cutting, degradation of the watershed, soil erosion, siltation and the diversion of water supplies are additional threats.

The Ramsar Convention reflected new international legal efforts aimed at conservation by protecting a habitat type rather than a species, resulting largely from the activities of the non-governmental International Waterfowl Research Bureau. The Ramsar Convention has 160 parties and now protects 1,994 sites in those countries, comprising a total surface area of over 190 million hectares. Without prejudice to their sovereign rights, each party must designate suitable wetlands within its territory for inclusion in the List of Wetlands of International Importance, taking account of their international significance in terms of ecology, botany, zoology, limnology or hydrology.³⁶¹ At least one wetland must be designated upon signature or ratification or accession; thereafter, the addition of further wetlands, or the extension of listed wetlands, is a matter for each party.³⁶² The deletion or restriction of listed wetlands is permitted on grounds of 'urgent national interest' but must, as when parties designate entries, take into consideration the 'international responsibilities for the conservation, management and wise use of migratory stocks of waterfowl' and compensate for any loss of wetland resources by, for example, the establishment of additional nature reserves.³⁶³ In 1990, the Conference of the Parties adopted criteria for the designation of wetlands sites, which have been updated on a number of occasions, most recently in 2005.³⁶⁴

Parties are to formulate and implement planning so as to promote conservation of wetlands in the List and wise use of wetlands in their territory. The concept of 'wise use' of wetlands has been the subject of guidance by the Conference of the Parties, and is defined as 'the maintenance of their ecological character, achieved through ecosystem approaches, within the context of sustainable development'.³⁶⁵ Parties must make arrangements to ensure that they are informed of any actual or likely change in the ecological character of any of their listed

³⁵⁸ Art. 1(1).

³⁵⁹ See World Conservation Monitoring Centre, *Global Biodiversity: Earth's Living Resources in the 21st Century* (2000), noting that, according to the broadest grouping of habitat types, there are thirty categories of natural wetlands and nine man-made categories.

³⁶⁰ *Ibid.* ³⁶¹ Art. 2(1)–(3). ³⁶² Art. 2(4) and (5). ³⁶³ Arts. 2(5) and (6) and 4(2).

³⁶⁴ Res. IX.1, Annex B, Revised Strategic Framework and Guidelines for Future Development of the List of Wetlands of International Importance. See Ramsar Convention Secretariat, *Ramsar Handbook 17: Designating Ramsar Sites* (2010, 4th edn).

³⁶⁵ See, most recently, Res. IX.1; and Ramsar Convention Secretariat, *Ramsar Handbook 1: Wise Use of Wetlands* (2010, 4th edn).

wetlands, which information is to be passed on to the Convention secretariat.³⁶⁶ Parties are to promote conservation by establishing nature reserves on wetlands, whether on the List or not, and are to endeavour to increase waterfowl populations on appropriate wetlands.³⁶⁷ The Convention also encourages research, the exchange of data, the training of personnel, and consultation between parties about implementing their obligations.³⁶⁸

Meetings of the Conference of the Parties to the Convention are held every three years. The Conference of the Parties may consider problems of implementation, additions and changes to the List and changes in the character of listed wetlands. The Conference of the Parties may make recommendations to the parties on the conservation, management and wise use of wetlands and their flora and fauna, which must be taken into consideration by the parties.³⁶⁹ The Conference of the Parties is assisted by a secretariat, which maintains the List of Wetlands.³⁷⁰

Since 1975, ten meetings of the Conference of the Parties have been held and a range of recommendations adopted. To improve implementation, particularly by developing countries and countries with economies in transition, the Conference of the Parties established a 'Wetland Conservation Fund' in 1990 (subsequently renamed the Ramsar Small Grants Fund for Wetland Conservation and Wise Use). Efforts under the Convention are now organised within the framework of a Strategic Plan for the period 2009–15, which provides guidance to the parties and to Convention's bodies.³⁷¹ The Convention's secretariat co-operates with other relevant international and regional bodies, including the Biodiversity Convention's work programme on inland water biodiversity.

In 2011, the International Court of Justice issued a provisional measures order in a dispute involving a wetland area on the Ramsar Convention's List.³⁷² Costa Rica complained of incursions into, and occupation of, part of its territory by Nicaragua, in connection with the construction of a canal and related dredging works, which Costa Rica alleged was causing damage to a fragile Ramsar-listed wetland area on Costa Rican territory. The Court observed that there were two wetlands of international importance within the meaning of the Ramsar Convention in the boundary area in question in the case.³⁷³ The Court reminded the parties of their obligation under Article 5 of the Ramsar Convention to consult about implementing obligations arising from the Convention especially in the case of a wetland extending over the territories of more than one party. The Court noted that the disputed territory in the case was situated in the Humedal Caribe Noreste Ramsar site, in respect of which Costa Rica bears obligations under the Ramsar Convention, and that, pending delivery of the Court's judgment, Costa Rica must be in a position to avoid irreparable prejudice to that part of the wetland where the territory in question was situated. Taking this into account, the Court ordered that Costa Rica could dispatch civilian personnel charged with protection of the environment to the disputed territory insofar as necessary to avoid irreparable damage to the wetland. It determined that Costa Rica should consult with the Ramsar Convention secretariat in regard to such actions, give Nicaragua prior notice of them and endeavour to find common solutions with Nicaragua. The case remains pending before the ICJ.

³⁶⁶ Arts. 3 and 4(1) and (4); 'waterfowl' are defined as 'birds which are ecologically dependent on wetlands': Art. 1(2).

³⁶⁷ Art. 4(1) and (4). ³⁶⁸ Arts. 4(3) and (5) and 5. ³⁶⁹ Art. 6(3).

³⁷⁰ Art. 8. The secretariat function is fulfilled by IUCN.

³⁷¹ Res. X.1. Previous Strategic Plans covered the periods 1997–2002 and 2003–8.

³⁷² *Certain Activities Carried Out by Nicaragua in the Border Area (Costa Rica v. Nicaragua)*, Request for the Indication of Provisional Measures, 8 March 2011.

³⁷³ The 'Humedal Caribe Noreste' wetland designated by Costa Rica, and the 'Refugio de Vida Silvestre Rio San Juan' wetland designated by Nicaragua.

Forests³⁷⁴

Forests have important ecological functions: they provide habitats for the preservation of biodiversity; they act as carbon sinks; and they contribute to maintaining and enhancing the quality of soil. The fact that preserving forests contributes to climate stability and biodiversity goals has provided developing states with extensive forests with significant leverage in international negotiations in respect of forests.

Threats to forest ecosystems are diverse and include habitat conversion, the scale of legal and illegal logging, and habitat fragmentation. While forests and forest species fall within the scope of certain global and regional legally binding instruments, there has been no global consensus on the need for a convention on forests. Discussions on forest conservation and sustainable use at the international level have been notoriously difficult. At UNCED in 1992, states were able to agree only a non-binding statement of forest principles, and a general commitment in Agenda 21 to 'consider the need for and feasibility of all kinds of appropriately internationally agreed arrangements to promote international co-operation' on forests.³⁷⁵ Since then, further inter-governmental dialogue on forests has taken place both in dedicated forums, described in this section, as well as under other agreements, including the Biodiversity Convention which has adopted a programme of work on forest biodiversity,³⁷⁶ and, increasingly under the climate change regime in the context of discussions on REDD+.³⁷⁷ Commodity-related issues are within the purview of the FAO Committee on Forestry and the International Tropical Timber Agreement.

International legal efforts to address forest issues have taken place in the context of the historical loss of the forests of developed countries, and of these states' efforts to ensure that the bulk of remaining forests in developing countries is preserved for their contribution to ecological cycles, particularly in relation to biodiversity and climate issues. Attempts by developed countries to 'internationalise' forest issues have so far been largely unsuccessful in legal terms, and the tropical forest resources of developing countries are carefully guarded as part of the national patrimony of these countries.

1994 International Tropical Timber Agreement

The first International Tropical Timber Agreement was adopted in 1983 and the International Tropical Timber Organization (ITTO) established in 1986. The objectives of the 1994 International Tropical Timber Agreement (ITTA 1994)³⁷⁸ include developing 'industrial tropical timber reforestation and forest management activities' and encouraging 'national policies aimed at sustainable utilisation and conservation of timber producing forests and their genetic

³⁷⁴ M. Prieur (ed.), *Forêts et Environnement en Droit Comparé et Droit International* (1985); M. B. Saunders, 'Valuation and International Regulation of Forestry Ecosystems: Prospects for a Global Forest Agreement', 66 *Washington Law Review* 871 (1991); A. Fabra, *The International Legal Protection of the Forest: A Case Study in Ecuador* (1992); H. Schally, 'Forests: Towards an International Legal Regime?', 4 *Yearbook of International Environmental Law* 30 (1993); Canadian Council of International Law, *Global Forests and International Environmental Law* (1996); R. Tarasofsky, 'The Global Regime for the Conservation and Sustainable Use of Forests', 56 *ZaöRV* 669 (1996).

³⁷⁵ Agenda 21, para. 11.12(e). ³⁷⁶ Decision VI/22; see also Decision IX/5.

³⁷⁷ See Chapter 7, pp. 295–6, above.

³⁷⁸ Geneva, 26 January 1994, in force 1 January 1997, 33 ILM 1014 (1994); sixty states and the EU are party. The 1994 Agreement replaced the expired 1983 International Tropical Timber Agreement (Geneva, 18 November 1983, in force 1 April 1985, UN Doc. TD/TIMBER/11/Rev.1 (1984)).

resources, and at maintaining the ecological balance in the regions concerned'.³⁷⁹ These are but two of fourteen ITTA 1994 objectives, the others including the expansion and diversification of international trade in tropical timber from sustainable sources and promotion of the industrialisation of tropical timber-producing member countries. A major initiative of the ITTO has been the 'Year 2000 Objective', which aimed to ensure that, by the year 2000, all tropical timber products traded internationally by member states would originate from sustainably managed forests. Article 18 of the ITTA 1994 establishes the Bali Partnership Fund to assist producing members to make the investments necessary to enhance their capacity to implement the Year 2000 Objective. An assessment conducted in 2000 suggested, however, that, while member states had made progress in formulating policies compatible with this objective, there was less evidence that such policies were being implemented.³⁸⁰

The ITTA 1994 is administered by the ITTO, which functions through a council, the International Tropical Timber Council.³⁸¹ The permanent committees of the ITTO include a Committee on Reforestation and Forest Management, the functions of which include harmonising international co-operation in reforestation and forest management.³⁸² The ITTA 1994 was due to remain in force for a period of four years from its entry into force, It has been extended by decision of the International Tropical Timber Council on three occasions, most recently until the provisional or definitive entry into force of the ITTA 2006.³⁸³

International Tropical Timber Agreement 2006³⁸⁴

The International Tropical Timber Agreement 2006 (ITTA 2006) is substantially similar in form and content to the 1994 Agreement but contains significant provisions concerning sustainable forest management and reflecting the Year 2000 Objective. The overall objectives of the ITTA 2006 are 'to promote the expansion and diversification of international trade in tropical timber from sustainably managed sources and legally harvested forests and to promote the sustainable management of tropical timber'. In addition to the mechanisms mentioned in ITTA 1994, these objectives are to be achieved, *inter alia*, by: enhancing the capacity of members to implement strategies for achieving exports of timber and timber products from sustainably managed sources; strengthening the capacity of members to improve forest law enforcement and governance, and address illegal logging and related trade in tropical timber; and encouraging information sharing for better understanding of voluntary mechanisms, such as certification,³⁸⁵ to promote sustainable management of tropical forests. The ITTA 2006 also specifically refers to promoting better understanding of the contribution of non-timber forest products and environmental services to the sustainable management of tropical forests, and encouraging members to recognise the role of forest-dependent indigenous and local communities in achieving sustainable forest management.³⁸⁶

³⁷⁹ Art. 1(j) and (l).

³⁸⁰ D. Poore and T. Hooi Chiew, *Review of Progress Towards the Year 2000 Objective*, ITTC(XXVIII)/9/Rev.2, 5 November 2000, paras. 44–9.

³⁸¹ Art. 3. ³⁸² Arts. 26(1) and 27(2).

³⁸³ International Tropical Timber Council, Decision 3 (XLI) ITTC XLI/21, 11 November 2006.

³⁸⁴ Geneva, 27 January 2006, not yet in force.

³⁸⁵ On certification of forest products, see, for example, the Forest Stewardship Council, www.fsc.org.

³⁸⁶ ITTA 2006, Art. 1.

1992 Forest Principles

UNCED produced two documents of relevance to forests. The first was Agenda 21, which addressed forests in its Chapter 11 by setting out four programme areas. The second was the 'Non-Legally Binding Authoritative Statement of Principles for a Global Consensus on the Management, Conservation and Sustainable Development of All Types of Forests' (1992 Forest Principles).³⁸⁷ The weakness of this instrument reflects the absence of international consensus on the subject, and the Principles are of limited legal authority and content. The guiding objective of the Forest Principles is to contribute to the management, conservation and sustainable development of forests and to provide for their multiple and complementary functions and uses.³⁸⁸ The Principles apply to all types of forest,³⁸⁹ and provide that forest issues must be dealt with in a 'holistic and balanced' manner. The Principles do not 'internationalise' forest issues, or state that forests are 'a common concern of mankind'. Consistently through the Principles runs the theme that forest issues are a matter for national, rather than international, policies.³⁹⁰ Thus, it is noted that:

sound management and conservation [of forests] is of concern to *the Governments of the countries to which they belong* and are of value to local communities and to the environment as a whole.³⁹¹

The fifteen Principles do not have titles, are difficult to classify in any logical or coherent way, and are poorly drafted. Several governing principles to inform the development of national policies are set forth, including 'the right to socio-economic development on a sustainable basis', Principle 21 of the Stockholm Declaration, the needs of present and future generations, an integrated and comprehensive approach, and the rights of indigenous people.³⁹² However, as a practical guide to the sustainable management of forests, the Principles have been of little assistance.

UN Forum on Forests

Following UNCED, renewed efforts were made to establish institutional arrangements for international forest management, conservation and sustainable development. At its third session, in April 1995, the UN Commission on Sustainable Development (CSD) established an Intergovernmental Panel on Forests (IPF) with a two-year mandate. The IPF's primary responsibility was the implementation of the forest-related decisions taken at UNCED. Its work was supported by an Interagency Taskforce on Forests (ITF) which co-ordinated the inputs of various international organisations into the forest policy process. In July 1997, the IPF was replaced by an *ad hoc* open-ended Intergovernmental Forum on Forests (IFF) with responsibility for promoting and facilitating the implementation of proposals for action developed by the IPF. The IFF was also given a mandate to consider international arrangements and

³⁸⁷ 13 June 1992, 31 ILM 881 (1992). ³⁸⁸ Preamble, para. (b).

³⁸⁹ '[N]atural and planted, in all geographic regions and climatic zones, including austral, boreal, subtemperate, temperate, subtropical and tropical': Preamble, para. (e).

³⁹⁰ Principle 2(a). 'National policies' are also referred to, *inter alia*, in Principles 3(a), 5(a), 6(b), 8(d), 8(f), 8(h) and 9(c).

³⁹¹ Preamble, para. (f) (emphasis added).

³⁹² See, for example, Preamble, para. (a); Principles 1(a), 2(b) and (c), 3(c), 4, 5(a) and (b), 8(d) and 15.

mechanisms to promote forest management, conservation and sustainable development, with the view to developing a legally binding instrument. The IFF's mandate came to an end in 2000, and it was replaced by the United Nations Forum on Forests (UNFF),³⁹³ a subsidiary body of the UN Economic and Social Council (ECOSOC), which held its first session in June 2001. The UNFF's overall purpose is to promote the implementation of internationally agreed action on forests at national, regional and global levels.³⁹⁴ UNFF was called upon to recommend the parameters of a mandate for developing a legal framework on all types of forests.³⁹⁵ Its work is supported by the Collaborative Partnership on Forests (replacing the ITF), which consists of representatives from relevant United Nations bodies as well as other international and regional organisations in the forestry area.³⁹⁶ In 2006, ECOSOC set four global objectives on forests, and set out a process for the UNFF to finalise a non-legally binding instrument by 2007. It also decided to review the effectiveness of the international arrangement on forests in 2015 and to consider a full range of options at that time, including a legally binding instrument on all types of forests.³⁹⁷

2007 Non-Legally Binding Instrument on All Types of Forests

The UNFF adopted the Non-Legally Binding Instrument on All Types of Forests at its seventh session in April 2007. The Instrument was subsequently adopted by the General Assembly in Resolution 62/98 in December 2007.³⁹⁸ The purpose of the Instrument is: to strengthen political commitment and action at all levels to implement effectively sustainable management of all types of forests; to enhance the contribution of forests to the achievement of internationally agreed development goals, including the Millennium Development Goals on poverty eradication and environmental sustainability; and to provide a framework for national action and international co-operation.³⁹⁹ Paragraph 4 of the Instrument provides that 'sustainable forest management, as a dynamic and evolving concept, aims to maintain and enhance the economic, social and environmental values of all types of forests, for the benefit of present and future generations'.

The Instrument reiterates its voluntary and non-legally binding nature in a section setting out 'Principles'. This section also provides that each state is responsible for the sustainable management of its forests and its forest-related laws and that major groups, local communities and forest owners should be involved in forest decision-making processes. It further notes the need for new and additional financial resources, good governance and international co-operation.⁴⁰⁰

The Instrument reaffirms four global objectives on forests and the commitment of states to work to achieve progress towards their achievement by 2015. These global objectives address: reversing the loss of forest cover worldwide; enhancing forest-based economic, social and environmental benefits; increasing significantly the area of protected forests worldwide and other areas of sustainably managed forests; and reversing the decline in official development assistance for sustainable forest management, and mobilising new and additional financial

³⁹³ ECOSOC Res. E/2000/35, 18 October 2000. ³⁹⁴ *Ibid.*, para. 1. ³⁹⁵ *Ibid.*, para. 3(c)(i).

³⁹⁶ For membership of the Collaborative Partnership on Forests, see www.fao.org/forestry/cpf/en.

³⁹⁷ ECOSOC Res. E/2006/49. ³⁹⁸ A/RES/62/98, 31 January 2008.

³⁹⁹ 2007 Non-Legally Binding Instrument on All Types of Forests, para. 1. ⁴⁰⁰ *Ibid.*, para. 2.

resources.⁴⁰¹ The Instrument also sets out national policies and measures that states ‘should’ take, taking into account national policies, priorities, conditions and available resources. Some twenty-five policies and measures are identified, addressing a wide range of issues.⁴⁰² A broad range of measures for international co-operation and means of implementation are also identified, including measures related to financial support, international co-operation in combating illegal trafficking in forest products and strengthening national capacities to address forest-related illegal practices.⁴⁰³ Finally, the Instrument calls on states to monitor and assess progress towards achieving the purpose of the Instrument, and provides that states should submit, on a voluntary basis, national progress reports as part of their regular reporting to the UNFF.⁴⁰⁴

While, like the 1992 Forest Principles, the 2007 Instrument is non-binding, it does represent a more clearly drafted reflection of the evolution of an international consensus in response to the challenge of sustainable forest management and arresting forest loss and degradation. It, together with relevant ECOSOC resolutions, also provides for some follow-up and review in 2015.

Land, soil and desertification

A 1992–3 study sponsored by UNEP found that an area of 1.2 billion hectares, nearly 11 per cent of the Earth’s vegetated surface, suffers from soil degradation. This has been defined as ‘a process that describes human-induced phenomena which lower the current and/or future capacity of the soil to support human life’, and occurs as: light degradation (good soils that show signs of degradation but can be restored using good conservation practices); moderate degradation (which allows continued agricultural use but with greatly reduced productivity, and restoration requires major changes in land use practices); severe degradation (agricultural use is no longer possible and restoration is possible at a high cost); and extreme degradation (the area is unsuitable for agriculture and is beyond restoration).⁴⁰⁵ Apart from wind and water erosion, soil degradation results from chemical deterioration due to salinisation, acidification and pollution, or from physical deterioration due to compaction, waterlogging or subsidence of organic soils. These are caused principally by agricultural activities, deforestation, over-exploitation, industrial and bio-industrial activities, and overgrazing.⁴⁰⁶

International legal responses to address soil degradation have been limited. Apart from the conventions which establish general obligations,⁴⁰⁷ and a 1998 Protocol on Soil Protection to the Alpine Convention, no legally binding instruments have been adopted which have, as their primary aim, specific measures to conserve, improve and rehabilitate soil, and prevent erosion and other forms of degradation.

⁴⁰¹ *Ibid.*, para. 5. ⁴⁰² *Ibid.*, para. 6. ⁴⁰³ *Ibid.*, para. 7. ⁴⁰⁴ *Ibid.*, paras. 8 and 9.

⁴⁰⁵ World Resources Institute, *World Resources (1992–3)*, 113. See also the joint study by the International Food Policy Research Institute (IFPRI) and the World Resources Institute, *Pilot Analysis of Global Ecosystems: Agroecosystems* (November 2000), 45–54.

⁴⁰⁶ World Resources Institute, *World Resources (1992–3)*, 111–12, citing International Soil Reference and Information Centre (ISRIC) and UNEP, *Global Assessment of Soil Degradation (GLASOD)*.

⁴⁰⁷ 1968 African Nature Convention, Art. IV, and 2003 African Convention, Art. VI; 1985 ASEAN Agreement, Art. 7.

Some non-binding instruments establish general guidelines. The FAO Council's 1982 World Soil Charter adopts agreed principles and guidelines to improve productivity, conservation and rational use of soils, and to promote 'optimum land use', recognising the responsibility of governments to ensure long-term maintenance and improvement of soil productivity.⁴⁰⁸ UNEP subsequently adopted a World Soils Policy,⁴⁰⁹ developed environmental guidelines for the formulation of National Soil Policies,⁴¹⁰ and adopted an Action Plan on Drought and Desertification.⁴¹¹ The Revised Montevideo Programme identified the conservation of soil as a priority legal issue, and sought to promote the effective implementation of the Plan of Action of the World Soil Charter through the preparation of guidelines for domestic legislation and related institutional arrangements.⁴¹² In 1992, the Committee of Ministers of the Council of Europe adopted a Recommendation on Soil Protection.⁴¹³ The issues of soil erosion and soil micro-organisms are also addressed within the work programme on agricultural biodiversity under the Convention on Biological Diversity.⁴¹⁴

1994 Convention to Combat Desertification

One aspect of land degradation which has been more firmly on the international legal agenda after UNCED is drought and desertification. Desertification was defined by Agenda 21 as 'land degradation in arid, semi-arid and dry sub-humid areas resulting from various factors, including climatic variations and human activities',⁴¹⁵ and encompasses soil degradation⁴¹⁶ and associated changes in vegetation in arid and semi-arid areas. Chapter 12 ('Managing Fragile Ecosystems: Combating Desertification and Drought') of Agenda 21 established six programme areas to combat desertification (including soil degradation) and drought.⁴¹⁷

In December 1992, at the request of UNCED, the UN General Assembly established an intergovernmental negotiating committee to elaborate an international convention to combat desertification in those countries experiencing serious drought and/or desertification, particularly in Africa.⁴¹⁸ The United Nations Convention to Combat Desertification in Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa (UNCCD) was adopted in June 1994 and entered into force on 26 December 1996.⁴¹⁹ Alongside the Biodiversity and Climate Change Conventions, it is considered as one of the three 'Rio Conventions', emerging from the UNCED process. One hundred and ninety-four states are currently party to the Convention. The objective of the Convention is:

⁴⁰⁸ 25 November 1981, 21 FAO Conf. Res. 8/81, 50 *FAO Soils Bulletin* 79.

⁴⁰⁹ UNEP GC/DEC/10/14, 31 May 1982; see also Plan of Action for Implementation of the World Soils Policy, UNEP/GC/DEC/12/12, 28 May 1984.

⁴¹⁰ UNEP Environmental Guidelines for the Formulation of National Soil Policies, UNEP Environmental Management Guidelines No. 7 (1983).

⁴¹¹ UNEP/GC.6/11, 24 May 1978. ⁴¹² UNEP/GC.17/5, Annex, Section K (1993).

⁴¹³ Recommendation 92(8), 18 May 1992, cited in 3 *Yearbook of International Environmental Law* 334 (1992).

⁴¹⁴ Convention on Biological Diversity, Decision III/11.

⁴¹⁵ Agenda 21, para. 12.2; desertification is said to affect about one-sixth of the world's population, 70 per cent of all drylands, amounting to 3.6 billion hectares, and one-quarter of the total land area of the world: *ibid.*

⁴¹⁶ See the definition of 'land degradation' in Art. 1(f)(ii) of the Desertification Convention.

⁴¹⁷ Paras. 12.15 to 12.25; 12.35 to 12.44; and 12.45 to 12.54. ⁴¹⁸ UNGA Res. 47/188 (1992).

⁴¹⁹ Paris, 17 June 1994, 33 ILM 1328 (1994); 194 states are party. See www.unccd.int. See also P. Johnson, K. Mayrand and M. Paquin (eds.), *Governing Global Desertification: Linking Environmental Degradation, Poverty and Participation* (2006).

to combat desertification and mitigate the effects of drought in countries experiencing serious drought and/or desertification, particularly in Africa, through effective action at all levels, supported by international co-operation and partnership arrangements, in the framework of an integrated approach which is consistent with Agenda 21, with a view to contributing to the achievement of sustainable development in affected areas.⁴²⁰

Affected country parties (i.e. countries whose lands include, in whole or in part, arid, semi-arid and/or dry sub-humid areas affected or threatened by desertification) are required to develop national action programmes to combat desertification in accordance with regional criteria set out in four Annexes to the Convention.⁴²¹ The purpose of the programmes is to identify factors contributing to desertification and practical measures necessary to combat desertification and to mitigate the effects of drought such as the establishment of early warning systems, the strengthening of drought contingency plans, the establishment of food security systems and the development of sustainable irrigation programmes. National action programmes must specify the respective roles of government, local communities and land users and the resources available and needed.⁴²² Development of the national programmes should take a 'bottom-up' approach ensuring the participation of populations and local communities and the creation of an 'enabling environment' at higher levels to facilitate action at national and local levels.⁴²³ The programmes should also be integrated with other national policies for sustainable development.⁴²⁴

Obligations are also placed on developed country parties to provide 'substantial' financial resources and other forms of support to affected developing countries, particularly those in Africa, and to promote and facilitate access by affected country parties, particularly affected developing country parties, to appropriate technology, knowledge and know-how.⁴²⁵ In implementing the Convention, the parties must give priority to affected African country parties, in the light of the particular situation prevailing in that region, while not neglecting affected developing country parties in other regions.⁴²⁶

The primary institution of the Convention is the Conference of the Parties, which is responsible for reviewing the implementation of the Convention, facilitating the exchange of information on implementing measures and adopting amendments to the Convention.⁴²⁷ It is supported by a Permanent Secretariat⁴²⁸ and a Committee on Science and Technology, which provides the Conference of the Parties with information and advice on scientific and technological matters relating to combating desertification and mitigating the effects of drought.⁴²⁹ The Conference of the Parties has met on ten occasions to date, and now meets every two years.⁴³⁰

⁴²⁰ Art. 2. 'Desertification' is defined as land degradation in arid, semi-arid and dry sub-humid areas resulting from various factors, including climatic variations and human activities (Art. 1(a)). 'Drought' is defined as the naturally occurring phenomenon that exists when precipitation has been significantly below normal recorded levels, causing serious hydrological imbalances that adversely affect land resource production systems (Art. 1(c)).

⁴²¹ Art. 5. Regional Implementation Annexes are provided for Africa, Asia, Latin America and the Caribbean, and the Northern Mediterranean.

⁴²² Art. 10.1 and 10.2. ⁴²³ Art. 3(a). ⁴²⁴ Art. 5(b). ⁴²⁵ Art. 6. ⁴²⁶ Art. 7. ⁴²⁷ Art. 22.

⁴²⁸ Art. 23. Since January 1999, the permanent Secretariat of the UNCCD has been located in Bonn, Germany.

⁴²⁹ Art. 24. ⁴³⁰ A committee for the Review of the Implementation of the Convention has also been established.

Migratory species⁴³¹

Migratory species can be classified into four general categories: (1) marine species which breed on the shores of coastal states but migrate to sea during adult life (e.g. seals, sea turtles, anadromous fish); (2) highly migratory marine species which travel between exclusive economic zones and high seas (e.g. tuna, whales); (3) territorial species with a well-established migration pattern (e.g. birds); and (4) territorial or marine species which live in border areas and regularly cross jurisdictional boundaries (e.g. gorillas, elephants).⁴³² Since these migratory species do not respect national boundaries, they pose a particular challenge to an international legal order premised upon the territorial state. The only effective approach is for international legal regulation to apply 'concerted action of all states within the national jurisdictional boundaries of which such species spend any part of their life cycle'.⁴³³ Several of the agreements described earlier apply to migratory species,⁴³⁴ and the *raison d'être* for a host of others is the migratory nature of the species that is being conserved.⁴³⁵ To date, the only treaty that has as its main objective the conservation of migratory species is the 1979 Bonn Convention.

1979 Bonn Convention on Migratory Species

The origins of the 1979 Convention on the Conservation of Migratory Species of Wild Animals (1979 Bonn Convention)⁴³⁶ can be traced to Recommendation 32 of the 1972 Stockholm Action Plan and an initiative by the then West German government to prepare a draft migratory species convention which would remedy the lack of uniformity and limited application of the agreements in force at the time.⁴³⁷ The 1979 Bonn Convention is potentially of global application and has 115 parties. It is, according to Lyster, a particularly interesting agreement for three reasons: it covers an unusually broad range of threats to listed species; its provisions are 'unusually rigorous in their restrictions'; and it establishes a precedent in international wildlife law for providing for subsidiary agreements which focus attention and efforts on particular species.⁴³⁸

The 1979 Bonn Convention has as its objective the conservation and effective management of migratory species, which are defined as:

the entire population or any geographically separate part of the population of any species or lower taxon of wild animals, a significant proportion of whose members cyclically and predictably cross one or more national jurisdictional boundaries.⁴³⁹

⁴³¹ N. D. Banks, 'Migratory Caribou Convention', 18 *Canadian Yearbook of International Law* 285 (1980); C. de Klemm, 'Migratory Species in International Law', 29 *Natural Resources Journal* 935 (1989); S. Lyster, 'The Convention on the Conservation of Migratory Species of Wild Animals', 29 *Natural Resources Journal* 979 (1989); L. Glowka, 'Complementarities Between the CMS and CITES', 3 *Journal of International Wildlife Law and Policy* 205 (2000); M. Bowman, P. Davies and C. Redgwell, *Lyster's International Wildlife Law* (2010, 2nd edn), Chapter 16 ('The Convention on the Conservation of Migratory Species').

⁴³² C. de Klemm, 'Migratory Species: A Review of Existing International Instruments', 15 *Environmental Policy and Law* 81 (1985).

⁴³³ 1979 Bonn Convention, Preamble. ⁴³⁴ 1971 Ramsar Convention, Preamble.

⁴³⁵ See, for example, the agreements addressing fisheries and marine mammals discussed in Chapter 9 above.

⁴³⁶ Bonn, 23 June 1979, in force 1 November 1983, 19 ILM 15 (1979); as at 30 June 2011, 115 states and the EU are party. See www.cms.int.

⁴³⁷ S. Lyster, *International Wildlife Law* (1985), 278–9. ⁴³⁸ *Ibid.*, 297. ⁴³⁹ Preamble and Arts. I(1)(a) and II(1).

Article III provides for the listing in Appendix 1 of migratory species where there is reliable evidence that the species is endangered.⁴⁴⁰ 'Endangered' means that a migratory species is 'in danger of extinction throughout all or a significant portion of its range'.⁴⁴¹ Parties that are range states of Appendix I migratory species must then endeavour: to conserve and restore habitats; to prevent or minimise adverse effects of activities which seriously impede or prevent the migration of species; and to prevent, reduce or control factors that are endangering or are likely to further endanger the species.⁴⁴² Range state parties must also prohibit the taking of Appendix I migratory species, unless the taking is for scientific purposes, or to enhance the propagation or survival of a species, or to accommodate the needs of subsistence users, or where extraordinary circumstances require, and subject to notification of the secretariat of any such taking.⁴⁴³

Articles IV and V provide for the listing in Appendix II of migratory species (which could also be listed in Appendix I) which

have an unfavourable conservation status and which require international agreements for their conservation and management, as well as those which have a conservation status which would significantly benefit from the international co-operation that could be achieved by an international agreement.⁴⁴⁴

An 'unfavourable conservation status' exists where:

- (1) the migratory species is not maintaining itself on a long-term basis as a viable component of its ecosystems; or
- (2) the range of the migratory species is either being reduced or likely to be reduced on a long-term basis; or
- (3) there is not, and will not be in the foreseeable future, a sufficient habitat to maintain the population of the migratory species on a long-term basis; or
- (4) the distribution and abundance of the migratory species do not approach historic coverage and levels to the extent that potentially suitable ecosystems exist and to the extent consistent with wise wildlife management.⁴⁴⁵

In such circumstances, range states are required to endeavour to conclude agreements to benefit these species, with a view to restoring the migratory species concerned to a favourable conservation status or to maintain such a status.⁴⁴⁶ The agreements should cover the whole of the range of the migratory species concerned, deal with more than one migratory species, and be open to accession to all range states even if they are not parties to the 1979 Bonn Convention.⁴⁴⁷ Article V(4) sets out the basic characteristics of these agreements. So far, seven such legally binding agreements have been adopted, all of which contain specific action

⁴⁴⁰ Art. III(1) and (2). ⁴⁴¹ Art. I(1)(e).

⁴⁴² Art. III(4). A 'range state' is one which 'exercises jurisdiction over any part of the range of that migratory species, or a state, flag vessels of which are engaged outside national jurisdictional limits in taking that migratory species': Art. I(1)(h). 'Range' means 'all the areas of land or water that a migratory species inhabits, stays in temporarily, crosses or overflies at any time on its normal migration route': Art. I(1)(f).

⁴⁴³ Art. III(5) and (7). ⁴⁴⁴ Art. IV(1). ⁴⁴⁵ Art. I(1)(c) and (d).

⁴⁴⁶ Arts. IV(3) and (4) and V(1). ⁴⁴⁷ Art. V(2) and (3).

plans.⁴⁴⁸ In addition, nineteen memoranda of understanding, concerning specific species or groups of species, have been adopted, which may act as a first step towards the conclusion of an agreement.⁴⁴⁹ There are also various other action plans and initiatives addressing specific species. At its ninth meeting, the Conference of the Parties to the Bonn Convention identified certain priorities for future agreements under Articles IV and V.⁴⁵⁰

Under the Bonn Convention, range state parties must provide the secretariat with regular information on the migratory species listed in Appendices I and II for which they consider themselves to be range states, and on the implementing of measures.⁴⁵¹ Institutional arrangements comprise the Conference of the Parties, a Scientific Council and a secretariat.⁴⁵² The Conference of the Parties is the principal decision-making organ of the Convention and has responsibility for reviewing implementation of the Convention, including reviewing and assessing the conservation status of migratory species, and making recommendations to the parties for improving the conservation status of migratory species and improving the effectiveness of the Convention.⁴⁵³ Amendments to Appendices I and II are adopted at meetings of the Conference of the Parties by a two-thirds majority of parties present and voting, and they enter into force ninety days after the Conference of the Parties at which they were adopted for all parties, except for those which make a reservation within that ninety-day period.⁴⁵⁴ The Conference of the Parties meets every three years and has met ten times, most recently in 2011.⁴⁵⁵ It has added numerous species to Appendices I and II, and has also established a formal review process for selected Appendix I species with a view to recommending specific conservation action.

⁴⁴⁸ 1990 Agreement on the Conservation of Seals in the Wadden Sea Area, Bonn, 16 October 1990, in force 1 October 1991; 1991 Agreement on Conservation of Populations of European Bats (EUROBATS), London, 4 December 1991, in force 16 January 1994; 1992 Agreement on the Conservation of Small Cetaceans of the Baltic, North East Atlantic, Irish and North Seas (ASCOBANS), New York, 17 March 1992, in force 29 March 1994; extended Agreement in force 3 February 2008; 1995 Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA), The Hague, 16 June 1995, in force 1 November 1999; 1996 Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area (ACCOBAMS), Monaco, 24 November 1996, in force 1 June 2001; 2001 Agreement on the Conservation of Albatrosses and Petrels (ACAP), Canberra, 19 June 2001, in force 1 February 2004; Agreement on the Conservation of Gorillas and Their Habitats, Paris, 26 October 2007, in force 1 June 2008. Further information about each of these agreements is available on the Bonn Convention website, www.cms.int.

⁴⁴⁹ See Res. 2.6 (1988). To date, memoranda of understanding address: the slender-billed curlew (in effect 10 September 1994); Siberian crane (in effect 1 January 1999); marine turtles of the Atlantic Coast of Africa (in effect 1 July 1999); the middle European population of the great bustard (in effect 1 June 2001); marine turtles and their habitats of the Indian Ocean and Southeast Asia (in effect 1 September 2001); West African populations of the African elephant (in effect 22 November 2005); the aquatic warbler (in effect 30 April 2003); migratory birds of prey in Africa and Eurasia (in effect 1 November 2008); bukhara deer (in effect 16 May 2002); cetaceans and their habitat in the Pacific islands region (in effect 15 September 2006); dugongs and their habitats (in effect 31 October 2007); High Andean flamingos and their habitats (in effect 4 December 2008); South American migratory grassland bird species and their habitats (in effect 26 August 2007); huemul of the Southern Andes (in effect 4 December 2010); Eastern Atlantic populations of the Mediterranean monk seal (in effect 18 October 2007); ruddy-headed goose (in effect 21 November 2006); the saiga antelope (in effect 24 September 2006); migratory sharks (in effect 1 March 2010); and manatee and small cetaceans of Western Africa and Macronesia (in effect 3 October 2008). Further information about each of the memoranda of understanding is available on the Bonn Convention website, www.cms.int.

⁴⁵⁰ UNEP/CMS/Resolution 9.2 (2008). ⁴⁵¹ Art. VI. ⁴⁵² Arts. VII, VIII and IX.

⁴⁵³ Art. VII. ⁴⁵⁴ Art. XI(1) and (4)–(6).

⁴⁵⁵ The tenth meeting of the Conference of the Parties was held in November 2011.

Birds

The international legal protection of birds is the express objective of two specific agreements: the 1950 Birds Convention and the 1970 Benelux Convention.⁴⁵⁶ Certain species of birds are also subject to protection under the 1971 Ramsar Convention, the 1973 CITES, and agreements under the 1979 Bonn Convention, as well as many treaties of general application to flora and fauna adopted at the regional level. Several important bilateral treaties have also been adopted.⁴⁵⁷

1950 Birds Convention

The only global instrument specifically designed to protect birds is the 1950 International Convention for the Protection of Birds (1950 Birds Convention),⁴⁵⁸ which superseded the 1902 Convention.⁴⁵⁹ The absence of any institutional or financial arrangements to ensure that the Convention is implemented has limited its effectiveness. The 1950 Birds Convention, which has attracted very limited participation, is intended to protect birds in the wild by granting protection to all birds during their breeding season, to migratory birds during their return flight to nesting grounds between March and July, and to species in danger of extinction or of scientific interest throughout the year.⁴⁶⁰ Subject to certain exceptions, the Convention prohibits the import, export, sale, offer for sale, giving or possession of any live or dead bird, or part, or eggs or their shells or broods killed or captured in breach of the Convention.⁴⁶¹ The Convention also outlaws certain methods likely to result in the mass killing or capture of birds or cause them unnecessary suffering.⁴⁶² Articles 6 and 7 set forth a number of exceptions, subject to certain administrative obligations including the grant of individual permits. Each party must prepare a list of birds that may be captured or killed in its territory and a list of species of indigenous or migratory birds which may be kept in captivity, for the purpose of regulating trade in birds, to prevent their destruction, and to promote the creation of undisturbed water or land reserves.⁴⁶³ In one of the earliest international provisions of this kind, parties are called upon to educate the public on the need to preserve and protect birds.⁴⁶⁴

1970 Benelux Convention

The 1970 Benelux Convention on the Hunting and Protection of Birds (1970 Benelux Convention)⁴⁶⁵ further provides for the harmonisation of dates for the opening and closing of hunting

⁴⁵⁶ See also EU Wild Birds Directive, note 314 above.

⁴⁵⁷ See e.g. Convention for the Protection of Migratory Birds in the United States and Canada, Washington, 16 August 1916, 4 IPE 1638; Convention for the Protection of Migratory Birds and Game Mammals (Mexico–United States), 7 February 1936, 178 LNTS 309; and Convention for the Protection of Birds and Birds in Danger of Extinction, and Their Environment (Japan–United States), Tokyo, 4 March 1972, 25 UST 3329. Other bilateral agreements include US–Soviet Union (1976); US–Japan (1972); Japan–Soviet Union (1973); Australia–Japan (1974); Japan–China (1981); India–Soviet Union (1985); and Australia–China (1986).

⁴⁵⁸ Paris, 18 October 1950, in force 17 January 1963, 638 UNTS 185. The Convention has ten parties.

⁴⁵⁹ Paris, 19 March 1902, IELMT 902:22.

⁴⁶⁰ Arts. 1 and 2. In *Count Lippens v. Etat Belge, Ministre d'Agriculture*, 13 March 1964, 47 ILR 336, the Belgian Conseil d'Etat held that Art. 2 did not lay down a positive rule of law, but constituted 'an undertaking on the part of the contracting parties that each one of them will take such steps by way of legislation or regulation as may be necessary to implement it', and it created neither rights nor duties for the individual: *ibid.*, 339.

⁴⁶¹ Arts. 3 and 4. ⁴⁶² Art. 5. ⁴⁶³ Arts. 8–11. ⁴⁶⁴ Art. 10.

⁴⁶⁵ Brussels, 10 June 1970, in force 1 July 1972, 847 UNTS 255.

seasons, procedures and methods permitted for hunting, and the adoption of additional measures for the protection of particular species of birds.⁴⁶⁶

Other animal species⁴⁶⁷

1973 Polar Bear Agreement

The 1973 Agreement on Conservation of Polar Bears (1973 Polar Bear Agreement)⁴⁶⁸ prohibits the taking of polar bears in the Arctic except for *bona fide* scientific, for conservation purposes, or to prevent serious disturbance of the management of other living resources.⁴⁶⁹ Taking is also permitted by local people using traditional methods in the exercise of their traditional rights and wherever polar bears have or might have been subject to taking by traditional means by nationals.⁴⁷⁰ Parties must protect the ecosystems of polar bears, including habitat components such as denning and feeding sites and migration patterns, and must manage populations in accordance with sound conservation practices on the basis of the best available scientific data.⁴⁷¹ Trade in polar bears or their parts is prohibited under the Convention, which also encourages research, actions for compliance by nationals of non-parties, and consultation.⁴⁷² The Convention establishes no institutions, and consultation meetings for the parties have been rare. However, a meeting was held in Norway in 2009. Issues related to polar bear conservation are now also being addressed in broader discussions concerning the Arctic,⁴⁷³ and the impacts of climate change.

1979 Vicuna Convention

The 1979 Convention for the Conservation and Management of the Vicuna,⁴⁷⁴ which is premised in part upon the potential economic benefits of the vicuna, prohibits hunting and illegal trade in the vicuna and its products and derivatives in the territories of all parties, and provides for co-operation on research, technical assistance and training.⁴⁷⁵ Internal and external trade was prohibited until 31 December 1989, but any party may allow trade under strict state control if the population of the vicuna 'would allow the production of meat, viscera and bones, as well as the processing of skins and wool into cloth', and in accordance with internationally recognised marks and in co-ordination with CITES.⁴⁷⁶ Fertile vicunas and their semen or other reproductive material may only be exported to other parties for the purpose of research or repopulation.⁴⁷⁷

⁴⁶⁶ Arts. 1, 2, 4, 7 and 8.

⁴⁶⁷ See also the agreements and memoranda of understanding adopted under the Bonn Convention on Migratory Species, pp. 502–4, above.

⁴⁶⁸ Oslo, 15 November 1973, in force 26 May 1976, 13 ILM 13 (1973); parties are Canada, Norway, United States, Russia and Greenland (Denmark).

⁴⁶⁹ Arts. I and III(1)(a)–(c); 'taking' includes hunting, killing and capturing: Art. I(2).

⁴⁷⁰ Art. III(1)(d) and (c). ⁴⁷¹ Art. II. ⁴⁷² Arts. V, VII and VIII.

⁴⁷³ See Chapter 13, pp. 473 *et seq.*, above.

⁴⁷⁴ Lima, 20 December 1979, in force 19 March 1982, IELMT 979:94; 2 SMTE 74 (unofficial translation), replacing the 1969 Convention for the Conservation of the Vicuna, La Paz, 16 August 1969. See also Agreement for the Protection and Conservation of the Vicuna, Buenos Aires, 2 February 1981.

⁴⁷⁵ Arts. 2, 7 and 8. 'Illegal trade' is defined as 'any form of transaction relating to vicuna and/or its products (sale, barter, import, export, transport, etc.) without control or authorisation from the competent State authority': Art. 9.

⁴⁷⁶ Art. 3. ⁴⁷⁷ Art. 4.

Plants and plant genetic resources⁴⁷⁸

Plant species are subject to protection under several of the global and regional treaties discussed in the earlier sections of this chapter. In addition, several international agreements aim to improve co-operation in controlling pests and diseases of plants and plant production and in preventing their introduction and spread across national boundaries. These include the 1951 International Convention for the Establishment of the European and Mediterranean Plant Protection Organization,⁴⁷⁹ the 1954 Phyto-Sanitary Convention for Africa South of the Sahara,⁴⁸⁰ the 1956 Plant Protection Agreement for the Asia and Pacific Region,⁴⁸¹ the 1959 Agreement Concerning Co-operation in the Quarantine of Plants and Their Protection Against Pests and Diseases,⁴⁸² the 1993 Agreement for the Establishment of the Near East Plant Protection Organization⁴⁸³ and the 1997 FAO International Plant Protection Convention.⁴⁸⁴ These treaties provide for a combination of measures, including the development of national standards, restrictions on import and export, and research on phytosanitary conditions. They focus primarily on averting the spread of plants pests and diseases and the risk they pose to both cultivated and wild plants. They have a particular importance in light of growing knowledge about the impacts of alien invasive species on biodiversity.

In recent years, significant attention has also been paid to the need to address the conservation and sustainable use of plant genetic resources used for food and agriculture. These discussions have been closely linked to, and influenced by, developments relating to access to genetic resources and benefit sharing under the Convention on Biological Diversity and, more recently, the Nagoya Protocol.⁴⁸⁵ In 1983, the FAO Council adopted a non-binding International Undertaking on Plant Genetic Resources (FAO Undertaking) to preserve plant genetic resources and make them as widely available as possible for plant breeding.⁴⁸⁶ The FAO Undertaking was based on 'the universally accepted principle that plant genetic resources are a heritage of mankind' and should be made available without restriction.⁴⁸⁷ Adhering states undertook to protect and preserve the genetic resources of plants growing in their habitat, and to ensure the collection and safeguarding of material where resources were in danger of becoming extinct because of agricultural or other development.⁴⁸⁸ They also undertook to

⁴⁷⁸ S. Johnston, 'Conservation Role of Botanic Gardens and Gene Banks', 2 *Review of European Community and International Environmental Law* 172 (1993); D. Cooper, 'The International Undertaking on Plant Genetic Resources', 2 *Review of European Community and International Environmental Law* 158 (1993); R. L. Margulies, 'Protecting Biodiversity: Recognising International Intellectual Property Rights in Plant Genetic Resources', 14 *Michigan Journal of International Law* 322 (1993); D. Cooper, 'The International Treaty on Plant Genetic Resources for Food and Agriculture', 11 *Review of European Community and International Environmental Law* 1 (2002).

⁴⁷⁹ Rome, 18 April 1951, in force 1 November 1953, UKTS 44 (1956), as amended by the European and Mediterranean Plant Protection Organization (EPPPO) Council on 27 April 1955, 9 May 1962, 18 September 1968, 19 September 1973, 23 September 1982, 21 September 1988 and 15 September 1999.

⁴⁸⁰ London, 29 July 1954, in force 15 June 1956, 1 SMTE 115.

⁴⁸¹ Rome, 27 February 1956, in force 2 July 1956, 247 UNTS 400.

⁴⁸² Sofia, 14 December 1959, in force 19 October 1960, 1 SMTE 153.

⁴⁸³ Rabat, 18 February 1993, not yet in force.

⁴⁸⁴ The 1997 Convention entered into force on 2 October 2005. It amends the 1951 Convention (Rome, 6 December 1951, in force 3 April 1952, 150 UNTS 67, as revised by the FAO Conference in 1979).

⁴⁸⁵ See pp. 457–60 and 464–6 above.

⁴⁸⁶ Rome, 23 November 1983, as supplemented; Res. 8/83 of the twenty-second FAO Conference. The Undertaking was part of the FAO's Global System on Plant Genetic Resources for Food and Agriculture. One hundred and thirteen states expressed their commitment to the Undertaking.

⁴⁸⁷ Art. 1. ⁴⁸⁸ Art. 4.

make plant genetic resources under their control available, free of charge, for scientific research, plant breeding, or genetic resource conservation.⁴⁸⁹ The Undertaking's objective of furthering international co-operation included the establishment of an international network of base collections in gene banks.⁴⁹⁰ In response to concerns that the Undertaking was not compatible with the protection of plant breeders' rights, further resolutions were adopted containing interpretations of the Undertaking. Resolution 4/89 declared that plant breeders' rights under the International Union for the Protection of New Varieties of Plants (UPOV)⁴⁹¹ were not incompatible with the FAO Undertaking, and that an adhering state may impose such minimum restrictions on the free exchange of plant genetic resources as are necessary to conform with national and international obligations.⁴⁹² Resolution 5/89 further addressed the concept of 'farmers' rights'.⁴⁹³ In 1991, notwithstanding the reference to plant genetic resources as 'a heritage of mankind', a further resolution recognised the sovereign rights of states over plant genetic resources.⁴⁹⁴ However, the adoption of the Convention on Biological Diversity in 1992 gave rise to calls for the FAO Undertaking to be revised in light of the Biodiversity Convention's provisions on access to genetic resources and benefit sharing.

In November 1993, the FAO Conference called on its Commission on Genetic Resources for Food and Agriculture to open negotiations for the revision of the Undertaking as a legally binding agreement that would operate in harmony with the Biodiversity Convention. After some seven years of negotiation, the International Treaty on Plant Genetic Resources for Food and Agriculture was adopted in 2001.⁴⁹⁵ Essentially, the Treaty seeks to balance the need for international co-operation and exchange of genetic resources for food and agriculture, in order to meet food security imperatives, with the need to provide for the fair sharing of benefits arising out of the use of such resources. The objectives of the 2001 Treaty are 'the conservation and sustainable use of plant genetic resources for food and agriculture and the fair and equitable sharing of the benefits arising out of their use, in harmony with the Convention on Biological Diversity, for sustainable agriculture and food security'.⁴⁹⁶ In furtherance of these objectives, the parties are to promote an integrated approach to the exploration, conservation and sustainable use of plant genetic resources through activities such as: surveying and collecting plant genetic resources; promoting on-farm, *in situ* and *ex situ* conservation of such resources; and monitoring the maintenance of the viability, the degree of variation, and the genetic integrity of collections of plant genetic resources for food and agriculture.⁴⁹⁷ Parties also commit to develop and maintain policy and legal measures to promote the sustainable use of plant genetic resources, such as the promotion of diverse farming systems and broadening the genetic base of crops.⁴⁹⁸ Pursuant

⁴⁸⁹ Art. 5. ⁴⁹⁰ Art. 7(1)(a).

⁴⁹¹ 1961 UPOV Convention, as revised in 1978. Under the UPOV Convention, a plant variety is subject to protection under the Convention if it is distinct, uniform and stable, and satisfies the requirement of 'novelty'. See International Union for the Protection of New Varieties of Plants, www.upov.int.

⁴⁹² 1989 Agreed Interpretation, paras. 1 and 2.

⁴⁹³ The concept of 'farmers' rights' recognises the contribution that local and indigenous communities, and farmers in all regions of the world, especially those in centres of origin and centres of crop diversity, make to the conservation and sustainable use of the plant genetic resources that are used for food and agriculture. See now Art. 9(1) of the International Treaty on Plant Genetic Resources for Food and Agriculture.

⁴⁹⁴ Res. 3/91.

⁴⁹⁵ FAO Conference Res. 3/2001, Rome, 3 November 2001, in force 29 June 2004. By 30 June 2011, there were 127 parties. See www.planttreaty.org.

⁴⁹⁶ Art. 1. ⁴⁹⁷ Art. 5. ⁴⁹⁸ Art. 6.

to Article 9 of the Treaty, parties are to take measures to protect and promote ‘farmers’ rights’, including traditional knowledge, the right to participate in the equitable sharing of benefits arising from the utilisation of plant genetic resources and the right to participate in national decision-making on matters related to the conservation and sustainable use of plant genetic resources.

Part IV of the Treaty establishes a Multilateral System for access to plant genetic resources for food and agriculture, and the sharing of benefits deriving from their utilisation. The Treaty recognises the sovereign rights of parties over their plant genetic resources, including that the authority to determine access to those resources rests with national governments and is subject to national legislation.⁴⁹⁹ The Multilateral System covers plant genetic resources in food crops and forages, listed in Annex I, which are under the management and control of parties and in the public domain.⁵⁰⁰ Other private entities that hold plant genetic resources are to be encouraged to include those resources within the Multilateral System.⁵⁰¹ The contracting parties undertake to facilitate access by other contracting parties, including natural and legal persons under their jurisdiction, to the plant genetic resources under the Multilateral System.⁵⁰² Access is subject to the condition that it is provided solely for the purpose of utilisation and conservation for research, breeding and training for food and agriculture; pharmaceutical and industrial uses are not permitted.⁵⁰³ Any benefits (including commercial benefits) arising from the use of resources under the Multilateral System are to be shared fairly and equitably through mechanisms such as the exchange of information, access to and transfer of technology, capacity-building and the sharing of any benefits arising from commercialisation.⁵⁰⁴ Benefits are to flow primarily, directly or indirectly, to farmers.⁵⁰⁵

The implementation of the Treaty is overseen by a Governing Body composed of the contracting parties. The Governing Body has oversight of the Multilateral System, may establish subsidiary bodies as necessary, and may consider amendments to the Treaty or its Annexes.⁵⁰⁶ The Governing Body is assisted by a Secretary appointed by the Director General of the FAO.⁵⁰⁷ By 2011, four sessions of the Governing Body had been held.

Cultural and natural heritage and landscape

A number of international agreements have been adopted that establish rules for the conservation of cultural and natural heritage and landscape. Although these are not primarily aimed at the conservation of biodiversity, nature or natural resources, their provisions are generally broad enough to allow them to contribute towards conservation efforts of that type.⁵⁰⁸ The primary instrument is the 1972 World Heritage Convention, which was supplemented in 2001 by the Convention on Underwater Heritage,⁵⁰⁹ and regional heritage treaties have also been

⁴⁹⁹ Art. 10. ⁵⁰⁰ Art. 11.1 and 11.2. ⁵⁰¹ Art. 11.3. ⁵⁰² Art. 12.1. ⁵⁰³ Art. 12.3(a).

⁵⁰⁴ Art. 13. ⁵⁰⁵ Art. 13.3. ⁵⁰⁶ Art. 19. ⁵⁰⁷ Art. 20.

⁵⁰⁸ On the relationship between cultural heritage and the environment, see Chapter 1, pp. 13–15, above, and Chapter 17, pp. 706 *et seq.*, below (relationship with liability for environmental damage).

⁵⁰⁹ 2001 Convention on Underwater Heritage, Paris, 2 November 2001, in force 2 January 2009, 41 ILM 40 (2002). The Convention’s objectives are to ensure and strengthen the protection of underwater cultural heritage and to preserve underwater cultural heritage for the benefit of humanity (Art. 2). It does not apply to natural heritage (Art. 1(1)).

adopted for Europe⁵¹⁰ and the Americas.⁵¹¹ In 2000, the Council of Europe adopted the European Landscape Convention.⁵¹²

1972 World Heritage Convention

The 1972 Convention for the Protection of the World Cultural and Natural Heritage⁵¹³ (1972 World Heritage Convention), adopted under the auspices of UNESCO, establishes a 'system of collective protection of the cultural and natural heritage of outstanding universal value, organised on a permanent basis and in accordance with modern scientific methods'.⁵¹⁴ 'Natural heritage' is defined to include: (1) natural features 'of outstanding universal value from the aesthetic or scientific point of view'; (2) geological and physiological formations and areas 'which constitute the habitat of threatened species of animals and plants of outstanding universal value from the point of view of science or conservation'; and (3) natural sites or areas 'of outstanding universal value from the point of view of science, conservation or natural beauty'.⁵¹⁵

Under Article 3 of the Convention, each party is responsible for identifying and delineating its own cultural and natural heritage sites. Parties recognise their duty to protect, conserve present and transmit cultural and natural heritage on their territories to future generations.⁵¹⁶ To that end, each party must adopt a general policy to integrate such protection into comprehensive planning programmes, to set up appropriate services, to foster training, to take necessary legal and other measures, and to submit reports to the General Conference of UNESCO on measures it has taken.⁵¹⁷ More specifically, each party is 'not to take

⁵¹⁰ 1969 European Convention on the Protection of Archaeological Heritage, London, 6 May 1969, in force 20 November 1970, 788 UNTS 227. A revised convention was adopted in Valetta on 16 January 1992, ETS No. 143. See also European Cultural Convention, Paris, 19 December 1954, in force 5 May 1955, 218 UNTS 139.

⁵¹¹ Convention on the Protection of the Archaeological, Historical and Artistic Heritage of the American Nations, Santiago, 16 June 1976, in force 30 June 1978, 15 ILM 1350 (1976); see also 1935 Treaty on the Protection of Artistic and Scientific Institutions and Historic Monuments, in force 26 August 1935, 167 LNTS 289.

⁵¹² 2000 European Landscape Convention, Florence, 20 October 2000, in force 1 March 2004, <http://conventions.coe.int/Treaty/en/Treaties/Html/176.htm>. The aims of the Convention are 'to promote landscape protection, management and planning, and to organise European co-operation on landscape issues' (Art. 3), and to that end it provides for national measures (Arts. 4–6) and European co-operation (Arts. 7–11), including in relation to 'transfrontier landscapes' (Art. 9). Landscape is defined as 'an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors' (Art. 1(a)).

⁵¹³ See F. Francioni with F. Lenzerini (ed.), *The 1972 World Heritage Convention: A Commentary* (2008).

⁵¹⁴ Paris, 16 November 1972, in force 17 December 1975, 1037 UNTS 151, Preamble; 187 states are party.

⁵¹⁵ Art. 2. 'Cultural heritage' includes monuments, groups of buildings and sites of outstanding universal value from the point of view of, *inter alia*, history, art, science, aesthetics, ethnology or anthropology: Art. 1.

⁵¹⁶ Art. 4.

⁵¹⁷ Arts. 5 and 29. In *Commonwealth of Australia and Another v. State of Tasmania and Others* (Judgment of 1 July 1983, 68 ILR 266; see T. C. Atherton and T. Atherton, 'The Power and the Glory: National Sovereignty and the World Heritage Convention', 69 *Australian Law Journal* 631 (1995)), the Australian High Court was required to interpret Arts. 4 and 5 of the 1972 Convention, and by a narrow majority held that the provisions imposed an international obligation on Australia to take appropriate measures for the preservation of the world heritage area. The case arose following the nomination by the Commonwealth of Australia in November 1991, at the request of the Premier of the State of Tasmania, of three parks in southwest Tasmania for inclusion on the World Heritage List. Australia maintained the nomination despite the request for its withdrawal by the next Premier of Tasmania who took over following an election. In December 1982, the World Heritage Committee included the three parks in the World Heritage List under Art. 11(2) of the Convention. The government of Tasmania nevertheless authorised and commenced work on the construction of a hydroelectric dam which would have flooded a large part of the nominated area. In entering the parks on the List, the World Heritage Committee expressed its concern at the likely effect of the construction of the dam and recommended that 'the Australian authorities take all possible

any deliberate measures which might damage directly or indirectly the cultural and natural heritage' of the territory of other parties.⁵¹⁸

The Convention is administered by the World Heritage Committee, which comprises twenty-one parties representing an 'equitable representation of the different regions and cultures of the world', a secretariat at UNESCO, and the General Assembly of states parties to the Convention.⁵¹⁹ Parties submit inventories of their properties to the World Heritage Committee, from which the Committee maintains a World Heritage List of sites, which now amounts to 936 sites in 153 states, of which 725 are cultural, 183 are natural, and 28 are mixed.⁵²⁰ Inclusion on the List requires the consent of the party or parties concerned.⁵²¹ From the World Heritage List the Committee establishes a subsidiary 'List of World Heritage in Danger', comprising sites threatened by 'serious and specific dangers' and for the conservation of which 'major operations' are necessary and for which assistance under the Convention is requested.⁵²² The Committee has established criteria for both lists. Properties included or potentially suitable for inclusion in the lists can receive international assistance to secure their protection, conservation, presentation or rehabilitation.⁵²³

The Convention establishes a World Heritage Fund as a trust fund of compulsory and voluntary contributions and other resources, the use of which is to be decided by the Committee.⁵²⁴ Any party may request international assistance for cultural or natural heritage property identified on the List or the Danger List that has outstanding universal value situated within its territory.⁵²⁵

CONCLUSIONS

The conservation of biodiversity presents enormous regulatory challenges to international law. The threats to biodiversity come from a multitude of sources, requiring a comprehensive approach to regulation of a broad range of human activities and accommodation of diverse interests and priorities. At the same time, the knowledge base from which to formulate and implement action to address biodiversity loss remains incomplete. Moreover, the conservation of biodiversity illustrates clearly the range of difficulties which exist in developing and applying rules of international law to resources which frequently do not respect national boundaries or are found in areas beyond national jurisdiction, and which require full consideration to be given to the social, cultural, ecological and economic values which different people place on different species, habitats and ecosystems. The conservation of biodiversity has, for many individuals and communities, a particularly important symbolic value, which also raises

measures to protect the integrity of the property'. The Australian government then adopted the World Heritage Properties Conservation Act 1983 and Regulations under the National Parks and Wildlife Conservation Act 1975 (Commonwealth) which would make the construction of the dam unlawful on the basis, *inter alia*, that it was necessary to give effect to the provisions of the 1972 Convention. Central to the case was the question of whether Arts. 4 and 5 of the World Heritage Convention imposed any legal obligation upon Australia to protect the area entered on the List and, if so, what kind of obligation. A four-judge majority of the High Court held that Arts. 4 and 5 imposed an international obligation on Australia to take appropriate measures for the preservation of the world heritage area.

⁵¹⁸ Art. 6(3). ⁵¹⁹ Arts. 8(1) and (2), 14 and 16(1). ⁵²⁰ Art. 11(1) and (2). ⁵²¹ Art. 11(3).

⁵²² Art. 11(4). These dangers include the threat of disappearance from accelerated deterioration, development projects, armed conflict, and natural disasters including changes in water level, floods and tidal waves: *ibid.*

⁵²³ Art. 13(1). ⁵²⁴ Arts. 13(6) and 15–18; Chapter 16, p. 675, below. ⁵²⁵ Arts. 19 and 20.

issues about the balance to be struck between the conservation of nature and the conduct of human behaviour; the role of law must, ultimately, be limited to reflecting the values which humans ascribe to other forms of life.

From the cumulative experience within the existing treaty arrangements, it is possible to obtain a sense of the effectiveness of various regulatory techniques. Many of the lessons learned about governance and the conservation of biodiversity apply equally to other areas of international environmental law. Perhaps the most important lesson relates to implementation and enforcement. It is clear that the adoption of regulations and the development of innovative regulatory techniques will not in themselves conserve biodiversity: international obligations need to be implemented and enforced, locally, regionally and globally, through the joint efforts of citizens, governments and international organisations. International agreements addressing biodiversity frequently contain provisions addressing capacity-building, and/or have designed and implemented programmes to assist developing country parties to build the legal frameworks and human and institutional capacity to implement and enforce national implementing laws. These efforts are now increasingly backed up by financial support through the Global Environment Facility and inputs from other multilateral and bilateral donors.

While supporting national implementation of international commitments on biodiversity is one aspect of the compliance question, another is establishing meaningful reporting and other mechanisms to monitor compliance where clear obligations are established under biodiversity-related agreements. The limited success of many existing legal arrangements derives from the lack of appropriate arrangements to address non-compliance, and the inability to adopt sanctions that can be enforced. In this regard, there is also much to be said for making greater use of the sanctions available under national legal systems.

International rules to address the conservation of biodiversity have been developed over a long period and reflect a consistent effort to balance economic development with protection of species and the habitats. International law and policy-making now reflect, at least in principle, a deeper understanding of the value of biodiversity to human life and well-being: the conservation and sustainable use of biodiversity is increasingly seen not as a barrier to poverty alleviation, but as an important contributor to it, and more broadly to progress towards achieving the Millennium Development Goals.⁵²⁶ International action on biodiversity over the coming decade will likely be centred on the Aichi Biodiversity Targets established by the Conference of the Parties to the Biodiversity Convention in October 2010. Recent moves towards adopting an ecosystem approach make clear that the limited effectiveness of regulating particular species or types of species is recognised, and a broader approach to the conservation and sustainable use of biodiversity is now underway.

Alongside the Biodiversity Convention, other international and regional agreements outlined in this chapter can play an important role in achieving these targets, provided they are implemented effectively. In some instances, the other biodiversity-related treaties, such as CITES, contain more specific commitments, targeted at particular components of biodiversity or at addressing particular threats. In other cases, there may be overlaps. For instance, the parties to the Apia Convention (a regional convention covering the Pacific) determined that, since the Biodiversity Convention now covered the issues that the Apia Convention had been

⁵²⁶ Chapter 6, p. 212, above.

designed to address, the operation of the regional convention could be suspended. Other regional agreements have been adopted but have failed, to date at least, to enter into force. On the other hand, it is clear that there remain gaps in the international legal framework: a global convention addressing forests is one obvious gap that the international community seems in no rush to fill; the lack of regional arrangements in Asia is another. Moreover, there is clearly scope for further range state arrangements addressing various migratory species under the Bonn Convention, for forms of co-operation in the protection and management of trans-boundary ecosystems, or for instruments that facilitate regional co-operation in the enforcement of national laws for the conservation and sustainable use of biodiversity. Indeed, there may be much to be gained from rather more narrowly focused regional and sub-regional instruments of this type, and by practical arrangements for the sharing of information and experience, rather than through the broader programmatic provisions of some of the existing regional arrangements, that often tend to replicate commitments already taken on by the parties under international agreements.

Another key challenge for achieving conservation objectives and the Aichi Biodiversity Targets lies in improving the integration of biodiversity consideration into other sectoral areas. Unless ways are found, through law and other mechanisms, to achieve such integration, the indirect drivers or underlying causes of biodiversity loss will not be addressed. This requires enhanced efforts in domestic law – and policy-making, but also calls for greater attention to the relationship of the biodiversity regime with other areas of international law and policy that govern some of the key direct and indirect drivers of biodiversity loss. In particular, it seems likely that the impacts of climate change, and of measures to mitigate and adapt to climate change, on biodiversity will be the subject of increasing attention in the coming years. But, as noted earlier in this chapter, the goals of conservation and sustainable use of biodiversity will not be achieved unless ways are also found to build biodiversity considerations effectively into other international regimes addressing, *inter alia*, trade, food security and the marine environment.

11

Hazardous substances and activities

INTRODUCTION

International environmental law has tended to regulate specific environmental media and/or resources rather than particular activities or products. There is, however, now a significant body of rules which regulate those activities or products considered by the international community, within a region or globally, to be hazardous or dangerous and to merit specific attention. The Biosafety Protocol, regulating certain categories of genetically modified organisms produced via processes of biotechnology, is one such example considered in the previous chapter. The reason for international attention to these substances and activities lies in their potential for global or transboundary impacts on human health or the environment. For instance, toxic chemicals such as dioxins persist in the environment over long timeframes and can be dispersed through air or water over a large area. Equally, activities such as the generation of nuclear energy warrant international regulatory involvement when poor safety practices or accidents result in widespread radioactive contamination.

As will be seen, hazardous substances and activities are not presently regulated by any single international organisation or treaty that establishes principles and rules of general application to all such substances or activities. The international community has instead adopted broad policy guidelines. Principle 6 of the 1972 Stockholm Declaration declared that the 'discharge of toxic substances or of other substances and the release of heat, in such quantities or concentrations as to exceed the capacity of the environment to render them harmless, must be halted in order to ensure that serious or irreversible damage is not inflicted upon ecosystems'. According to Principle 14 of the Rio Declaration, 'states should effectively co-operate to discourage or prevent the relocation and transfer to other states of any activities and substances that cause severe environmental degradation or are found to be harmful to human health'. Rules developed after the 1972 Stockholm Conference arise from a range of international acts of differing legal qualities, with competence devolved to different international organisations. This has contributed to a certain lack of coherence, and to reactive and fragmented rules which may be difficult to identify or interpret. The result is a patchwork of international regulations the applicability of which depends upon the nature and characteristics of a particular substance and the location where it is being manufactured or used. For hazardous substances in particular, the absence of global rules is a real problem, since such substances may be easily transportable and do not, as a general matter, distinguish in their damaging effects between different peoples or environments.

Industrialised countries have put in place an extensive and complex body of binding legal obligations regarding hazardous substances and activities under domestic law and regional agreements, including EU law and OECD acts. However, the extent to which many of these rules apply to the activities of their registered corporations in developing countries is not clear despite calls for companies to demonstrate a commitment, in respect of toxic chemicals, 'to adopt standards of operation equivalent to or not less stringent than those existing in the country of origin'.¹ Moreover, the standards and approaches adopted in domestic law regarding hazardous substances are diverse and often divergent, highlighting the need for multilateral harmonisation efforts to ensure effective control over the production, use and international trade of toxic chemicals. An important step in this direction has been the development of a 'Globally Harmonized System of Classification and Labelling of Chemicals' (GHS) under the auspices of the UN,² although national implementation remains a problem.

This chapter describes particular aspects of the management of hazardous substances over their life-cycle. In the absence of a comprehensive global framework governing the area, the chapter examines international rules relating to different aspects of the risk management of hazardous substances, namely: (a) accident prevention, preparedness and response; (b) the classification, labelling, international trade and transportation of hazardous chemicals and pesticides; and (c) control of exposure to hazardous substances in the working environment. This chapter also identifies and outlines the main international regulations that address activities considered to be particularly damaging to the environment. Nuclear activities, such as the generation of nuclear energy or the proliferation or testing of nuclear weapons, are an important example in this regard that have been the subject of extensive regulation. However, the chapter also discusses other potentially environmentally hazardous activities, such as energy, mining, transport, agriculture and tourism for which dedicated international rules are only just beginning to emerge.

The discussion in this chapter does not touch on all aspects of international regulation relevant to the management of hazardous substances and activities. To develop a comprehensive understanding of the extent to which international law regulates hazardous activities and substances, it is necessary also to consider: the disposal of and international trade in hazardous wastes (Chapter 12); the disposal of hazardous wastes at sea or in freshwater (Chapters 8 and 9); the environmental impact assessment of hazardous activities (including lists and annexes indicating categories of activities which require prior environmental assessment) (Chapter 14); information on hazardous activities and substances (including activities in respect of which information must be made available to the public or for which environmental auditing or accounting is recommended) (Chapter 15); the regional rules of the Antarctic (Chapter 13); and the rules on international liability for environmental damage caused by hazardous activities and substances (Chapter 17). In addition, the first hazardous substances the production of which was prohibited by international law – certain ozone-depleting substances – are subject to the specific global regime described in Chapter 7 in relation to the protection of the atmosphere.

¹ UN GAOR 46th Sess., Agenda Item 21, UN Doc. A/Conf.151/26 (1992) (Agenda 21), para. 19.52(d). On the OECD's guidelines for multinational enterprises, see Chapter 3, pp. 89–90, above.

² GHS (2009, 3rd edn), ST/SG/AC.10/30/Rev.3.

Definition of hazardous substances

International rules regarding hazardous substances and activities to date have not been developed or applied in the framework of a co-ordinated regulatory strategy. One consequence is the lack of a general definition under international law as to what constitutes a hazardous or dangerous activity or substance. The International Law Commission (ILC) in its draft Articles on Prevention of Transboundary Harm from Hazardous Activities did not define the term 'hazardous',³ although by implication from the scope of the draft Articles this covers activities 'which involve a risk of causing significant transboundary harm through their physical consequences'.⁴ In addition, many industrial and other activities that may, over time, pose significant long-term environmental threats are not subject to significant specific international environmental regulation. Examples include transport, mining, agriculture and energy generation.

At least four approaches to the definition of hazardous or dangerous substances and activities are discernible in international agreements. The most common approach defines hazardous substances and activities by reference to their inherent characteristics, including their toxicity, flammability, explosiveness and oxidisation.⁵ A second approach characterises activities as hazardous by reference to a listing system which identifies certain activities or projects on the basis that they are, *per se*, likely to have significant effects on the environment.⁶ A third approach defines hazardous substances by reference to national laws. Finally, a fourth approach (which is increasingly utilised) is reflected in those efforts that do not seek to establish definitions of general application but instead regulate specific substances.⁷ This approach underpins the most recent international efforts to regulate hazardous substances, such as the 1998 Chemicals Convention and the 2001 Persistent Organic Pollutants (POPs) Convention.

ACCIDENT PREVENTION, PREPAREDNESS AND RESPONSE

Many of the chemicals used widely in manufacturing and industrial processes present potential hazards to human health and the environment. One of the major ways in which these substances may affect people and the environment is if industrial accidents occur resulting in the environmental release of large quantities of chemical pollutants. Well-publicised incidents, such as those in Seveso, Italy, and Bhopal, India, have

³ The commentary to the draft Articles does elaborate the concept of an 'ultrahazardous activity' as 'an activity with a danger that is rarely expected to materialize but might assume, on that rare occasion, grave (more than significant, serious or substantial) proportions': ILC, Draft Articles on Prevention of Transboundary Harm from Hazardous Activities with commentaries, 2001, in *Yearbook of the International Law Commission* (2001-II), Part 2, commentary to Art. 1, para. 2.

⁴ Art. 1.

⁵ 1996 EU Seveso Directive, pp. 518–19, below; 1992 Industrial Accidents Convention, pp. 519–21, below; and the various instruments relating to transport, p. 532, below; 1993 Lugano Convention, Chapter 17, pp. 766–70, below, Art. 2(1) and (2) and Annex I; 1993 ILO Accidents Convention, Art. 3(a).

⁶ 1985 EU EIA Directive (as amended), Chapter 14, p. 605, fn 23, below; 1991 Espoo Convention, Chapter 14, pp. 610–13, below; World Bank Operational Directive 4.01, Chapter 14, pp. 617–19, below.

⁷ 1985 Vienna Convention and 1987 Montreal Protocol, Chapter 7, pp. 262–74, above; 1986 Asbestos Convention, p. 534, below; 1998 Chemicals Convention, pp. 530–2, below; 2000 Biosafety Protocol, Chapter 10, pp. 468–71, above; 2001 POPs Convention, pp. 524–6, below. See also the 2003 Protocol on Civil Liability and Compensation to the Industrial Accidents and Transboundary Watercourse Convention, Art. 2(2)(f) and Annex I.

highlighted the potential for serious accidents to release toxic chemicals, causing widespread harm including transboundary impacts.⁸

Such incidents have provided the impetus for the conclusion of several international agreements that promote international co-operation on accident prevention, preparedness and response in relation to hazardous activities or substances. Some agreements in this category relate to the provision of information in certain emergency situations,⁹ or have been adopted to address particular hazards, such as radioactive substances,¹⁰ or oil pollution at sea.¹¹ A large number of bilateral treaties also address transboundary accident preparedness and prevention, such as the agreement between the United States and Mexico on the discharge of hazardous substances along their international boundary. This establishes a joint contingency plan to deal with polluting incidents, consultation, and joint responses to polluting incidents, and establishes a 'Joint Response Team' to, *inter alia*, advise on measures needed to respond to the incident and to take measures to co-ordinate resources.¹²

International institutions have also been active in the area of industrial accident prevention. For instance, the International Labour Organization (ILO) adopted a Code of Conduct on Major Industrial Accidents,¹³ and a Convention on the Prevention of Major Industrial Accidents, which draws on regional arrangements, and establishes responsibilities for the employer and public authorities, in relation to the conduct of activities and the preparation of emergency preparedness arrangements.¹⁴ The OECD has prepared Guiding Principles for Chemical Accident Prevention, Preparedness and Response, with an updated second edition released in 2003.¹⁵ The Principles address issues of planning, construction, management, operation and review of safety performance of industrial installations that employ hazardous processes. UNEP runs a programme on Awareness and Preparedness for Emergencies at the Local Level (APELL),¹⁶ and in 1991 established, on an experimental basis, a UN Centre for Urgent Environmental Assistance to address the assessment of and responses to man-made environmental emergencies, including industrial accidents.¹⁷ The short-lived Centre was replaced by the Joint Environment Unit, which combines UNEP's technical environmental expertise with the humanitarian response structure of the UN Office for the Coordination of Humanitarian Affairs.

⁸ In 1976, the release of a cloud of dioxin (tetrachlorodibenzoparadiioxin) from a pesticides/herbicides chemical plant in the Italian town of Seveso, resulted in a large-scale evacuation and the treatment of as many as 2,000 people for dioxin poisoning. In 1984, methyl isocyanate gas escaped from a US-owned pesticide plant in Bhopal, India, and killed 3,787 people.

⁹ OECD Council Decision on Exchange of Information Concerning Accidents Capable of Causing Transfrontier Damage (Preamble, Appendices I-III), 8 July 1988, 28 ILM 247 (1989); OECD Council Decision/Recommendation on Provision of Information to Public and Public Participation in Decision Making Processes Related to the Prevention of, and Responses to, Accidents Involving Hazardous Substances, 8 July 1988, OECD C(88)85, 28 ILM 277 (1989).

¹⁰ See pp. 537-40, below.

¹¹ Chapter 9, pp. 391-5, above.

¹² Agreement of Co-operation Between the United States of America and the United Mexican States Regarding Pollution of the Environment Along the Inland International Boundary by Discharges of Hazardous Substances (Annex II to the US-Mexico Environment Co-operation Agreement), 18 July 1985, in force 29 November 1985, 26 ILM 19 (1987), Arts. II, III, V and VI and Appendices I and II.

¹³ Prevention of Major Industrial Accidents: An ILO Code of Practice (1991).

¹⁴ Convention No. 174 on the Prevention of Major Industrial Accidents, Geneva, 22 June 1993, in force 3 January 1996.

¹⁵ OECD Guiding Principles for Chemical Accident Prevention, Preparedness and Response (2003, 2nd edn), www.oecd.org/dataoecd/10/37/2789820.pdf.

¹⁶ See UNEP Governing Council Decision 21/17, Further Improvement of Environmental Emergency Prevention, Preparedness, Assessment, Response and Mitigation (2001).

¹⁷ UNEP Governing Council Decision 16/9 (1991); UNGA Res. 44/224 (1989).

Its main focus has been on sudden events requiring immediate and urgent action, including industrial, transport, oil spill and other technological emergencies.¹⁸

The two most important instruments adopted to date are regional agreements, which aim to establish rules applicable to a wide range of hazardous and dangerous activities. The first of these is the EU Seveso Directive, adopted in the aftermath of the Seveso accident, which was replaced by the Seveso II Directive in 1996. While only applicable to EU member states, the Directive has broader significance, given its influence on the adoption of other international regulations in the area. For instance, the second major treaty, the 1992 UNECE Convention on Industrial Accidents, draws heavily on the Seveso Directive.

1996 EU Seveso Directive

EU rules are now to be found in a 1996 Directive (itself extended by Directive 2003/105/EC), which replaced the 1982 Directive adopted following a major industrial accident at Seveso, Italy.¹⁹ The 1996 Directive has a more extensive application than the original 1982 law, by reason of the lower thresholds it applies, and provides more detailed obligations in relation to the prevention of accidents and the provision of information after they have occurred. Following the occurrence of further industrial accidents at Toulouse, Baia Mare and Enschede, the Seveso II Directive was extended in 2003.²⁰ As a consequence, the Directive now applies to risks arising from storage and processing activities in mining, from pyrotechnic and explosive substances, and from the storage of ammonium nitrate and ammonium-nitrate-based fertilizers.

The 1996 Directive is aimed at preventing major accidents that involve dangerous substances, and the limitation of their consequences for man and the environment. It is applicable to establishments where dangerous substances are present in quantities exceeding limits as listed in its Annex I.²¹ A major accident is defined as:

an occurrence such as a major emission, fire, or explosion resulting from uncontrolled developments in the course of the operation of any establishment covered by this Directive, and leading to serious danger to human health and/or the environment, immediate or delayed, inside or outside the establishment, and involving one or more dangerous substances.²²

Dangerous substances are substances, mixtures or preparations listed in Annex 1, Part 1 (named substances) or fulfilling the criteria laid down in Annex 1, Part 2 (substances classified as hazardous under certain EU Directives or on account of their characteristics), and which are present as a raw material, product, by-product, residue or intermediate, including substances

¹⁸ See now the Joint UNEP/Office for the Co-ordination of Humanitarian Affairs (OCHA) Environment Unit ('the United Nations mechanism which mobilizes and coordinates emergency assistance to countries affected by environmental emergencies and natural disasters with significant environmental impact'), <http://ochaonline.un.org/OCHAHome/AboutUs/Coordination/EnvironmentalEmergencies/MainBodies/tabid/6319/language/en-US/Default.aspx>.

¹⁹ Council Directive 96/82/EC on the control of major-accident hazards involving dangerous substances, OJ L10, 14 January 1997, 13 (repealing and replacing Council Directive 82/501/EEC, OJ L230, 5 August 1982, 1, as amended).

²⁰ A review of the Seveso II Directive has recently been concluded, resulting in the adoption of a proposal by the Commission for a new Directive to repeal and replace the current Directive by 1 June 2015. See further <http://ec.europa.eu/environment/seveso/review.htm>.

²¹ Arts. 1 and 2(1). ²² Art. 3(5).

which may be generated in the event of accident.²³ The Directive does not apply to certain installations, including nuclear and military installations, transport (including in pipelines), extractive industries and waste landfill sites.²⁴

Member states must ensure that operators take all measures necessary to prevent major accidents and to limit their consequences for man and the environment, to notify certain activities, prepare a document setting out the major accident prevention policy (and ensure that it is properly implemented) and prepare a safety policy.²⁵ The Directive also requires national authorities to identify (on the basis of notifications received) establishments where 'the likelihood and the possibility or consequences of a major accident may be increased because of the location and the proximity of such establishments, and their inventories of dangerous substances' (referred to as the 'domino effect').²⁶ Member states are required to ensure that operators responsible for the establishments to which Article 9 applies draw up emergency plans (in accordance with Annex IV), that the objectives of preventing major accidents and limiting consequences are taken into account in land-use and other relevant policies, and that any establishment, installation or storage facility where the measures taken by the operator for the prevention and mitigation of major accidents are seriously deficient is not used.²⁷ Safety plans are to be made available to persons liable to be affected by a major accident originating in an establishment covered by Article 9, and provision is made for inspections, for the information that is to be provided in the event of an accident (including to the European Commission) and for information systems and the exchange of information.²⁸

1992 Industrial Accidents Convention

The 1992 Convention on the Transboundary Effects of Industrial Accidents (1992 Industrial Accidents Convention) was adopted under the auspices of the UNECE and follows the approach of the original 1982 Seveso Directive. Its objectives include the prevention of, preparedness for, and response to industrial accidents, including those caused by natural disasters.²⁹ The Convention does not prejudice 'any obligations of the parties under international law with regard to industrial accidents and hazardous activities'.³⁰ The Convention applies to industrial accidents from activities involving hazardous substances, including categories of substances and preparations and named substances which are set out in Annex I.³¹ It does not apply to nuclear accidents or accidents at military installations, dam failures, certain land-based transport accidents, accidental releases of genetically modified organisms, activities in the marine environment, and spills of oil and other harmful substances at sea.³²

Parties must identify hazardous activities within their jurisdiction and ensure that affected parties are notified, holding any necessary discussions on the identification of hazardous

²³ Art. 3(4). ²⁴ Art. 4.

²⁵ Arts. 5–7 and 9, and Annex III (setting out the principles to be followed in establishing the policy).

²⁶ Art. 8 and Annex II. ²⁷ Arts. 11, 12 and 17. ²⁸ Arts. 14, 15, 18 and 19.

²⁹ 17 March 1992, in force 19 April 2000, 31 ILM 1330 (1992), Art. 2(1); there are forty parties to the Convention.

³⁰ Art. 3(5).

³¹ Art. 1(a) and (b) and Annex I. The Convention follows the same categories as the original Seveso Directive and adds a new category of 'dangerous for the environment'.

³² Art. 2(2).

activities that are reasonably capable of causing transboundary effects.³³ Annex III establishes procedures for consultations between parties of origin and potentially affected parties.³⁴ The Convention promotes international co-operation and the implementation of policies and strategies towards measures of prevention, preparedness and response, including restoration, and requires parties to ensure that operators take ‘all measures necessary’ for the safe performance of hazardous activities and for the prevention of industrial accidents.³⁵ Annex IV details the preventive measures to be taken, including: the setting of safety objectives; the adoption of legislative provisions or guidelines concerning safety measures and standards; the identification of activities requiring licensing or authorisation; risk evaluation for hazardous activities; information provision to authorities; application of the ‘most appropriate technology’; appropriate education and training; the establishment of managerial structures and practices; and the monitoring and auditing of hazardous activities.³⁶ Operators are required to demonstrate the safe performance of the hazardous activity.³⁷

Parties must develop policies on the siting of activities to minimise risk to the population and environment of all affected parties,³⁸ and establish and maintain adequate emergency preparedness, including on-site and off-site contingency plans.³⁹ In areas capable of being affected by an industrial accident arising out of a hazardous activity, the public must be given adequate information and an opportunity to participate in the relevant procedures on the development of prevention and preparedness measures.⁴⁰ The Convention goes beyond the Espoo Convention, by also providing that:

Parties shall, in accordance with their legal systems and, if desired, on a reciprocal basis provide natural or legal persons who are being or are capable of being adversely affected by the transboundary effects of an industrial accident in the territory of a party, with access to, and treatment in, the relevant administrative and judicial proceedings, including the possibilities of starting a legal action and appealing a decision affecting their rights, equivalent to those available to persons within their own jurisdiction.⁴¹

The Convention establishes an industrial accident notification system, and requires parties to ensure that adequate response measures are taken as soon as possible, using the most efficient methods to contain and minimise effects.⁴² The Convention establishes a framework for mutual assistance, requires parties to support appropriate international efforts to elaborate rules on responsibility and liability, and supports research and development and the exchange of information and technology.⁴³ The Convention is administered by the competent authorities

³³ Art. 4(1) and (2). Disagreement on whether an activity is hazardous may be submitted by any affected party to an inquiry commission in accordance with Annex II for advice: *ibid.*

³⁴ Art. 4(3) and Annex III. ³⁵ Art. 3(1)–(3). ³⁶ Art. 6(1) and Annex IV. ³⁷ Art. 6(2) and Annex V.

³⁸ Art. 7 and Annex V, para. 2(1)–(8), and Annex VI. ³⁹ Art. 8 and Annex V, para. 2(1)–(5), and Annex VII.

⁴⁰ Art. 9(1) and (2) and Annex V, para. 2(1)–(4) and (9), and Annex VIII.

⁴¹ Art. 9(3); on the 1991 Espoo Convention, see Chapter 14, pp. 610–13, below.

⁴² Art. 10 and Annex IX, and Art. 11. The first Conference of the Parties (November 2000) accepted a more detailed UNECE Industrial Accident Notification (IAN) System, based on three reports (early warning, information, request for assistance). In 2008, the IAN System was enhanced by the development of a web-based application, www.unece.org/env/teia/pointsofcontact.html.

⁴³ Arts. 12–16 and Annexes X and XI. Information is to be subject to rules of confidentiality: Art. 22.

of each party, annual meetings of the Conference of the Parties, and a secretariat provided by the UNECE.⁴⁴ The Convention is supplemented by a Protocol (not yet in force) establishing a civil liability regime that relates to damage caused by the transboundary effects of industrial accidents on transboundary waters.⁴⁵

CHEMICALS, PESTICIDES AND OTHER DANGEROUS SUBSTANCES⁴⁶

According to Agenda 21 there are approximately 100,000 chemical substances in commerce, many of which appear as pollutants and contaminants in food, commercial products and the various environmental media, but for a great number of which there is insufficient scientific information for the assessment of risks.⁴⁷ The environmental risks posed by such chemicals may be of concern to international law where the chemicals can be widely dispersed throughout the environment and/or persist and accumulate in the environment over long timeframes, thus posing threats of transboundary harm. Chemicals that are classified as 'persistent organic pollutants' (POPs) fall into this category and are subject to regulation under a specific treaty regime, the 2001 POPs Convention. Transboundary impacts may also arise where toxic chemicals are the subject of transportation and international trade. The potential for 'dumping' of hazardous substances and wastes in their territories has long been a concern of developing countries, especially in regions of Africa and South America where regulatory and technological capacity to deal with chemicals safely may be limited.⁴⁸

Many aspects of pesticide regulation fall within the general regulatory framework for chemicals, and are often categorised within the sub-group of hazardous chemicals but not necessarily named as pesticides. However, pesticides must be distinguished from hazardous chemicals because they are often highly toxic, produced and used in large quantities, and widely applied over large areas of land directly to the environment and over foodstuffs in such a way as to limit individual control over them. Studies have shown that fertiliser use worldwide increased by almost 250 per cent in the twenty years between 1966–8 and 1986–8 and that worldwide pesticide use increased by 13 per cent in the period 1975–84. Moreover, declines reported in some countries were offset by the increased potency of pesticides used.⁴⁹

Ultimately, treaties and other international acts which have as their objective the international regulation of chemicals, pesticides and other hazardous substances aim at a policy of

⁴⁴ Arts. 17–20. Annex XII sets out tasks for mutual assistance to be subject to the Conference of the Parties' programme of work.

⁴⁵ Chapter 17, pp. 770–1, below.

⁴⁶ R. Brickman, S. Jasanoff and T. Ilgen, *Controlling Chemicals: The Politics of Regulation in Europe and the United States* (1985); G. Rose, 'Prior Informed Consent: Hazardous Chemicals', 1 *Review of European Community and International Environmental Law* 64 (1992); W. Howarth, 'Poisonous, Noxious, or Polluting: Contrasting Approaches to Environmental Regulation', 56 *Modern Law Review* 171 (1993); M. Pallemerts, *Toxics and Transnational Law: International and European Regulation of Toxic Substances as Legal Symbolism* (2003); H. Selin, 'Global Politics and Policy of Hazardous Chemicals', in R. Axelrod, S. VanDeveer and D. Downie, *The Global Environment: Institutions, Law and Policy* (2011, 3rd edn), 172.

⁴⁷ Agenda 21, paras. 19.1 and 19.11.

⁴⁸ Bamako Convention on the Ban of the Import into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes within Africa (Bamako Convention), 29 January 1991, in force 22 April 1998, 30 ILM 775 (1991). See further Chapter 12, pp. 571–2, below.

⁴⁹ See UNEP, *Environmental Data Report* (1991), 142.

pollution prevention achieved through minimising, or phasing out, the use of these substances. In furtherance of this goal, international instruments have adopted a multi-pronged approach addressing four related issues: registration and classification (including labelling and packaging); production and use; international trade; and transport.

Registration and classification (including labelling and packaging)

International rules and practices for the registration and classification of hazardous substances are extensive as a result of the activities of the ILO, UNEP, WHO, FAO, OECD and the EU. Space limitations foreclose the possibility of a detailed assessment of the numerous instruments that have been developed, most of which are not legally binding but nevertheless provide evidence of widely accepted international standards and practices.

The main registration and classification schemes are those applied: by UNEP, ILO and WHO, under the International Programme on Chemical Safety (IPCS);⁵⁰ by UNEP under the International Register of Potentially Toxic Chemicals (IRPTC);⁵¹ by the WHO;⁵² and by the UN Economic and Social Council (ECOSOC).⁵³ In addition, the 1990 Convention Concerning Safety in the Use of Chemicals at Work requires states to establish systems and criteria for the classification of chemicals according to the type of hazards they present, in accordance with national or international systems.⁵⁴ With regard to production, the FAO has developed a range of guidelines on various aspects of pesticide production and use, including registration and control;⁵⁵ packaging and storage;⁵⁶ labelling;⁵⁷ retail distribution;⁵⁸ national legislation;⁵⁹ and obsolete stocks.⁶⁰ The OECD Council has also adopted a wide range of binding and non-binding acts.⁶¹

⁵⁰ Set up in 1980 in order to establish the scientific health and environmental risk assessment basis for the safe use of chemicals (normative functions) and to strengthen national capabilities for chemical safety (technical co-operation), www.who.int/ipcs/en.

⁵¹ UNEP Governing Council Decisions, Revised Objectives and Strategies of the International Register of Potentially Toxic Chemicals, UNEP/GC/DEC/15/28 (1989). The Register includes details of more than 500 substances, including information on their physical and chemical characteristics, methods of use, and effects on man and the environment. WHO, *Recommended Classification of Pesticides by Hazard and Guidelines to Classification* (2009).

⁵² Recommendations on Tests and Criteria for the Classification of Dangerous Goods, ST/SG/AC.10/11/Rev.5.

⁵³ Convention Concerning Safety in the Use of Chemicals at Work (ILO Convention No. 170), Geneva, 25 June 1990, Art. 6.

⁵⁴ FAO Guidelines for the Registration of Pesticides, 2010; FAO Revised Guidelines on Environmental Criteria for the Registration of Pesticides, 1989; FAO Guidelines for the Registration and Control of Pesticides, 1985, Addenda, 1988.

⁵⁵ FAO Guidelines for the Packaging and Storage of Pesticides, 1985.

⁵⁶ FAO Guidelines on Good Labelling Practice for Pesticides, 1995 (revised).

⁵⁷ FAO Guidelines for Retail Distribution of Pesticides with Particular Reference to Storage and Handling at the Point of Supply to Users in Developing Countries, 1988.

⁵⁸ FAO Guidelines for Legislation on the Control of Pesticides, 1989.

⁵⁹ FAO Guidelines on the Prevention of Accumulation of Obsolete Pesticide Stocks, 1995.

⁶⁰ These include: 1981 and 1989 OECD Council Recommendations on Mutual Acceptance of Data in the Assessment of Chemicals and Good Laboratory Practices (OECD C(81)30 and OECD C(89)87); 1973 OECD Decision/Recommendation on Protection of the Environment by Control of Polychlorinated Biphenyls (OECD C(73)1); 1982 OECD Council Decision on Minimum Pre-Marketing Set of Data in Assessment of Chemicals (OECD C(82)196); 1987 OECD Decision/Recommendation on Further Measures for the Protection of the Environment by Control of Polychlorinated Biphenyls (OECD C(87)2); 1987 Decision/Recommendation on the Systematic Investigation of Existing Chemicals (OECD C(87)90); 1991 Decision/Recommendation on the Co-operative Investigation and Risk Reduction of Existing Chemicals (OECD C(90)163); 1992 Recommendation Concerning Chemical Accident Prevention, Preparedness and Response (OECD C(2003)221); 1996 Recommendation on Implementing Pollutant Release and Transfer Registers (OECD C(96)41, amended by OECD C(2003)87).

Other schemes that apply include that developed by the Codex Alimentarius Commission, which was established in 1962 to implement the joint FAO/WHO Food Standards Programme. The purposes of the Programme include: protecting the health of consumers; promoting co-ordination of food standards work undertaken by international governmental and non-governmental organisations; and preparing and finalising regional or global standards. The Commission now has more than 180 members, and amongst the various standards it has developed are those setting maximum limits for pesticide residues.⁶² The Codex Alimentarius has since been supplemented by the Consolidated List of Products whose consumption and/or sale has been banned, withdrawn, severely restricted or, in the case of pharmaceuticals, not approved by governments.⁶³

The most recent and comprehensive effort to establish harmonised practices regarding the classification and labelling of hazardous substances is the 'Globally Harmonized System of Classification and Labelling of Chemicals' (GHS), developed under the auspices of the Inter-organisation Programme for the Sound Management of Chemicals (IOMC), a co-ordinating body for the work of the ILO, OECD and relevant expert committees within the UN. The GHS recognises the extensive global trade in chemicals and hence the need for common systems of classification and labelling as the basis for national programmes governing their safe use, transport and disposal. It is comprehensive in scope, applying to all hazardous chemicals, although the mode of its operation (e.g. labelling, production of safety data sheets) may vary by product category or stage in the life-cycle of a particular chemical.

The mandate for preparation of the GHS was originally set by Agenda 21, which called for the harmonisation of systems for the classification and labelling of chemicals by the year 2000, including material safety data sheets and easily understandable symbols.⁶⁴ Ten years on, the WSSD Plan of Implementation encouraged countries to implement the GHS as soon as possible with a view to having the system fully operational by 2008. However, apart from the EU, which implemented the GHS via a 2008 Regulation,⁶⁵ few other countries have met this target.

Production and use

Although international law has long prohibited the production and use of certain weapons,⁶⁶ it has only recently moved to prohibit, on environmental grounds, the production and use of certain industrial substances and products. The leading example of this type of international regulation is the 1987 Montreal Protocol that seeks to phase out the commercial production and use of certain ozone-depleting substances.⁶⁷ Another category of chemicals that has attracted regulatory attention at a regional and global level is persistent organic pollutants (POPs). POPs are organic chemicals characterised by their capacity to persist in the environment, their

⁶² Chapter 3, p. 75, above; see FAO/WHO, *Procedural Manual of the Codex Alimentarius Commission* (2010, 19th edn), detailing the Risk Analysis Principles applied by the Committee on Pesticide Residues.

⁶³ (2009, 15th issue), ST/ESA/323.

⁶⁴ Agenda 21, paras. 19.27 and 19.29.

⁶⁵ Regulation (EC) No. 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No. 1907/2006, OJ L353, 31 December 2008, 1, in force 20 January 2009.

⁶⁶ E.g. the Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons, Paris, 13 January 1993, in force 29 April 1997, 32 ILM 800 (1993).

⁶⁷ Chapter 7, pp. 262–74, above.

tendency to accumulate in organisms up the food chain, and their ability to travel long distances in the atmosphere and in water posing risks to human health and the environment far from their site of production.⁶⁸ Well-known POPs include the pesticide DDT, polychlorinated biphenyls (PCBs), dioxins and furans. All are chemicals or chemical by-products of manufacturing processes that have been widely used in industrialised societies since the mid-twentieth century. For this reason, regulating the risks posed by POPs requires more than simply a ban on their use. In addition, there is a need to identify suitable substitutes for POPs in essential manufacturing processes, to remove stockpiles of the chemicals, to undertake clean-up of contamination, to monitor their health and environmental effects and to initiate the implementation of cleaner technologies.⁶⁹ All such risk management measures may entail significant socio-economic consequences, particularly for less well-resourced developing countries.

While many POPs, such as DDT, have been the subject of domestic regulation for a decade or more, POPs only became a matter of international concern during the 1990s. Agenda 21 was the first global instrument to call for risk reduction programmes focused on 'phasing out or banning of chemicals . . . that are toxic, persistent and bio-accumulative and whose use cannot be adequately controlled'.⁷⁰ In 1995, UNEP initiated a global scientific assessment process for twelve well-known POPs (described as the 'dirty dozen'), including DDT, PCBs, dioxins and furans.⁷¹ This assessment was co-ordinated by the Intergovernmental Forum on Chemical Safety (IFCS), a body operating under the auspices of the WHO, which consists of 'an alliance of all stakeholders concerned with the sound management of chemicals'.⁷² The IFCS report identified the need for international action, including a global legally binding instrument, to reduce the risks to human health and the environment posed by the dirty dozen POPs.⁷³

2001 POPs Convention

International negotiations for a global POPs Convention began in June 1998 and concluded in Stockholm in May 2001.⁷⁴ An important precedent for the negotiations was the Protocol on Persistent Organic Pollutants adopted in 1998 by the parties to the 1979 LRTAP Convention, which aims to eliminate the production and use of certain POPs within the UNECE region.⁷⁵ The 2001 Stockholm Convention on Persistent Organic Pollutants (2001 POPs Convention) globalises that objective, aiming to protect human health and the environment from persistent organic pollutants, and to that end it imposes measures to reduce or eliminate releases from the production and use of certain POPs.⁷⁶

⁶⁸ Noelle Eckley, 'Traveling Toxics: The Science, Policy, and Management of Persistent Organic Pollutants', 43(7) *Environment* 24 at 26–7 (2001).

⁶⁹ *Ibid.*

⁷⁰ Commission on Sustainable Development, *Agenda 21: The United Nations Programme of Action from Rio* (1992), 19, 44.

⁷¹ UNEP Governing Council Decision 18/32, Persistent Organic Pollutants, Nairobi, 25 May 1995.

⁷² See the IFCS website at www.who.int/ifcs/page2/en/index.html.

⁷³ IFCS Ad Hoc Working Group on Persistent Organic Pollutants Meeting, Final Report, 21–22 June 1996, Manila, Philippines, IFCS/WG.POPs/Report.1, 1 July 1996, 4.1.

⁷⁴ Negotiations were initiated by Decision 19/13 C of 7 February 1997 of the Governing Council of UNEP.

⁷⁵ Chapter 7, p. 255, above.

⁷⁶ Stockholm, 22 May 2001, in force 17 May 2004, 40 ILM 532 (2001), <http://chm.pops.int>. See generally P. L. Lallas, 'The Stockholm Convention on Persistent Organic Pollutants', 95 *American Journal of International Law* 692 (2001); J. A. Mintz, 'Two Cheers for Global POPs: A Summary and Assessment of the Stockholm Convention on Persistent Organic Pollutants', 14 *Georgetown International Environmental Law Review* 319 (2001); H. Selin and

The Convention is precautionary in approach, and initially targets twelve POPs (the ‘dirty dozen’): Annex A lists those which are targeted for elimination, and Annex B lists those which are to be restricted.⁷⁷ Article 3(1) requires parties to eliminate the production and use of all the chemicals listed in Annex A, in accordance with that Annex, and to restrict production and use of chemicals listed in Annex B. Annexes A and B identify ‘specific exemptions’ in relation to the production and/or use of some (but not all) of the chemicals, and Annex B additionally identifies certain ‘acceptable purposes’.⁷⁸ Article 3(2) requires parties to permit imports of chemicals listed on Annex A or Annex B for the purposes of environmentally sound disposal (in accordance with Article 6(1)(d)) or for a use which is permitted for the importing party under Annex A or B.⁷⁹ It also requires parties to allow exports only for environmentally sound disposal, or to a party which is permitted to use that chemical under Annex A or B, or to a state which is not a party to the Convention but which has provided an annual certification to the exporting party.⁸⁰ Finally, Article 3(2) also provides that a party may only export an Annex A chemical for which production and use exemptions are no longer in effect for it for the purpose of environmentally sound disposal.⁸¹ Parties must take measures to regulate the prevention of production and use of new industrial chemicals which exhibit the characteristics of persistent organic pollutants, taking into account the criteria set forth in Annex D.⁸² These criteria are also to be taken into account when assessing other pesticides or industrial chemicals already in use but not listed in Annex A or B.⁸³

With regard to unintentional production, Article 5 requires parties to take certain measures to reduce releases from anthropogenic sources of the chemicals listed in Annex C, including action plans to identify and address releases, the use of substitutes, and the use of ‘best available techniques’ and ‘best environmental practices’. The Convention also commits parties to develop implementation plans and provides for information exchange, public awareness and information, research and monitoring, and the provision of technical assistance to developing countries and economies in transition.⁸⁴ Developed countries undertake to provide new and additional financial resources to enable developing countries and countries with economies in transition to meet the ‘agreed full incremental costs’ of implementing measures, and to that end a financial mechanism is ‘defined’.⁸⁵ As with earlier conventions relating to climate change and

N. Eckley, ‘Science, Politics, and Persistent Organic Pollutants: The Role of Scientific Assessments in International Environmental Cooperation’, 3 *International Environmental Agreements: Politics, Law and Economics* 17 (2003).

⁷⁷ Annex A originally listed: aldrin, chlordane, dieldrin, endrin, heptachlor, hexachlorobenzene, mirex, toxaphene and polychlorinated biphenyls (PCBs). Annex B listed DDT. At its fourth meeting in May 2009, the Conference of the Parties, by decisions SC-4/10 to SC-4/18, adopted amendments to the Annexes to the POPs Convention to list nine additional chemicals as POPs: chlordecone, lindane, alpha hexachlorocyclohexane, beta hexachlorocyclohexane, pentachlorobenzene, perfluorooctane sulfonate, hexabromobiphenyl and two polybrominated flame retardants.

⁷⁸ As at 17 May 2009, there were no parties registered for the specific exemptions listed in Annex A nor for the specific exemptions listed in Annex B. In accordance with Art. 4(9), therefore, no new registrations may be made with respect to those exemptions.

⁷⁹ Art. 3(2)(a).

⁸⁰ Art. 3(2)(b). The certificate must specify the intended use of the chemical and state that the importing state is committed to protecting human health and the environment and complying with Art. 6(1) and (where appropriate) Annex B, Part II, para. 2. Art. 6(1) defines measures to reduce or eliminate releases from stockpiles or wastes, and Art. 6(2) calls for co-operation with the 1989 Basel Convention.

⁸¹ Art. 3(2)(c).

⁸² Art. 3(3). The criteria relate to: chemical identity; persistence; bioaccumulation; potential for long-range environmental transport; and adverse effects.

⁸³ Art. 3(4). ⁸⁴ Arts. 7 and 9–12.

⁸⁵ Art. 13(2) and (6). The GEF is designated on an interim basis: Art. 14; see Chapter 16, pp. 676–8, below.

biodiversity, it is recognised that the extent to which developing countries will effectively implement their commitments will depend on the effective implementation by developed country parties of their commitments relating to financial resources, technical assistance and technology transfer.⁸⁶ The Convention also sets forth reporting requirements and commits the Conference of the Parties to establish a non-compliance mechanism as soon as practicable.⁸⁷ Negotiations regarding the latter are underway,⁸⁸ but little progress has been made in the face of objections from major developing countries such as China and India. By contrast, the Conference of the Parties, at its first meeting in 2005, adopted arbitration and conciliation procedures to govern the settlement of disputes in accordance with the direction in Article 18. The procedures are set out in a new Annex G to the Convention, which entered into force on 31 October 2007.⁸⁹

The Conference of the Parties is entrusted with implementation of the Convention, assisted by a secretariat (UNEP).⁹⁰ Provision is also made for adoption and amendment of the Convention and, in particular, its Annexes.⁹¹ This includes procedures for parties to propose additional chemicals for listing as POPs in Annexes A, B and/or C. Under Article 8, proposed listings must be reviewed by an expert POPs Review Committee, which may prepare a risk profile in accordance with the criteria set forth in Annex E and, as appropriate, a risk management evaluation (on the basis of information provided by parties and observers relating to the considerations specified in Annex F). The Committee's evaluation of a chemical proposed for listing is to determine 'whether the chemical is likely, as a result of its long-range environmental transport, to lead to significant adverse human health and/or environmental effects, such that global action is warranted'.⁹² In deciding whether to list the chemical in Annex A, B and/or C, the conference of parties must take due account of the recommendations of the POPs Review Committee, including any scientific uncertainty, and act in a precautionary manner. This process of science-policy interaction appears to be working successfully to identify and regulate new POPs of international concern. For instance, on the basis of recommendations put forward by the POPs Review Committee, the parties to the Convention agreed at their fourth conference held in May 2009 to list nine additional chemicals as POPs subject to the global regulatory regime.⁹³ However, the greatest test for this process may still lie in the future as the Convention increasingly moves to regulate POPs whose toxicity is not uniformly accepted, and for which the socio-economic consequences of bans would be more acute for many countries.

International trade

International trade in chemicals, pesticides and banned or severely restricted products and substances has been a legally and politically complex subject. It has also been a source of tension between developed and developing countries as substances banned from consumption

⁸⁶ Art. 13(4). ⁸⁷ Arts. 15 and 17.

⁸⁸ For the draft text prepared by the open-ended working group on non-compliance over the course of 2006/7, see SC3/20, Annex.

⁸⁹ See further Chapter 5, p. 165, above. ⁹⁰ Arts. 16 and 19–20. ⁹¹ Arts. 21 and 22.

⁹² Annex E.

⁹³ Report of the Conference of the Parties of the Stockholm Convention on Persistent Organic Pollutants on the Work of Its Fourth Meeting, 8 May 2009, UNEP/POPS/COP.4/38.

or sale in developed countries have found their way onto the markets of some developing countries, which may lack the technical capacity, resources or regulatory infrastructure to manage their domestic use safely. An important function of international regulation of trade in hazardous substances has therefore been to address the capacity-building needs of developing country importers through technical co-operation and financial assistance. Initial efforts to regulate trade in hazardous substances utilised non-binding guidelines of international organisations. These were followed by regional commitments established by the OECD and the 1991 Bamako Convention. In 1998, under the auspices of the FAO and UNEP, a convention of potentially global application was adopted.

In the past, the UN has frequently considered the issue of the regulation of products harmful to health and the environment, usually by placing the emphasis on the need to regulate their international traffic. In 1983, the General Assembly adopted a resolution that provided the basis for the principle of 'prior informed consent', which underlies the 1998 Chemicals Convention. This resolution declared that:

products that have been banned from domestic consumption and/or sale because they have been judged to endanger health and the environment should be sold abroad by companies, corporations or individuals only when a request for such products is received from an importing country or when the consumption of such products is officially permitted in the importing country.⁹⁴

The 1983 UN General Assembly resolution also resolved that:

all countries that have severely restricted or have not approved domestic consumption and/or sale of specific products, in particular pharmaceuticals and pesticides, should make available full information on these products with a view to safeguarding the health and environment of the importing country, including clear labelling in a language acceptable to the importing country.⁹⁵

The principle of 'prior informed consent' has subsequently been defined as 'the principle that international shipment of a chemical that is banned or severely restricted in order to protect human health or the environment should not proceed without the agreement, where such agreement exists, or contrary to the decision, of the designated national authority in the importing country'.⁹⁶ The prior informed consent procedure, which requires the formal obtaining and disseminating of the decisions of importing countries on whether they wish to receive further shipments of chemicals which have been banned or severely restricted, has been used in UNEP and FAO non-binding instruments, and integrated into the legally binding arrangements for international trade in hazardous waste established by, for example, the 1989 Basel Convention⁹⁷ and the 1991 Bamako Convention.⁹⁸

In 1990, the General Assembly endorsed the utilisation and implementation of the 'prior informed consent schemes for chemicals and pesticides in international trade', and requested

⁹⁴ UNGA Res. 37/137 (1983), para. 1. ⁹⁵ *Ibid.*, para. 2.

⁹⁶ Adopted by UNEP Governing Council Decision 14/27 of 27 June 1987, amended by UNEP Governing Council Decision 15/30 of 25 May 1989, para. 1(g).

⁹⁷ Chapter 12, pp. 568–71, below. ⁹⁸ Chapter 12, pp. 571–2, below.

the UN Regional Economic Commissions to contribute to the prevention of illegal traffic in toxic and dangerous products and wastes by monitoring and ensuring regional assessment of illegal traffic and its environmental and health consequences.⁹⁹ The resolution also called on the Secretary General to disseminate the UN Consolidated List, ensure the more effective involvement of non-governmental organisations in its utilisation, and study sustainable alternatives to banned and severely restricted products and unregistered pesticides. This was followed by the 1985 FAO Code of Conduct and the 1987 UNEP London Guidelines, which now adopt the approach taken in the 1998 Chemicals Convention that came into force on 24 February 2004.

1985 FAO Code of Conduct

The most widely used 'soft' instrument, which applies only to pesticides, is the voluntary International Code of Conduct on the Distribution and Use of Pesticides, adopted by the FAO Conference in 1985.¹⁰⁰ Following the adoption of the 1998 Chemicals Convention, work was initiated by the FAO to revise and update the Code, resulting in the approval of a revised version in November 2002.¹⁰¹ The revised Code no longer includes procedures for prior informed consent in respect of pesticides trade as these have been superseded by provisions in the 1998 Chemicals Convention. The Code has also been updated to reflect modern approaches to pesticides management that incorporate the 'life-cycle concept' and processes of integrated pest management.¹⁰² The revised Code is particularly directed to strengthening pesticides management in developing countries where significant problems persist with regard to the enforcement of pesticide legislation, the sale of highly hazardous or sub-standard formulations, and inadequate training and protection of end-users to minimise the risks in handling pesticides.

The Code defines and clarifies the responsibilities of all public and private entities involved in the distribution and use of pesticides, including conditions for international trade.¹⁰³ The Code establishes basic rules on pesticide management, testing, reducing health and environmental risks, and adoption of regulatory and technical requirements, including registration and recording of import data and use.¹⁰⁴ It recommends that the availability and use of pesticides should be subject to national rules and regulations, and restricted as necessary.¹⁰⁵ It recommends that industry

⁹⁹ UNGA Res. 44/226 (1990); see also the Report of the UN Secretary General on 'Products Harmful to Health and the Environment', A/44/276 (1989).

¹⁰⁰ 23 FAO Conference Res. 10/85 (1985). The Code was amended in 1989 to include the principle of prior informed consent in Art. 9: FAO Conference Res. 6/89 (1989).

¹⁰¹ In November 2002, the 123rd Session of the FAO Council (with the authorisation of the 31st Session of the FAO Conference) approved the revised version of the International Code of Conduct on the Distribution and Use of Pesticides by Council Res. 1/123.

¹⁰² Art. 1.

¹⁰³ Pesticides are defined as 'any substance or mixture of substances intended for preventing, destroying or controlling any pest, including vectors of human or animal disease, unwanted species of plants or animals causing harm during or otherwise interfering with the production, processing, storage, transport, or marketing of food, agricultural commodities, wood and wood products or animal feedstuffs, or substances which may be administered to animals for the control of insects, arachnids or other pests in or on other bodies. The term includes substances intended for use as a plant growth regulator, defoliant, desiccant, or agent for thinning fruit or preventing the premature fall of fruit, and substances applied to crops either before or after harvest to protect the commodity from deterioration during storage and transport': Art. 2.

¹⁰⁴ Arts. 3–6. ¹⁰⁵ Art. 7.

should take all measures to ensure that pesticides entering international trade conform at a minimum to relevant FAO and WHO standards, and that pesticides manufactured for export meet the same quality requirements imposed on comparable domestic products.¹⁰⁶ The FAO Code also includes provisions on labelling, packaging, storage and advertising.¹⁰⁷

Previously central to the FAO Code were the provisions on information exchange and prior informed consent, set out in Article 9. As amended, this Article now addresses information exchange only. The FAO Code recommends that governments should facilitate the exchange of information between regulatory authorities, including information on actions taken to ban or severely restrict a pesticide and scientific, technical, economic, regulatory and legal information concerning pesticides. In addition, governments are encouraged to develop legislation and regulations that allow public access to information about pesticide risks and facilitate public participation in the regulatory process.¹⁰⁸ The Code does not establish any new institutional arrangements to apply the provisions on information exchange: the FAO and other international organisations are called upon to give full support to the observance of the Code, and governments must monitor its observance.¹⁰⁹

1987 UNEP London Guidelines

The UNEP London Guidelines for the Exchange of Information on Chemicals in International Trade (1987 UNEP London Guidelines) apply to all chemicals, including pesticides.¹¹⁰ The Guidelines are complementary to the UN and WHO instruments and the FAO Code of Conduct.¹¹¹ The Guidelines are designed to assist governments to increase chemical safety and to protect human health and the environment against potential harm by calling on importing and exporting states to exchange information on chemicals in international trade.¹¹² General principles adopted by the Guidelines include the requirement that regulations and standards should not create unnecessary obstacles to international trade, should be non-discriminatory, and should develop legislative and regulatory structures, creating national registers of toxic chemicals, and improving information collection and dissemination.¹¹³

Part II of the Guidelines addresses notification of and information on banned and severely restricted chemicals and the operation of the prior informed consent (PIC) procedure. Participation in the PIC procedure, which is voluntary, is effected by communication to the International Register of Potentially Toxic Chemicals (IRPTC), which maintains a list of participating countries, those which do not participate, and those which have not responded, as well as a list of chemicals included in the PIC procedure.¹¹⁴ All exporting countries are expected to participate in the PIC procedure.¹¹⁵ Under the PIC procedure, each participating country designates a national authority as a point of contact for information exchange, with the IRPTC acting as a centre for the channelling of notifications and information.¹¹⁶ States must notify the IRPTC of actions to ban or severely restrict chemicals as soon as practicable after such action is taken,

¹⁰⁶ Art. 8(1). ¹⁰⁷ Arts. 10 and 11. ¹⁰⁸ Art. 9(1) and (2). ¹⁰⁹ Art. 12(5) and (6).

¹¹⁰ Adopted by UNEP Governing Council Decision 14/27 of 27 June 1987, amended by UNEP Governing Council Decision 15/30 of 25 May 1989.

¹¹¹ London Guidelines, Introduction, para. 7.

¹¹² Guideline 2(a). 'Chemical' is defined as 'a chemical substance whether by itself or in a mixture or preparation, whether manufactured or obtained from nature and includes such substances used as industrial chemicals and pesticides': para. 1(a). The Guidelines are not intended to apply to pharmaceutical or radioactive materials, small quantities of research chemicals, personal or household effects, and food additives: para. 3.

¹¹³ Guideline 2(c), (d) and (f). ¹¹⁴ Guideline 7.1(e) and (f). ¹¹⁵ Guideline 7.1(b). ¹¹⁶ Guidelines 9 and 12.

whereupon the IRPTC will notify participating states.¹¹⁷ On the basis of the notifications received, the IRPTC identifies all chemicals banned or severely restricted by five or more countries, which will be introduced immediately into the PIC procedure if banned or severely restricted by ten or more countries.¹¹⁸ Chemicals banned or severely restricted by five to ten countries are introduced into the PIC procedure only if found by an expeditious informal consultation procedure to have met the definitions of chemicals which have been banned and severely restricted for human health or environmental reasons.¹¹⁹

A Decision Guidance Document is prepared for each chemical placed into the PIC procedure, comprising a summary of the control action, summary information on the chemical, and a response form to allow participating countries to register their decision with the IRPTC.¹²⁰ If a chemical that is banned or severely restricted in the country of export is to be exported, information concerning the export should be provided to the importing country, including an estimate of the amount to be exported annually and any other shipment-specific information that is available.¹²¹ Additional Guidelines are provided on channels of notification and information, feedback and confidential data, as well as on the role of national authorities.¹²²

On 11 September 1998, the Chemicals Convention was adopted at a conference of plenipotentiaries jointly convened by FAO and UNEP. The conference also adopted a Resolution on Interim Arrangements, which changed the voluntary PIC procedures operated by UNEP, together with those formerly under the FAO Code, to bring them into line with the procedure established by the Chemicals Convention in order to operate as an 'interim PIC procedure'. Since the coming into force of the Chemicals Convention in 2004, this interim PIC procedure has been phased out, formally ceasing to operate on 24 February 2006.¹²³

1998 Chemicals Convention

The objective of the 1998 Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (1998 Chemicals Convention) is:

to promote shared responsibility and co-operative efforts among Parties in the international trade of certain hazardous chemicals in order to protect human health and the environment from potential harm and to contribute to their environmentally sound use, by facilitating information exchange about their characteristics, by providing for a national decision-making process on their import and export and by disseminating these decisions to Parties.¹²⁴

The Convention draws upon the FAO and UNEP voluntary schemes in applying a prior informed consent (PIC) procedure for chemicals listed in Annex III to the Convention, which is applicable to banned or severely restricted chemicals and severely hazardous pesticide

¹¹⁷ Guideline 6. ¹¹⁸ Annex II, para. 1(b). ¹¹⁹ Annex II, para. 1(b)(ii). ¹²⁰ Annex III. ¹²¹ Guideline 8.

¹²² Guidelines 9–12; see also Annex II (Procedure for Initial Identification of Chemicals for Inclusion in the Prior Informed Consent Procedure) and Annex III (Information to Be Included in the PIC Decisions Guidance Document).

¹²³ Decision RC-1/13.

¹²⁴ Rotterdam, 10 September 1998, entered into force 24 February 2004, 38 ILM 1 (1999), Art. 1. The Convention currently has 140 states parties.

formulations,¹²⁵ subject to certain exceptions.¹²⁶ Each party is to designate a national authority.¹²⁷ With regard to chemicals,¹²⁸ a party that has banned or severely restricted a chemical (taken a 'final regulatory action') is to notify the secretariat, which will then forward the information to all parties.¹²⁹ With regard to pesticides, any party that is a developing country or a country with an economy in transition and that is experiencing problems caused by a severely hazardous pesticide formulation under conditions of use in its territory, may propose to the secretariat the listing in Annex III of the severely hazardous pesticide formulation.¹³⁰ The secretariat will then forward the proposal to the Chemical Review Committee, which will review the information and recommend to the Conference of the Parties whether the formulation should be subject to the PIC procedure and, accordingly, listed in Annex III.¹³¹

The Convention presently lists forty chemicals, the majority of which are pesticides. The Conference of the Parties may add further chemicals to Annex III on the basis of recommendations by the Chemicals Review Committee in accordance with criteria laid down in Annex II.¹³² Unlike its equivalent in the POPs Convention, the Chemicals Review Committee is not obliged to observe the precautionary principle in carrying out its decision-making tasks. The failure to include precautionary concepts in the Convention may prove problematic over time, inhibiting the capacity of the Conference of the Parties to respond proactively to the emergence of new chemical risks about which there is some level of scientific uncertainty. In addition, the stringent scientific data requirements set out in Annex II 'will make it almost impossible for any regulatory actions taken by developing countries to qualify for consideration as a basis for including chemicals in the PIC list'.¹³³

Articles 10 and 11 of the Convention establish the PIC procedure in respect of imports and exports of chemicals listed in Annex III. The export of banned or severely restricted chemicals that are not so listed is governed by a separate notification procedure.¹³⁴ Without prejudice to the requirements of the importing party, exported chemicals which are listed in Annex III or which are banned or severely restricted must be labelled to ensure 'adequate availability of information with

¹²⁵ Art. 3(1). A 'banned chemical' is 'a chemical all uses of which within one or more categories have been prohibited by final regulatory action, in order to protect human health or the environment': Art. 2(b). A 'severely restricted chemical' is 'a chemical virtually all use of which within one or more categories has been prohibited by final regulatory action in order to protect human health or the environment, but for which certain specific uses remain allowed': Art. 2(c). A 'severely hazardous pesticide formulation' means 'a chemical formulated for pesticidal use that produces severe health or environmental effects observable within a short period of time after single or multiple exposure, under conditions of use': Art. 2(d).

¹²⁶ By Art. 3(2), the Convention does not apply to: narcotic drugs and psychotropic substances; radioactive materials; wastes; chemical weapons; pharmaceuticals, including human and veterinary drugs; chemicals used as food additives; food; and chemicals in quantities not likely to affect human health or the environment provided they are imported.

¹²⁷ Art. 4.

¹²⁸ A 'chemical' is 'a substance whether by itself or in a mixture or preparation and whether manufactured or obtained from nature, but does not include any living organism': Art. 2(a). It consists of two categories: pesticide (including severely hazardous pesticide formulations) and industrial.

¹²⁹ Art. 5(1) and (2). Notifications under the amended London Guidelines or the Code of Conduct need not be submitted: Art. 5(2). Annex I identifies information requirements for Art. 5 notifications.

¹³⁰ Art. 6(1). ¹³¹ Art. 6(3)–(5).

¹³² Arts. 7 and 8. Amendments to Annex III are to be adopted by consensus: Art. 22(5)(b). Provision is also made for removal of chemicals from the list: Art. 9. The criteria for listing (and removing) chemicals and pesticides is set forth in Annexes II and IV.

¹³³ M. Pallemarts, *Toxics and Transnational Law: International and European Regulation of Toxic Substances as Legal Symbolism* (2003), 576.

¹³⁴ Art. 12. The notification must include the information set out in Annex V.

regard to risks and/or hazards to human health or the environment, taking into account relevant international standards'.¹³⁵ The Convention also makes provision for general information exchange and technical assistance (though not for financial assistance to developing countries), as well as implementation of the Convention.¹³⁶ The Conference of the Parties is responsible for reviewing and evaluating implementation of the Convention, assisted by a secretariat (FAO and UNEP), and is also tasked with establishing a non-compliance mechanism.¹³⁷ In respect of the latter, in 2005 a working group was set up to develop procedures and institutional mechanisms for determining non-compliance, but agreement has so far proved elusive.

Transport

International regulations for the transport of hazardous substances and goods establish standards and guidelines to govern the conditions under which such transport is to take place. These conditions relate to labelling, packaging, shipping and marking, and different standards and rules have been put in place to cover different modes of transport. Apart from the general Recommendations adopted by ECOSOC,¹³⁸ rules have been adopted to govern the transportation of hazardous goods and substances by road,¹³⁹ by rail,¹⁴⁰ by sea,¹⁴¹ by air¹⁴² and by inland waterways.¹⁴³ Special rules have been promulgated by the IAEA to govern the transport of radioactive materials.¹⁴⁴

THE WORKING ENVIRONMENT

International regulation regarding hazardous substances extends beyond activities with an explicit transnational dimension (such as international trade or transport) to matters of domestic governance, such as the use of these substances in workplaces. The principal international

¹³⁵ Art. 13(2). A party may also require that chemicals subject to environmental or health labelling requirements in its territory are, when exported, subject to labelling requirements that ensure adequate availability of information with regard to the risks and/or hazards to human health or the environment, taking into account relevant international standards: Art. 13(3).

¹³⁶ Arts. 14–16. ¹³⁷ Arts. 17–19.

¹³⁸ ECOSOC Recommendations on the Transport of Dangerous Goods, Model Regulations Geneva, 26 April 1957 (2008, 16th edn), ST/SG/AC.10/1/Rev.16.

¹³⁹ See e.g. European Agreement Concerning the International Carriage of Goods by Road (1957 ADR), Geneva, 30 September 1957, 619 UNTS 77, as amended (1297 UNTS 406) and restructured with effect from 1 July 2001. Biannually, a body of international experts, known as WP.15 (Working Party on the Transport of Dangerous Goods), meets at the UN in Geneva to discuss and update the ADR; the current version is 2009.

¹⁴⁰ See e.g. Regulations Concerning the International Carriage of Dangerous Goods by Rail (RID), 2009 edition, Annex I of the Convention Concerning International Carriage by Rail 1980, www.otif.org/index.php?id=142&tL=2; on 1 July 2010, the Organisation Intergouvernementale pour les Transports Internationaux (OTIF) (Intergovernmental Organisation for International Carriage by Rail) notified its member states of the amendments to RID, which, if accepted by the member states, will enter into force automatically from 1 January 2011.

¹⁴¹ IMO, International Maritime Dangerous Goods Code (IMDG Code), as amended (from 1 January 2010, the provisions of the IMDG Code, 2008 edition, entered into force on a mandatory basis).

¹⁴² ICAO Technical Instruction for the Safe Transport of Dangerous Goods by Air, DOC.9284-AN/905 (ICAO TI); Convention Concerning the Safe Transport of Dangerous Goods by Air (Annex 18 to the 1944 ICAO Convention) (updated 2001).

¹⁴³ See e.g. Agreement on International Carriage of Dangerous Goods by Inland Waterways (2009 ADN), 28 February 2009, www.unece.org/trans/danger/publi/adn/adn2009/09files_e.html.

¹⁴⁴ IAEA, Regulations for the Safe Transport of Radioactive Material (2000), as amended. The latest edition of the Regulations was issued in 2009 and is available at www.pub.iaea.org/MTCD/publications/PDF/Pub1384_web.pdf.

organisation that has been involved in the development of international rules to protect the working environment has been the International Labour Organization (ILO), under whose auspices at least nine international agreements have been negotiated, adopted and implemented. These relate to: nuclear hazards; benzene; carcinogenic substances; hazards due to air pollution and noise; occupational health services; asbestos; construction safety; chemicals generally; and the prevention of industrial accidents.¹⁴⁵ Although these agreements are primarily intended to protect humans rather than the environment, their application contributes to the protection of the environment, and many contain innovative provisions that have been incorporated into other environmental agreements.

The ILO's first Convention addressed nuclear hazards,¹⁴⁶ and was followed in 1971 by the Convention Concerning Protection Against Hazards of Poisoning Arising from Benzene (1971 Benzene Convention), which now has thirty-eight parties.¹⁴⁷ The 1971 Benzene Convention applies to all activities exposing workers to benzene and products containing benzene, and requires harmless or less harmful substances to be used instead of benzene or products containing benzene whenever they are available, and a prohibition on their use as a solvent or diluent in most situations.¹⁴⁸ The Convention fixes a maximum benzene concentration in the air, requires occupational hygiene and technical measures, regular medical examinations, and labelling requirements; and requires pregnant women and children under eighteen not to be exposed to benzene and benzene products.¹⁴⁹

The 1974 Convention Concerning Prevention and Control of Occupational Hazards Caused by Carcinogenic Substances and Agents commits its thirty-eight parties to determine the carcinogenic substances and agents in respect of which occupational exposure is to be prohibited or subjected to authorisation or other control and to protect workers against the risk of exposure to such substances and agents.¹⁵⁰

The 1977 Convention Concerning the Protection of Workers Against Occupational Hazards in the Working Environment Due to Air Pollution, Noise and Vibration (1977 Working Environment Convention), which has forty-five parties, applies to all economic activities and requires parties to adopt national laws or regulations to protect against hazards in the working environment from air pollution, noise and vibration.¹⁵¹ The Convention does not set individual standards of general application, but requires national authorities to specify exposure limits on the basis of criteria established and regularly revised in light of national and international knowledge and data, with a general objective of keeping the working environment 'as far as possible' free from these hazards.¹⁵²

The 1985 Convention Concerning Occupational Health Services, which has twenty-nine parties, requires parties to formulate, implement and regularly review a coherent national policy, and to provide occupational health services for workers in all areas of economic activity.¹⁵³ Occupational health services must identify and assess health risk, ensure surveillance of factors affecting health, advise on the planning and organisation of work and on

¹⁴⁵ See pp. 519–21, above. ¹⁴⁶ See p. 541, below. ¹⁴⁷ Geneva, 23 June 1971, in force 27 July 1973, 2 UNTS 45.

¹⁴⁸ Arts. 1, 2 and 4(2). ¹⁴⁹ Arts. 6(2), 9(1), 11 and 12.

¹⁵⁰ Geneva, 26 June 1974, in force 10 June 1976, 1010 UNTS 5.

¹⁵¹ Geneva, 20 June 1977, in force 11 July 1979, 1 SMTE 482 (ILO Convention No. 148), Arts. 1(1) and 4(1).

¹⁵² Arts. 8 and 9.

¹⁵³ Geneva, 26 June 1985, in force 17 February 1988, 2 SMTE 126 (ILO Convention No. 155), Arts. 2 and 3.

health, safety and hygiene, provide surveillance of workers' health, organise first aid and emergency treatment, and analyse accidents and occupational diseases.¹⁵⁴

The 1986 Convention Concerning Safety in the Use of Asbestos, which has thirty-two parties, applies to all activities exposing workers to asbestos, and requires parties to adopt laws or regulations to protect workers' health.¹⁵⁵ The Convention gets very close to a complete ban on asbestos and products containing asbestos, requiring where necessary and whenever possible the replacement of asbestos or products containing asbestos by other materials which have been scientifically evaluated as harmless or less harmful, and the total or partial prohibition of the use of asbestos and products containing asbestos in certain work processes.¹⁵⁶ The Convention prohibits the use of crocidolite and products containing the fibre, and the spraying of all forms of asbestos,¹⁵⁷ requires labelling of containers containing asbestos and products containing asbestos, and the prescription of exposure limits fixed in light of technological progress and technological and scientific knowledge.¹⁵⁸ Removal of asbestos may only be carried out by qualified employers or contractors, subject to the drawing up of a work plan, and disposal of waste containing asbestos must not pose a health risk to workers or the population in the vicinity.¹⁵⁹

The 1988 Convention Concerning Safety and Health in Construction applies to all construction activity, and establishes a general obligation to ensure that all work places are safe and without risk of injury to the safety and health of workers.¹⁶⁰ Of particular relevance to broader environmental concerns are the provisions on health hazards requiring preventive measures to be taken to prevent exposure of workers to chemical, physical or biological hazards that are liable to be dangerous to health.¹⁶¹ To that end, hazardous substances must be replaced by harmless or less harmful substances wherever possible, or technical measures are to be applied to the plant, machinery, equipment or process, or other effective measures such as the use of personal protective equipment and clothing are to be used.¹⁶² Adequate measures must also be provided where workers enter areas in which toxic or harmful substances may be present, and waste should not be destroyed on a construction site in a manner liable to injure health.¹⁶³

The 1990 Convention Concerning Safety in the Use of Chemicals at Work establishes rules for all economic activity on the classification of chemicals according to the inherent hazards they pose for health and physical safety, as well as rules designed to protect workers from these hazards, including marking and labelling, and the maintenance of chemical safety data sheets by employers.¹⁶⁴ Under the Convention, all chemicals must be marked, and hazardous chemicals must be marked in a way easily understandable to workers to provide essential information regarding their classification, the hazards they present and the safety precautions to be taken.¹⁶⁵ Employers must be provided with chemical safety data sheets for hazardous chemicals, and suppliers have particular responsibilities for the classification, marking and labelling of chemicals and hazardous chemicals, as well as the preparation of the safety sheets.¹⁶⁶ The responsibilities of employers include the obligation to ensure that chemicals

¹⁵⁴ Art. 5. ¹⁵⁵ Geneva, 24 June 1986, in force 16 June 1989, 2 SMTE 359 (ILO Convention No. 162), Art. 3(1).

¹⁵⁶ Art. 10. ¹⁵⁷ Arts. 11 and 12. ¹⁵⁸ Arts. 14 and 15. ¹⁵⁹ Arts. 17 and 19.

¹⁶⁰ Geneva, 20 June 1988, in force 11 January 1991, 2 SMTE 440, Art. 13. ¹⁶¹ Art. 28(1). ¹⁶² Art. 28(2).

¹⁶³ Art. 28(3) and (4).

¹⁶⁴ Geneva, 24 June 1990, in force 4 November 1993 (ILO Convention No. 170). The Convention defines 'chemicals' as 'chemical elements and compounds, and mixtures thereof, whether natural or synthetic': Art. 2(a).

¹⁶⁵ Art. 7(1) and (2). ¹⁶⁶ Arts. 8 and 9.

which are not classified, identified and assessed or labelled and marked in accordance with the Convention are not used, and to ensure that workers are not exposed to chemicals 'to an extent which exceeds exposure limits or other exposure criteria for the evaluation and control of the working environment' established by the national authority in accordance with national or international standards.¹⁶⁷ The employer must also assess, monitor and record the exposure of workers to hazardous chemicals, and assess the risks arising from the use of chemicals at work and protect workers against such risks by choosing chemicals or technologies that eliminate or minimise risk as mentioned previously.¹⁶⁸ Other obligations relate to the disposal of hazardous chemicals and containers that may contain residues in a manner that eliminates or minimises risk in accordance with national law and practice, and to provide information and training.¹⁶⁹ The Convention also requires exporting states, which have banned or restricted the use of certain hazardous chemicals, to communicate the fact and the reasons underlying it to the national authorities of any importing country.¹⁷⁰

The ILO also participated, together with IMO and parties to the Basel Convention, in the elaboration of the 2009 Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships (2009 Ship Recycling Convention).¹⁷¹ The Convention aims to address all the issues around ship recycling, including the fact that ships sold for scrapping may contain hazardous substances such as asbestos, heavy metals, hydrocarbons and ozone-depleting substances that present hazards to health, to the environment and to workers at ship recycling facilities. When the Convention enters into force,¹⁷² ships to be recycled will be required to maintain an inventory of hazardous materials that is specific to each ship.¹⁷³ A party must prohibit and/or restrict the installation or use of hazardous materials listed in Appendix I to the Convention on ships entitled to fly its flag or operating under its authority, and on ships whilst in its ports, shipyards, ship repair yards, or offshore terminals, and shall take effective measures to ensure that such ships comply with those requirements.¹⁷⁴ A ship-specific recycling plan must be developed by the ship recycling facility prior to recycling taking place.¹⁷⁵ Authorised ship recycling facilities must ensure safe and environmentally sound removal of any hazardous material contained in a ship approved for recycling. This includes ensuring that hazardous materials detailed in the ship's inventory are properly identified, labelled, packaged and removed to the maximum extent possible prior to scrapping, and that all wastes generated from the recycling activity are kept separate, labelled and appropriately stored so that they do not pose a risk to workers, human health or the environment, and only transferred to a waste management facility authorised to deal with their treatment and disposal in a safe and environmentally sound manner.¹⁷⁶

¹⁶⁷ Arts. 10 and 12(a). ¹⁶⁸ Arts. 12(b) and (c) and 13. ¹⁶⁹ Arts. 14 and 15. ¹⁷⁰ Art. 19.

¹⁷¹ International Convention for the Safe and Environmentally Sound Recycling of Ships (Hong Kong), 11 May 2009, not in force, IMO Doc. SR/CONF/45. See also Chapter 9, p. 386, above.

¹⁷² Art. 17. The Convention is open for accession by any state. It will enter into force twenty-four months after the date on which fifteen states, representing 40 per cent of world merchant shipping by gross tonnage, have either signed it without reservation as to ratification, acceptance or approval or deposited an instrument of ratification, acceptance, approval or accession with the Secretary General. Furthermore, the combined maximum annual ship recycling volume of those states must, during the preceding ten years, constitute not less than 3 per cent of their combined merchant shipping tonnage.

¹⁷³ Annex, Regulation 5. ¹⁷⁴ Annex, Regulation 4. ¹⁷⁵ Annex, Regulation 9. ¹⁷⁶ Annex, Regulation 20.

Parties are also to maintain certain controls on ship recycling facilities to ensure they are designed, constructed and operated in a safe and environmentally sound manner.¹⁷⁷ As a general matter, ship recycling facilities authorised by a party are to establish management systems, procedures and techniques which do not pose health risks to the workers concerned or to the population in the vicinity of the facility and which will prevent, reduce, minimise and to the extent practicable eliminate adverse effects on the environment caused by ship recycling, taking into account guidelines to be developed by IMO.¹⁷⁸ This is supplemented by a requirement for facilities to put in place a detailed Ship Facility Recycling Plan covering matters such as: a policy ensuring workers' safety and the protection of human health and the environment; a system for ensuring implementation of the Convention requirements, the policy goals of the recycling company and continuous improvement or procedures and standards; identification of roles and responsibilities for employers and workers when conducting ship recycling operations; a programme for providing appropriate information and training of workers for the safe and environmentally sound operation of the facility;¹⁷⁹ an emergency preparedness and response plan;¹⁸⁰ a system for monitoring performance; a system for reporting discharges, emissions, incidents and accidents causing damage, or with the potential for causing damage, to workers' safety, human health and the environment;¹⁸¹ and a system for reporting occupational diseases, accidents, injuries and other adverse effects on workers' safety and human health.¹⁸² In addition, ship recycling facilities authorised by a party must: establish and utilise certain procedures to prevent adverse effects to human health or the environment including those designed to prevent explosions, fires and other unsafe conditions; prevent harm from dangerous atmospheres and other unsafe conditions; prevent other accidents, occupational diseases and injuries or other adverse effects on health and the environment; and prevent spills or emissions throughout ship recycling that may cause health or environmental harm.¹⁸³

NUCLEAR ACTIVITIES AND RADIOACTIVE SUBSTANCES¹⁸⁴

The potential for widespread consequences and long-term effects on human health and the environment have seen nuclear activities, and associated contamination by radioactive substances, placed in a special category of activities dealt with by international hazardous substances regulation, often termed 'ultrahazardous activities'.¹⁸⁵ Although the use and proliferation of nuclear weapons have long attracted international concern, in the years following the Second World War use of nuclear technology for energy production was viewed more positively. This was reflected in the creation of the International Atomic Energy Agency

¹⁷⁷ Annex, Regulation 15. ¹⁷⁸ Annex, Regulation 17.

¹⁷⁹ Specific requirements relating to worker safety and training are set out in Regulation 22.

¹⁸⁰ See further Annex, Regulation 21. ¹⁸¹ See further Annex, Regulation 23.

¹⁸² Annex, Regulation 18. These plans are to be developed in accordance with guidelines issued by IMO.

¹⁸³ Annex, Regulation 19.

¹⁸⁴ V. Lamm, *The Utilization of Nuclear Energy and International Law* (1984); A. O. Adede, *The IAEA Notification and Assistance Conventions in Case of a Nuclear Accident: Landmarks in the History of the Multilateral Treaty-Making Process* (1987); P. Cameron, L. Hancher and W. Kuhn, *Nuclear Energy after Chernobyl* (1988); P. Sands, *Chernobyl: Law and Communication: Transboundary Nuclear Air Pollution* (1988); L. Boisson de Chazournes and P. Sands (eds.), *International Law, the International Court of Justice and Nuclear Weapons* (1999); S. Tromans, *Nuclear Law: The Law Applying to Nuclear Installations and Radioactive Substances in Its Historic Context* (2010, 2nd edn). See also the *Nuclear Law Bulletin* published by the OECD.

¹⁸⁵ On the concept of ultrahazardous activities, see note 3 above.

(IAEA) in 1956 with the objective 'to accelerate and enlarge the contribution of atomic energy to peace, health and prosperity throughout the world'.¹⁸⁶ Following the Chernobyl accident in 1986, the IAEA and the international regulation of nuclear activities underwent a substantial reorientation. Presently, the area is receiving renewed attention as nuclear energy enjoys a resurgence as a low emissions technology in a world increasingly concerned with the effects of climate change.¹⁸⁷

The international regulation of radioactive substances commenced with the establishment in 1955 by the UN General Assembly of the Scientific Committee on the Effects of Atomic Radiation (UNSCEAR),¹⁸⁸ followed by the creation of the IAEA.¹⁸⁹ The other principal international institutions exercising competence in the field of radioactive substances are the European Atomic Energy Agency (EURATOM), established in 1957, and the Nuclear Energy Agency of the OECD, also established in 1957.

Specialised international treaty obligations concerning nuclear materials commenced with the adoption of treaties on liability for nuclear damage¹⁹⁰ and the protection of workers. Subsequent agreements have been adopted on atmospheric nuclear testing;¹⁹¹ the use and proliferation of nuclear weapons;¹⁹² border area co-operation; co-operation on nuclear safety and research; the protection of nuclear material; and nuclear emergencies. Disposal of radioactive waste is also regulated,¹⁹³ and some regions have been designated by states as nuclear-free zones. Under the auspices of the IAEA, several international conventions have been adopted, including treaties on the Physical Protection of Nuclear Material (1980),¹⁹⁴ Early Notification of a Nuclear Accident (1986),¹⁹⁵ Assistance in the Case of Nuclear Accident or Radiological Emergency (1986),¹⁹⁶ Nuclear Safety (1994)¹⁹⁷ and the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (1997).¹⁹⁸

Nuclear safety

The IAEA is required by its Statute to 'establish or adopt . . . standards of safety for protection of health and minimisation of danger to life and property' (including such standards for labour conditions).¹⁹⁹ It has adopted, with the assistance of the International Commission on

¹⁸⁶ IAEA Statute, Art. II.

¹⁸⁷ However, the release of radioactive contamination by the stricken Fukushima nuclear power plant following the earthquake and tsunami of March 2011 may dampen the enthusiasm of nations with respect to the introduction or expansion of nuclear sources of energy.

¹⁸⁸ UNGA Res. 913 (X), 3 December 1955.

¹⁸⁹ 23 October 1956, in force 29 July 1957, 276 UNTS 3, subsequently amended; see Chapter 3, pp. 75–6, above.

¹⁹⁰ Chapter 17, pp. 742–5, below.

¹⁹¹ Chapter 7, pp. 240 *et seq.*, above.

¹⁹² Treaty on the Non-Proliferation of Nuclear Weapons, 1 July 1968, in force 5 March 1970, 729 UNTS 161 ('nuclear weapon parties' agree not to transfer to 'non-nuclear weapon parties' any nuclear weapons or devices, or to assist the latter to manufacture, acquire or control such weapons or devices, and 'non-nuclear weapon parties' undertake to submit themselves to verification safeguards under the auspices of and in agreement with the IAEA). In 1995, the Treaty's application was extended indefinitely: 1995 Review and Extension Conference of Parties to NPT, Annex, Decision 3, 34 ILM 959 (1995).

¹⁹³ Chapter 12, pp. 574–5, below. ¹⁹⁴ 3 March 1980, in force 8 February 1987, 18 ILM 1419 (1979).

¹⁹⁵ 26 September 1986, in force 27 October 1986, 1457 UNTS 133.

¹⁹⁶ 26 September 1986, in force 26 February 1987 1457 UNTS 133.

¹⁹⁷ 17 June 1994, in force 24 October 1996, 33 ILM 1514.

¹⁹⁸ 5 September 1997, in force 18 June 2001, 36 ILM 1431 (1997). ¹⁹⁹ IAEA Statute, Art. III(A)(6).

Radiological Protection (ICRP) and other organisations, instruments on nuclear safety which are binding upon itself and must be applied in respect of its own research operations, but which are not binding upon its member states or third parties. This compares unfavourably with EURATOM and the OECD's Nuclear Energy Agency, which have the power to adopt binding acts. In practice, however, many IAEA standards are relied upon by states in developing and implementing national legislation and standards. The instruments that the IAEA may adopt as part of its Safety Standards series include Safety Fundamentals, Safety Requirements, and Safety Guides.²⁰⁰ These concern four thematic areas – the safety of nuclear facilities, radiation protection and the safety of radiation sources, safe management of radioactive waste, and safe transport of radioactive materials – as well as issues of general safety relating to government organisation, siting, design, operation and quality assurance. Significant instruments include the Basic Safety Standards that have been adopted for Radiation Protection,²⁰¹ the Regulations for Safe Transport of Radioactive Material,²⁰² the Radioactive Waste Safety Standards²⁰³ and the General Safety Requirements Governing Radiological Emergency.²⁰⁴ In September 1991, the General Conference of the IAEA invited its Director General to prepare an outline of the possible elements of a nuclear safety convention.²⁰⁵ An Expert Group subsequently identified a tentative list of obligations to be included in a nuclear safety convention, including a legislative framework for the regulation of civil nuclear facilities and activities of the nuclear fuel cycle; education and training of employees; emergency plans; safety (including siting, design, construction, commissioning and decommissioning); safe operation and maintenance; continuous safety surveillance; safe management and disposal of waste; and the sharing of information.²⁰⁶

1994 Nuclear Safety Convention

In June 1994, the Convention on Nuclear Safety was adopted under the auspices of the IAEA.²⁰⁷ The Convention has three objectives: to achieve and maintain a high level of nuclear safety worldwide; to establish and maintain effective defences in nuclear installations against potential radiological hazards to protect individuals, society and the environment from the harmful effects of ionising radiation; and to prevent accidents with radiological consequences and to mitigate such consequences should they occur.²⁰⁸ Parties are required to establish a national

²⁰⁰ IAEA, 'Long Term Structure of the IAEA Safety Standards and Current Status', December 2010, www.ns.iaea.org/downloads/standards/status.pdf.

²⁰¹ International Basic Safety Standards for Protection Against Ionizing Radiation and for the Safety of Radiation Sources (1996) (supersedes IAEA Safety Series No. 9, 1982).

²⁰² TS-R-1 (2009) (supersedes ST-1 (1996) and Safety Series No. 6 (1985) and No. 80).

²⁰³ See GSR Part 5 (2009) (supersedes WS-R-2, Pre-disposal Management of Radioactive Waste, Including Decommissioning (2000)); WS-R-1, Near Surface Disposal of Radioactive Waste (1999) (draft safety standard DS354 – Disposal of Radioactive Waste will supersede WS-R-1 on publication); on radioactive waste generally, see Chapter 12, pp. 555, 560, below.

²⁰⁴ GS-R-2, Preparedness and Response for a Nuclear or Radiological Emergency (2002).

²⁰⁵ IAEA GC(XXXV)/res./553 (1991).

²⁰⁶ Report of the Expert Group on Outline of the Possible Elements for an International Convention on Nuclear Safety, 13 December 1991, reprinted in Report by the Director General on Implementation of General Conference Resolution GC(XXXV)/res./553, GOV/2567 (1992).

²⁰⁷ Vienna, 17 June 1994, in force 24 October 1996; seventy-one states and Euratom are party; M. Kamminga, 'The IAEA Convention on Nuclear Safety', 44 *International and Comparative Law Quarterly* 872 (1995).

²⁰⁸ Art. 1. A 'nuclear installation' is 'any land-based civil nuclear power plant under its jurisdiction including such storage, handling and treatment facilities for radioactive materials as are on the same site and are directly related to the operation of the nuclear power plant': Art. 2(i).

regulatory body and to establish and maintain a legislative and regulatory framework to govern the safety of nuclear installations, providing, *inter alia*, for the establishment of applicable national safety requirements and regulations, a system of licensing, a system of regulatory inspection and assessments, and the enforcement of applicable regulations and of the terms of licences, including suspension, modification or revocation.²⁰⁹ Parties must give effect to 'general safety considerations' by prioritising safety, and must: ensure adequate financial and human resources; implement quality assurance programmes; carry out comprehensive and systematic safety assessments; ensure that radiation exposure to workers and the public is kept as low as reasonably achievable (and that no individual shall be exposed to radiation doses which exceed prescribed national dose limits); and establish on-site and off-site emergency preparedness plans.²¹⁰ In relation to safety, siting should be evaluated by reference to factors likely to affect safety for the projected lifetime of the installation and for impacts on individuals, society and the environment; design and construction should provide for 'several reliable levels and methods of protection' against the release of radioactive materials, technologies incorporated in the design and construction should be proven by experience or qualified by testing or analysis, and the design should allow for reliable, stable and easily manageable operation. Minimum standards are to be applied with regard to operation, including the principle that the generation of radioactive waste resulting from the operation of a nuclear installation should be kept to the minimum practicable for the process concerned, in terms of activity and volume.²¹¹ These obligations are characterised by their generality, by the failure to make reference to any of the IAEA's own international standards, and by the absence of any commitment to established and broadly accepted environmental requirements, such as environmental impact assessment. Compliance is also an issue in the absence of a non-compliance mechanism or any procedure for independent verification and inspection. At most, the Convention requires parties to meet periodically to review and discuss national reports on measures taken to implement their obligations.²¹²

1997 Joint Safety Convention

Three years after the conclusion of the Nuclear Safety Convention, the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (1997 Joint Safety Convention) was adopted, also under IAEA auspices. Its objectives are to achieve and maintain a high level of safety worldwide in spent fuel and radioactive waste management, to ensure that during all stages of spent fuel and radioactive waste management there are effective defences against potential hazards to protect against harmful effects of ionising radiation, and to prevent accidents.²¹³ The Convention applies to spent fuel management when the spent fuel results from the operation of civilian nuclear reactors, including certain discharges: it does not cover spent fuel held at reprocessing facilities as part of a reprocessing activity, or waste that contains only naturally occurring radioactive materials and that does not originate from the nuclear fuel cycle, or the safety of management of spent fuel or radioactive waste within military or defence programmes (unless the contracting party declares otherwise).²¹⁴ The 1997 Convention addresses the safety of spent fuel management²¹⁵ and of

²⁰⁹ Arts. 7 and 8. ²¹⁰ Arts. 10–16. ²¹¹ Arts. 17–19. ²¹² Art. 22.

²¹³ Vienna, 5 September 1997, in force 18 June 2001, 36 ILM 1431 (1997), Art. 1; thirty-one states are party.

²¹⁴ Art. 3. ²¹⁵ Arts. 4–10.

radioactive waste management²¹⁶ (addressing general requirements, existing facilities, siting, design and construction, safety assessment, operation, disposal of spent fuel and institutional measures after closure). With regard to general safety provisions, it includes similar provisions to the 1994 Convention in relation to the adoption of a legislative and regulatory framework, a regulatory body and responsibilities of the licence holder, as well as requirements in relation to human and financial resources, quality assurance and operational radiation procedure, emergency preparedness and decommissioning.²¹⁷

It is noteworthy that, unlike the 1994 Convention, the 1997 Convention refers to international standards: in relation to radiation protection, for example, it requires each party to ensure that 'no individual shall be exposed, in normal situations, to radiation doses which exceed national prescriptions for dose limitation which have due regard to internationally endorsed standards on radiation protection'.²¹⁸ The 1997 Convention also requires a party involved in transboundary movement to 'take the appropriate steps to ensure that such movement is undertaken in a manner consistent with the provisions of this Convention and relevant binding international instruments', and commits parties to a system of prior notification and consent.²¹⁹

Transport

Beyond the requirements of the 1997 Joint Safety Convention governing transboundary movements of spent fuel and radioactive waste, the provisions of the 1980 Convention on the Physical Protection of Nuclear Material apply to nuclear material used for peaceful purposes when being transported internationally and, to a more limited extent, the domestic use, storage and transport of nuclear material used for peaceful purposes.²²⁰ The Convention requires parties to ensure as far as practicable that nuclear material in international transport is protected in accordance with the requirements set forth in Annex I, and that nuclear material shall not be exported, imported or permitted transit through the territory unless assurances have been received that the nuclear material will be protected at Annex I levels.²²¹ The party responsible for receiving such assurances must identify and inform in advance transit states, as well as states whose airports or seaports the nuclear material is expected to enter.²²² Parties must identify and share information on their central authority having responsibility for the physical protection of nuclear material, co-operate in the event of theft, robbery or other unlawful taking, and co-operate and consult on the design, maintenance and improvement of physical protection systems.²²³ The Convention establishes a range of offences to be made punishable by each state, including theft or robbery or threats to use nuclear material to cause death or injury or property damage (but not environmental damage), and provides for jurisdiction over offences, and rules on detention, prosecution and extradition, as well as assistance between parties in criminal proceedings.²²⁴ Interestingly, and rarely, the Convention has a dispute settlement clause providing for the compulsory jurisdiction of the ICJ.²²⁵

²¹⁶ Arts. 11–17. ²¹⁷ Arts. 18–26. ²¹⁸ Art. 24(1)(ii) and (2)(ii). ²¹⁹ Art. 27; Chapter 12, pp. 574–5, below.

²²⁰ Vienna and New York, 3 March 1980, in force 8 February 1987, IELMT 980:18, Art. 2(1) and (2); 145 states and Euratom are party.

²²¹ Arts. 3 and 4(1)–(3). These provisions do not apply to domestic activities. Annex I sets out 'Levels of Physical Protection to be Applied in International Transport of Nuclear Materials as Categorised in Annex II'.

²²² Art. 4(5). ²²³ Art. 5. ²²⁴ Arts. 7–14. ²²⁵ Art. 17.

In July 2005, a conference was convened to amend the Convention in order to strengthen its provisions relating to nuclear security.²²⁶ In response to heightened concerns over the possibility of nuclear terrorism, the amended Convention will oblige states parties to establish 'an appropriate physical protection regime' for nuclear facilities and nuclear materials under their jurisdiction to protect against theft or sabotage.²²⁷ This obligation of protection extends to the international transport of nuclear materials until responsibility for such materials is properly transferred to another state. The amendments will take effect once they have been ratified by two-thirds of the states parties to the Convention.

Given that nuclear materials and fuel are often carried by sea, the IMO has also played a role in developing international regulation relating to nuclear safety in transport. In 1993, the IMO Assembly adopted a voluntary Code for the Safe Carriage of Irradiated Nuclear Fuel, Plutonium and High-Level Radioactive Wastes in Flasks On Board Ships (INF Code).²²⁸ The INF Code recommends how certain materials should be carried, including specifications for ships. The material covered by the Code includes irradiated nuclear fuel, plutonium and high-level radioactive wastes, and the Code applies to all ships carrying INF cargo except warships, naval auxiliary ships or other ships used only on government non-commercial service. The Code became legally binding with effect from 1 January 2001.²²⁹ Non-binding instruments adopting guidelines and recommendations for maritime aspects of radioactive substances have also been adopted by IMO²³⁰ and the IAEA.²³¹

Protection of workers and the public

Beyond the IAEA Safety Standards,²³² the 1960 ILO Convention (No. 115) Concerning the Protection of Workers Against Ionising Radiations aims to ensure effective protection of workers against ionising radiations.²³³ Their exposure must be restricted to the lowest practicable level, and parties must fix maximum permissible doses of radiation that may be received and maximum permissible amounts that can be taken into the body for workers directly engaged in radiation work, as well as others who may be exposed.²³⁴ The Convention provides for warnings to be used to indicate radiation hazards, the instruction of workers on precautions, the monitoring of workers and workplaces, and regular medical examinations.²³⁵

Border area co-operation

One of the most contentious issues regarding nuclear energy and radioactive substances has been the obligations of states constructing facilities in areas close to the border with other states. In recent times controversies have arisen between the United Kingdom and Ireland over a

²²⁶ Convention on the Physical Protection of Nuclear Material (CPPNM) Conference, Vienna, 4–8 July 2005.

²²⁷ Amendment to the Convention on the Physical Protection of Nuclear Material, not in force, Art. 2A.

²²⁸ IMO Res. A.748(18) (1993), as amended. The Code's regulations address, *inter alia*, damage stability, fire protection, structural considerations, cargo securing arrangements, radiological protection equipment and management, training and shipboard emergency plans.

²²⁹ IMO Res. MSC.88(71) (27 May 1999), as amended.

²³⁰ IMO Code of Safety for Nuclear Merchant Ships, IMO Res. A.491(XII), Part A (19 November 1981).

²³¹ Regulations for the Safe Transport of Radioactive Material (2009). ²³² See p. 538, above.

²³³ Geneva, 22 June 1960, in force 17 June 1962, 431 UNTS 41, Art. 3(1). ²³⁴ Arts. 5, 6(1), 7 and 8.

²³⁵ Arts. 9–12.

proposed nuclear reprocessing plant at Sellafield adjacent to the Irish Sea,²³⁶ in relation to a proposal to dispose of Taiwanese nuclear waste in North Korea at sites bordering South Korea, and in respect of the Temelin nuclear power plant in the Czech Republic, fifty miles from the border with Austria.²³⁷ Proposals such as these raise the question of the extent to which the state building the new facility must consult with neighbouring states and take into account their concerns about potential health and environmental effects in decision-making.

Several bilateral and other treaties promote consultations and other information sharing on the construction of nuclear power plants in border areas.²³⁸ A typical example is the 1980 Agreement Between Spain and Portugal on Co-operation in Matters Affecting the Safety of Nuclear Installations in the Vicinity of the Frontier, which provides that 'the competent authorities of the constructor country shall notify the neighbouring country of applications for licences for the siting, construction or operation of nuclear installations in the vicinity of the frontier which are submitted to them'.²³⁹ More generally, Article 17 of the 1994 Nuclear Safety Convention and Article 13 of the 1997 Joint Safety Convention commit parties to consult with other parties in the vicinity of a proposed nuclear installation or facility, insofar as they are likely to be affected by that installation or facility. Together with the general requirements of international law relating to prevention and notification, as well as environmental assessment, there is now sufficient treaty and other state practice to indicate that customary international law requires states that are planning nuclear activities which might entail a significant risk of transfrontier pollution to give early advice to any state affected and to enter into good faith consultations at the request of such a state.²⁴⁰

Emergencies

Following the Chernobyl accident, treaties on emergency notification and assistance were negotiated at the IAEA. The 1986 IAEA Convention on Early Notification of a Nuclear Accident (1986 Notification Convention)²⁴¹ was modelled on existing IAEA guidelines²⁴² and supplemented the bilateral and other treaties already adopted.²⁴³ The 1986 Notification Convention

²³⁶ See the discussion of the MOX litigation at Chapter 6, p. 205, above.

²³⁷ For a discussion, see R. Axelrod, 'Democracy and Nuclear Power: The Czech Case and the Global Nuclear Renaissance', in *The Global Environment: Institutions, Law and Policy* (2011, 3rd edn), 285–310.

²³⁸ See e.g. France–Belgium Agreement on Radiological Protection Concerning the Installations of the Nuclear Power Station of the Ardennes, 7 March 1967, 588 UNTS 227; Guidelines for Nordic Co-operation Concerning Nuclear Installations in the Border Areas, 15 November 1976; Denmark–Federal Republic of Germany, Agreement Relating to Exchange of Information on Construction of Nuclear Installations Along the Border, 4 July 1977, 17 ILM 274 (1978).

²³⁹ Agreement Between Portugal and Spain on Co-operation in Matters Affecting the Safety of Nuclear Installations in the Vicinity of the Border, Lisbon, 31 March 1980, in force 13 July 1981, Art. 2.

²⁴⁰ See e.g. 1982 ILA Montreal Rules, Arts. 6 and 7; 1987 IDI Resolution, Art. 8(1); on the principle of good-neighbourliness, see Chapter 6, pp. 649 *et seq.*, below; on the provision of information, see Chapter 15.

²⁴¹ 26 September 1986, in force 27 October 1986, 25 ILM 1370 (1986); see Chapter 15.

²⁴² IAEA Guidelines on Reportable Events, Integrated Planning and Information Exchange in a Transboundary Release of Radioactive Material, IAEA Doc. INFCIRC/321 (January 1985).

²⁴³ See e.g. Federal Republic of Germany–Luxembourg, Agreement on the Exchange of Information in Case of Accidents Which Could Have Radiological Consequences, 2 March 1978, 29 IPE 251; France–Switzerland, Agreement on the Exchange of Information in Case of Accidents Which Could Have Radiological Consequences, 18 October 1979, 27 IPE 382; Finland–Soviet Union, Agreement on Early Notification of a Nuclear Accident and on Exchange of Information Relating to Nuclear Facilities, 7 January 1987, IAEA LegSer No. 15, 187; Sweden–Soviet Union, Agreement on Early Notification of a Nuclear Accident and on Exchange of Information Relating to

has been followed by numerous bilateral and regional arrangements. The 1986 IAEA Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency (1986 Assistance Convention)²⁴⁴ was also modelled on existing IAEA guidelines²⁴⁵ and bilateral and other regional arrangements.²⁴⁶ It is intended to 'facilitate prompt assistance in the event of a nuclear accident or radiological emergency to minimise its consequences and to protect life, property and the environment from the effects of radioactive releases'.²⁴⁷ The 1986 Assistance Convention applies whether or not the accident occurred within the requesting state's territory or jurisdiction, and requires requesting states to specify the scope and type of assistance they require and to provide any information.²⁴⁸ Once a state has received a request for information, it must promptly decide and notify the requesting state whether it is in a position to render the assistance requested and the scope and terms of assistance it might provide, and to identify and notify the IAEA of experts, equipment and material which could be made available, and the terms on which it will provide assistance.²⁴⁹ The IAEA's responsibilities include making available appropriate resources for emergency purposes, transmitting information about resources, and if requested, co-ordinating available assistance at the national level.²⁵⁰ The 1986 Assistance Convention also includes administrative provisions on the direction and control of assistance, competent national authorities, reimbursement of costs, confidentiality of information, and rules on privileges, immunities, claims and compensation relating to persons or property injured or damaged in the course of providing assistance.²⁵¹

The 1986 Assistance Convention clearly marks a step in the right direction, removing many of the administrative barriers that frequently limit the effectiveness of international assistance in emergency situations. Nevertheless, it has been criticised for emphasising the protection of the assisting state: Argentina, for example, noted that under Article 10(2) the state receiving assistance is to be held responsible for all damage suffered by the assisting state, but the assisting state apparently assumes no responsibility for any damage which it might cause.²⁵² Furthermore, Article 7, on the reimbursement of costs, has the result that a state which caused a nuclear accident and which agrees to provide assistance to another affected state has the right to require reimbursement of assistance costs. This seems to be unsatisfactory, and led the representative of Luxembourg to conclude that the fundamental question of responsibility had not been properly resolved.²⁵³

Nuclear weapons and testing, and nuclear-free zones

While perceptions of the environmental risks associated with nuclear power have fluctuated over time, nuclear weapons and their potential proliferation have long been viewed as posing an important international problem, including from an environmental perspective. As a

Nuclear Facilities, 1 January 1988, IAEA LegSer No. 15, 407; see generally the list cited in E. Brown Weiss, P. C. Szasz and D. B. Magraw, *International Environmental Law: Basic Instruments and References* (1992).

²⁴⁴ Vienna, 26 September 1986, in force 26 February 1987, 25 ILM 1377 (1986).

²⁴⁵ Guidelines for Mutual Emergency Assistance Arrangements in Connection with a Nuclear Accident or Radiological Emergency, IAEA Doc. INF/CIRC/310 (January 1984).

²⁴⁶ See e.g. Nordic Mutual Emergency Assistance Agreement in Connection with Radiation Accidents, 17 October 1963, 525 UNTS 75.

²⁴⁷ Art. 1(1). ²⁴⁸ Arts. 1(1) and 2(2). ²⁴⁹ Art. 2(3) and (4). ²⁵⁰ Art. 2(6). ²⁵¹ Arts. 3, 4, 6, 7, 8 and 10.

²⁵² See the comment of the representative of Argentina at the Final Plenary Meeting of Governmental Experts, 15 August 1986, IAEA Doc. GC(SPL.I)/2, Annex V, 18 (1986).

²⁵³ *Ibid.*, 28.

consequence, the acquisition, use and testing of nuclear weapons has been addressed by a number of international conventions. They have also been the subject of various proceedings before the ICJ which, ironically perhaps, have made a rather significant contribution to the development of international environmental law.²⁵⁴

Aside from the 1968 Treaty on the Non-Proliferation of Nuclear Weapons,²⁵⁵ the objectives of the 1963 Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water include the desire to 'put an end to the contamination of man's environment by radioactive substances'.²⁵⁶ To that end, the parties have undertaken to prohibit, and not to participate in or encourage, any nuclear weapon test or other nuclear explosion at any place under their jurisdiction or control in the atmosphere, outer space, or under water or in any other environment if it causes radioactive debris to be present outside the territorial limit of the state under whose jurisdiction or control it is conducted.²⁵⁷ The 1963 Treaty allows underground nuclear tests, and does not establish institutional arrangements or mechanisms for verification and compliance. In 1991, an amendment conference was convened to widen the scope of the treaty to include underground testing and establish compliance controls as part of a comprehensive test ban treaty, but no amendments were adopted.²⁵⁸ The 1996 Comprehensive Nuclear Test Ban Treaty (1996 CTBT) commits parties 'not to carry out any nuclear weapon test explosion or any other nuclear explosion, and to prohibit and prevent any such nuclear explosion at any place under its jurisdiction or control', and to refrain from 'causing, encouraging, or in any way participating in the carrying out of any nuclear weapon test explosion or any other nuclear explosion'.²⁵⁹ The 1996 Treaty (which will not come into force until it receives ratification from nuclear powers such as the United States and China) establishes a comprehensive verification and inspection system.

The 1971 Treaty on the Prohibition of the Emplacement of Nuclear Weapons and other Weapons of Mass Destruction on the Sea-Bed and the Ocean Floor and in the Sub-Soil Thereof prohibits the placing of nuclear weapons or any other type of weapon of mass destruction, as well as related structures and facilities, on the seabed and ocean floor and in the subsoil beyond the outer limit of the seabed zone.²⁶⁰ The Treaty establishes a verification procedure leading ultimately to the reference of disputes to the UN Security Council.²⁶¹ In 1988, the UN General Assembly called on the UN Conference on Disarmament to agree on an international convention prohibiting the use or threat of use of nuclear weapons under any circumstances, but this has not materialised on a global basis.²⁶² At the regional level, however, nuclear-free zones have been established by treaty covering five regions: Latin America and the Caribbean, the South Pacific, Southeast Asia, Africa and Central Asia.

The 1967 Treaty for the Prohibition of Nuclear Weapons in Latin America and the Caribbean (Treaty of Tlatelolco) prohibits the testing, use, manufacture, production, acquisition, receipt, storage, installation, deployment or possession of any nuclear weapons by the parties in their territories.²⁶³ The Treaty does not prejudice the right of parties to use nuclear energy for

²⁵⁴ *Australia v. France, New Zealand v. France* (1974), Chapter 7, pp. 240–2, above, *New Zealand v. France* (1995), Chapter 6, p. 199, above, and Chapter 14, p. 620, below; Advisory Opinion on *The Legality of the Threat or Use of Nuclear Weapons* (1996), Chapter 6, pp. 199, 210, above.

²⁵⁵ See p. 537, above. ²⁵⁶ 5 August 1963, in force 10 October 1963, 480 UNTS 43, Preamble.

²⁵⁷ Art. I(1). ²⁵⁸ PTBT/CONF.13/Rev.1 (1991).

²⁵⁹ New York, 24 September 1996, not yet in force, 35 ILM 1439 (1996).

²⁶⁰ 11 February 1971, in force 18 May 1972, UKTS 13 (1973), Art. 1(1). ²⁶¹ Art. III.

²⁶² UNGA Res. 43/76 (1988).

²⁶³ 14 February 1967, in force 22 April 1968, 6 ILM 521 (1967), as amended, Arts. 1(2) and 4.

peaceful purposes and to carry out, subject to certain conditions, explosions of nuclear devices for peaceful purposes.²⁶⁴ Compliance with the Treaty is to be ensured by the Agency for the Prohibition of Nuclear Weapons in Latin America (OPANAL) and by a control system, including IAEA safeguards, to verify that devices and facilities intended for peaceful uses of nuclear energy are not being used in the testing or manufacture of weapons, that the prohibited activities are not being carried out, and that explosions for peaceful purposes are compatible with the Treaty.²⁶⁵

The 1985 South Pacific Nuclear Free Zone Treaty is designed to keep the South Pacific region 'free of environmental pollution by radioactive wastes and other radioactive matter'.²⁶⁶ Under the Treaty, each party agrees not to manufacture, acquire, possess or control any nuclear explosive device anywhere inside or outside the South Pacific Nuclear Free Zone; to prevent the stationing of nuclear explosive devices in their territory; to prevent the testing of nuclear explosive devices; and to prevent the dumping of radioactive wastes or matter in the Zone.²⁶⁷ Parties may only provide source or special fissionable material or related equipment or material to non-nuclear-weapon states which are subject to safeguards under Article III(1) of the 1968 Non-Proliferation Treaty or to nuclear weapon states subject to safeguard agreements with the IAEA.²⁶⁸ The Treaty establishes a control system that includes the application of IAEA safeguards to verify the non-diversion of nuclear material from peaceful nuclear activities to nuclear explosive devices.²⁶⁹ Protocol 1 to the Treaty allows France, the United Kingdom and the United States to undertake to apply the prohibitions under Articles 3, 5 and 6 of the Treaty that relate to manufacture, stationing and testing to territories for which they are internationally responsible situated within the Zone.²⁷⁰ Parties to Protocol 2 to the Treaty, which is open to signature by China, France, Russia, the United Kingdom and the United States, undertake not to use or threaten to use any nuclear explosive device against parties to the Treaty or any territory for which a state that has become a party to Protocol 1 is internationally responsible.²⁷¹ Parties to Protocol 3, which is open to signature by the same five states, agree not to test any nuclear explosive device anywhere within the Zone.²⁷²

The 1996 Treaty on the Nuclear-Weapon-Free Zone in Africa (1996 Pelindaba Treaty) establishes an African nuclear-weapon-free zone and commits parties to renounce research on, or to develop, manufacture, stockpile or otherwise acquire, possess or have control over, any nuclear explosive device by any means anywhere, to prevent the stationing of nuclear explosive devices in its territory, and to prohibit the testing of nuclear explosive devices.²⁷³ Parties also commit to declare, dismantle, destroy or convert nuclear explosive devices and the facilities for their manufacture.²⁷⁴ Going beyond other regional arrangements, the 1996 Pelindaba Treaty also commits parties to give effect to the 1991 Bamako Convention, to prohibit the dumping of radioactive wastes and other radioactive matter anywhere within the African

²⁶⁴ Arts. 17 and 18. ²⁶⁵ Arts. 7–16.

²⁶⁶ Rarotonga, 6 August 1985, in force 11 December 1986, 24 ILM 142 (1988), Preamble.

²⁶⁷ Arts. 3 and 5–7. Parties are free to decide whether to allow visits by ships or aircraft and transit of airspace and navigation by ships in their territorial sea or archipelagic waters: Art. 5(2).

²⁶⁸ Art. 4(a). ²⁶⁹ Art. 8(2)(c) and Annex 2. ²⁷⁰ Protocol 1, Art. 1.

²⁷¹ Protocol 2, Art. 2. China and the Soviet Union have ratified this Protocol. In May 2010, the US Secretary of State, Hillary Clinton, undertook to submit the Protocols to the Treaty to the US Senate for ratification.

²⁷² Protocol 3, Art. 1. China and Russia have ratified this Protocol.

²⁷³ Cairo, 1 April 1996, in force 15 July 2009, Arts. 1 and 3–5. ²⁷⁴ Art. 6.

nuclear-weapon-free zone, and to apply measures of physical protection equivalent to those provided for in the 1980 Convention on Physical Protection of Nuclear Material and in IAEA recommendations and guidelines.²⁷⁵ Three Protocols address the non-use of nuclear weapons, the prohibition on weapons testing, and the application of IAEA safeguards.

The 1996 Pelindaba Treaty was adopted following a call by the UN General Assembly on all states not to test, manufacture, use or deploy nuclear weapons in Africa, and to refrain from transferring such weapons, scientific data or technical assistance, either directly or indirectly, in any way which could assist in the manufacturing or use of nuclear weapons.²⁷⁶ The UN General Assembly also endorsed the concept of a nuclear-weapons-free zone in South Asia and urged the states of South Asia to continue to make all efforts to establish a nuclear-weapons-free zone in their region.²⁷⁷ This led to the conclusion in 1995 of the Southeast Asia Nuclear Weapons-Free Zone Treaty (the Treaty of Bangkok) that establishes a nuclear-weapons-free zone extending over the territories, and, uniquely, the continental shelf and exclusive economic zones, of its ten states parties.²⁷⁸ More recently, in 2006, five states in Central Asia concluded the Treaty of Semipalatinsk establishing the Central Asian Nuclear Weapons Free Zone.²⁷⁹ Obligations of parties under the two treaties are very similar to those under the other nuclear-weapons-free zone treaties and, like the Pelindaba Treaty, incorporate obligations on parties to apply particular IAEA safeguards.

OTHER HAZARDOUS ACTIVITIES

States and other members of the international community have accepted that the activities and substances identified in the preceding sections of this chapter pose sufficient risks to the environment and to human health to warrant the development and adoption of particularised international rules. At a general level, bodies such as the International Law Commission have also sought to codify and develop rules governing hazardous activities with the potential for significant adverse transboundary effects, including requirements for notification, consultation and prior risk assessment.²⁸⁰

Certain other activities are increasingly recognised as posing sufficient threats to the environment at the local, national, regional and global levels to warrant their special consideration by international organisations with a view to the development of international rules. The WSSD, for instance, addressed the need to develop sustainable agriculture,²⁸¹ promote eco-tourism²⁸² and foster sustainable mining practices (in accordance with national regulations and taking into account significant transboundary impacts).²⁸³ Apart from rules on noise pollution,²⁸⁴ new international environmental norms are likely to be developed at the regional and

²⁷⁵ Arts. 7 and 10. ²⁷⁶ UNGA Res. 2033 (XX) (1965). ²⁷⁷ UNGA Res. 45/53 (1990).

²⁷⁸ 15 December 1995, in force 28 March 1997, 35 ILM 635 (1996); parties are Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand and Vietnam.

²⁷⁹ 8 September 2006, in force 21 March 2009, available at <http://disarmament.un.org>.

²⁸⁰ Draft Articles on the Prevention of Transboundary Harm from Hazardous Activities 2001, *Yearbook of the International Law Commission* (2001-II), Part 2.

²⁸¹ Plan of Implementation, para. 38; see also para. 39 (land degradation). ²⁸² Para. 41. ²⁸³ Para. 44(b).

²⁸⁴ See e.g. OECD Council Recommendation on Noise Abatement Policies, OECD C(78)73 (Final), 3 July 1978; and OECD Council Recommendation on Strengthening Noise Abatement Policies, OECD C(85)103, 20 June 1985. See also the rules adopted by the ILO (pp. 533–6, above) and the ICAO (Chapter 3, p. 74, above).

global levels to address energy, mining, agriculture, transport and tourism. These may follow the approach taken by existing rules and guidelines adopted under the auspices of UNEP, the OECD and the EU.

Energy

Energy generation other than by nuclear sources has been the subject of limited attention, and even less action, by international organisations. Apart from the ECOSOC Committee on New and Renewable Sources of Energy (now the Committee on Energy and Natural Resources for Development), which has a limited mandate and no power to make binding or other acts,²⁸⁵ no UN body has responsibility for non-nuclear energy sources. The recent establishment of the International Renewable Energy Agency (IRENA) may go some way towards filling this gap.²⁸⁶ IRENA's constitutive statute states that its objective is to 'promote the widespread and increased adoption and the sustainable use of all forms of renewable energy'.²⁸⁷ Its activities will mainly take the form of issuing policy recommendations, and the provision of information and research.²⁸⁸

The environmental risks posed by energy use from fossil fuel sources (including coal, gas and oil), as well as certain non-renewable sources such as hydro-power, remain essentially unregulated at the international level and beyond the scope of a concerted or coherent international regulatory regime. To the extent that fossil fuel use in energy generation is 'regulated' by international law, it is as an incidental aspect of the rules governing mainly atmospheric pollution (in particular SO₂, NO_x and greenhouse gas obligations), waste, and the use of environmental impact assessments (and even then only in respect of very large plants and not overall energy policy).

There is, however, a growing recognition that the significant impact which energy policy and use has on the environment requires it to be the subject of its own institutional arrangements and substantive rules, which would be designed to develop national energy strategies, reduce the use of fossil fuel and wastage in energy distribution, develop renewable and other non-fossil fuel sources, and use energy more efficiently in homes and industry.²⁸⁹ Energy was one of the most controversial issues addressed at UNCED. Despite the opposition of some states, the majority of states managed to ensure that some energy-related topics, including energy efficiency and the development and application of new and renewable sources of energy, were addressed in Agenda 21.²⁹⁰ At the WSSD, no agreement was reached on fixing a specified target for the use of renewable sources of energy.²⁹¹ In the meantime, the main global forum for addressing energy issues has, in effect, been the Conference of the Parties to the Climate Change Convention and the 1997 Kyoto Protocol, which is charged with keeping under review the commitments adopted under the Convention and developing new commitments on limiting emissions of

²⁸⁵ See Chapter 3, pp. 67–9, above.

²⁸⁶ At a regional level, see also the Convention of the African Energy Commission, 11 July 2001, in force 13 December 2006, www.au.int/en/content/convention-african-energy-commission.

²⁸⁷ Statute of IRENA, Bonn, 26 January 2009, Art. II. 'Renewable energy' is defined to include bioenergy, geothermal, hydro-power, ocean energy and solar and wind energy: Art. III.

²⁸⁸ Art. IV. ²⁸⁹ See IUCN, UNEP and WWF, *Caring for the Earth* (1991), 89–95. ²⁹⁰ Chapter 7 above.

²⁹¹ Para. 19(c) of the Plan of Implementation merely commits states to give 'a greater share of the energy mix to renewable energies'; and para. 19(e) calls on states, 'with a sense of urgency, [to] substantially increase the global share of renewable energy sources'.

greenhouse gases from fossil fuel sources.²⁹² Guidance on the content of more specific future international energy-related legislation may be found in non-binding Recommendations adopted by the OECD on various aspects of energy's impact on the environment,²⁹³ and acts of the EU, which has adopted a range of measures on energy efficiency and conservation.²⁹⁴

Another regional initiative of potential global scope is the 1994 Energy Charter Treaty, which establishes a legal framework to promote long-term co-operation in the energy field.²⁹⁵ Recognising that state sovereignty and sovereign rights over energy resources must be exercised in accordance with and subject to the rules of international law, it commits parties to 'strive to minimize in an economically efficient manner harmful Environmental Impacts occurring either within or outside its Area from all operations within the Energy Cycle in its Area', in pursuit of sustainable development and taking into account parties' obligations under those international agreements concerning the environment to which they are party.²⁹⁶ It commits parties to strive to take precautionary measures 'to prevent or minimize environmental degradation', and recognises that the polluter should, in principle, bear the cost of pollution, including transboundary pollution.²⁹⁷ To those ends, it requires parties, *inter alia*, to: take account of environmental considerations throughout the formulation and implementation of their energy policies; more fully reflect environmental costs and benefits; encourage co-operation in international environmental standards; develop and use renewable energy sources; promote public awareness of the environmental impacts of energy systems; promote energy-efficient and environmentally sound technologies, practices and processes; and promote the transparent assessment at an early stage and prior to decision, and subsequent monitoring, of environmental impacts of environmentally significant energy investment projects.

The Charter also has a Protocol on Energy Efficiency and Related Environmental Aspects which aims to promote energy efficiency policies consistent with sustainable development, to create conditions which induce producers and consumers to use energy as economically, efficiently and environmentally soundly as possible, and to foster co-operation in the field of energy efficiency.²⁹⁸ It commits parties to establish energy-efficiency policies, to create a legal and regulatory framework which promotes energy efficiency, to develop, implement and update programmes, and to co-operate internationally.²⁹⁹

Mining

Despite its significant adverse environmental effects, mining has been the subject of few international rules (beyond environmental impact assessment and human rights

²⁹² Chapter 7, pp. 276 *et seq.*, above.

²⁹³ OECD Council Recommendation on Reduction of Environmental Impacts from Energy Production and Use, OECD C(76)162 (Final), 12 October 1976; OECD Council Recommendations on Reduction of Environmental Impacts from Energy Use in the Household and Commercial Sectors, OECD C(77)109 (Final), 21 September 1977; and OECD Council Recommendation on Environmentally Favourable Energy Options and Their Implementation, OECD C(85)102, 20 June 1985.

²⁹⁴ See also the Energy Protocol to the 1991 Alpine Convention, 22 December 2005, OJ L337, 22 December 2005, 36.

²⁹⁵ 17 December 1994, in force 16 April 1998, 34 ILM 360 (1995). The treaty has fifty-three members, mainly drawn from European states, but is open to accession from outside the European region.

²⁹⁶ Arts. 18 and 19(1). ²⁹⁷ *Ibid.*

²⁹⁸ Energy Charter Protocol on Energy Efficient and Related Environmental Aspects, Lisbon, 17 December 1994, in force 16 April 1998, 33 ILM 446 (1995), Art. 1.

²⁹⁹ Arts. 3(2) and 8(1).

requirements),³⁰⁰ with the significant exception of obligations imposed in the Antarctic region,³⁰¹ and in relation to deep seabed mining.³⁰² The impact of mining begins to be felt at the exploration stage, but becomes more significant during the extraction and metallurgical phases, where significant effects may occur for flora and fauna, sedimentation of rivers, acid and toxic drainage from tailings dumps and accidental overflow of waters, and in the pollution and toxic waste generated by the smelting process.³⁰³ Like energy, mining is regulated by international law only to the extent that it is incidentally addressed by rules developed more specifically to address the protection of flora and fauna, the disposal of wastes, air pollution and environmental impact assessments. Future international legislation on mining might be guided by the principles developed under non-binding guidelines such as those adopted by UNEP.³⁰⁴

In 1989, the ICJ was presented with an opportunity to consider some of the environmental aspects of mining in the *Case Concerning Certain Phosphate Lands in Nauru*,³⁰⁵ brought by Nauru against Australia. The issues raised by the case, which was settled by agreement between the parties in September 1993, included the extent of certain legal obligations on the use of natural resources, including the obligation to rehabilitate mined lands, and the land rights of indigenous inhabitants. Nauru is a central Pacific island with a landmass of twenty-one square kilometres and a population of approximately 6,000, which achieved independence in 1968. Despite its small size, it is rich in phosphate, which was discovered there in 1900, and subsequently the island became an important source of the substance for phosphate-poor countries like Australia and New Zealand.

From 1947 until 1968, Nauru had been a territory administered under a UN General Assembly approved Trusteeship Agreement between Australia, New Zealand and the United Kingdom. By the time it reached independence in 1968, large amounts of the phosphate had been mined and large parts of the island had been rendered uninhabitable. In May 1989, Nauru submitted an application to the ICJ asking it to declare Australia's responsibilities for breaches of international legal obligations relating to its phosphate mining activities in Nauru. Nauru claimed, *inter alia*, that Australia: had violated the 1947 Trusteeship Agreement and Article 76 of the UN Charter by contributing to the physical destruction of the island as a unit of self-determination accompanied by a failure to rehabilitate the land; had violated the principle of self-determination, occasioned by the literal disposal of the territorial foundation of the unit of self-determination accompanied by a failure to provide an adequate sinking fund to cover the costs of rehabilitating the mined lands; and had breached the obligation to respect the right of the Nauruan people to permanent sovereignty over natural resources, because a major resource was being depleted on grossly inequitable terms and the extraction of phosphate involved a physical reduction of the homeland of the people of Nauru. Nauru asked the Court to declare

³⁰⁰ See M. Orellana, *Indigenous Peoples, Mining and International Law* (International Institute for Environment and Development, Mining, Minerals and Sustainable Development Project, 2002).

³⁰¹ See 1988 Convention on the Regulation of Antarctic Mineral Resource Activities (CRAMRA) and 1991 Antarctic Environment Protocol, Chapter 13, pp. 582–91, below.

³⁰² Chapter 10, p. 463, above.

³⁰³ See T. Wilde, 'Environmental Policies Towards Mining in Developing Countries', 10 *Journal of Energy and Natural Resources Law* 327 at 329–30 (1992).

³⁰⁴ UNEP, 'Conclusions of the Study of Legal Aspects Concerning the Environment Related to Offshore Mining and Drilling Within the Limits of National Jurisdiction', UNEP/GC/Dec./10/14VI, 31 May 1982, 7 *Environmental Policy and Law* 50.

³⁰⁵ *Case Concerning Nauru v. Australia* (Preliminary Objections) (1992) ICJ Reports 240.

that Australia had incurred an international legal responsibility for breach of these and other obligations, and requested primarily a declaration of Australia's liability. Included among the five forms of loss identified as the basis of relief was the cost of rehabilitation of the phosphate lands worked out before 1 July 1967.

In June 1992, the Court found, by nine votes to four, that it had jurisdiction over the application and that the application was admissible, with the exception of one claim.³⁰⁶ Some of the grounds raised by Australia, and the findings by the Court in respect thereof, are of some relevance to broader issues of international environmental law, including the waiver of environmental claims, the time period within which such claims should be brought, the conditions in which good faith principles will have been violated, and the issue of joint and several liability. In August 1993, Australia offered Nauru A\$107 million in full and final settlement of the claim, which sum was accepted by Nauru with an undertaking to discontinue proceedings and bring no further claims.³⁰⁷ The Court did not have the opportunity to consider the merits, including the possibility of assessing the costs of rehabilitation. Nevertheless, it set out certain principles of some significance for the development of international environmental law. First, for the waiver of any claim, including an environmental claim, to be effective, it will need to be made in a clear and express form. Second, acts of international institutions (in this case, a General Assembly resolution) which have definitive legal effects will not discharge rights which might exist in regard to environmental and other claims in the face of clearly expressed differences of opinion which exist between states supporting such an act. Third, provided that certain minimum steps are taken to maintain a legal position and promote a legal claim, the passage of time will not necessarily render a claim inadmissible. Fourth, and particularly of significance in the environmental field, the question of whether states have 'joint and several liability' is to be distinguished from the question of whether one of those states may be sued alone in respect of a claim of a breach of an international legal obligation, and the possibility that attributing responsibility to one state might have implications for the legal situation of other states concerned does not establish a bar to proceedings being brought against that one state.

Agriculture

The impact of agriculture on the environment is well documented. Threats that are incidentally subject to international legal regulation include: expanding farms that destroy forests and wetlands; soil erosion; the use of pesticides that damage flora and fauna; release of greenhouse gas emissions from livestock and other farming practices; and chemical run-off and consequential contamination of freshwater resources from excessive fertiliser use.³⁰⁸ Agricultural practices are significantly influenced and affected by the rules of international law addressing the use of pesticides, the protection of watercourses, environmental assessment, the conservation of biodiversity, including forests, and increasingly rules under the international climate change regime. Nevertheless, agriculture is not subject to a co-ordinated regime of legal obligations which apply specific rules at the regional or global level, and which might prepare

³⁰⁶ *Ibid.*

³⁰⁷ *Australia–Republic of Nauru: Settlement of the Case in the International Court of Justice Concerning Certain Phosphate Lands in Nauru*, 32 ILM 1471 (1993).

³⁰⁸ World Resources Institute and International Institute for Environment and Development, *World Resources 1988–9* (1989), 135–7.

and implement strategies to use agricultural land optimally, control the use of fertilisers and pesticides, and promote proper land husbandry. While specific agreements address drought and desertification,³⁰⁹ the humane treatment of animals,³¹⁰ and mountain farming in the European Alpine region,³¹¹ only non-binding instruments on the regulation of agricultural practices have been adopted by UNEP and the FAO. These address the use of environmental impact assessment on agricultural activities,³¹² and other environmental aspects of agricultural practices.³¹³ It remains to be seen how the WTO Agreement on Agriculture's exemption of environmental programmes from rules limiting governmental subsidies will be applied.³¹⁴

Transportation

Transportation is a major contributor to fossil fuel use and a significant source of urban air pollution, sulphur dioxide emissions and greenhouse gas emissions. Roads and railways also make use of land in ways that can be particularly damaging to biodiversity. The regulation of environmental aspects of air and sea transport is a matter for the ICAO and the IMO respectively, but transportation by road and rail is not addressed by any UN body, or subject to a body of international rules which would allow the development of an integrated transport policy which takes account of the environmental consequences of the different modes of transport and the elaboration and implementation of fuel efficiency standards, emissions standards and waste-minimisation standards. In this regard, only the UNECE has adopted binding standards, which may provide a basis for the adoption of minimum standards in other regions and globally.³¹⁵

Tourism

Finally, in recent years, tourism has begun to be the subject of a new body of rules aimed at addressing environmental degradation from this source. The adverse environmental effects of tourism and related recreational activities have led to the adoption of national and regional environmental standards,³¹⁶ and at the international level restrictions have been imposed on tourism in the Antarctic region,³¹⁷ and non-binding guidelines adopted by UNEP and the OECD.³¹⁸

³⁰⁹ Chapter 10, pp. 500–1, above.

³¹⁰ See European Convention for the Protection of Animals During International Transport (revised), Chisinau, 6 November 2003, CETS No. 193, in force 14 March 2006; European Convention for the Protection of Animals Kept for Farming Purposes, Strasbourg, 10 March 1976, CETS No. 87, in force 10 September 1978.

³¹¹ Mountain Farming Protocol to the 1991 Alpine Convention, 30 September 2006, OJ L271, 30 September 2006, 63.

³¹² FAO, Comparative Legal Study on Environmental Impact Assessment and Agricultural Development, FAO Paper 2 (1982).

³¹³ Environmental Guidelines for the Formulation of National Soil Policies, UNEP EMG No. 7 (1983); Environmental Guidelines for Agricultural Mechanization, UNEP EMG No. 10 (1986); Environmental Guidelines for Agroforestry Projects, UNEP EMG No. 11 (1986); UNEP Environmental Guidelines for Farming Systems Research, UNEP EMG, No. 12 (1986).

³¹⁴ 1994 Agreement, Annex 2.

³¹⁵ See Chapter 7, pp. 246 *et seq.*, above. See also Transport Protocol to the 1991 Alpine Convention, OJ L323, 8 December 2007, 15.

³¹⁶ See Tourism Protocol to the 1991 Alpine Convention, OJ L337, 22 December 2005, 43.

³¹⁷ Chapter 13, pp. 589–90, below.

³¹⁸ OECD Council Recommendation, Environment and Tourism, OECD C(79)115, 8 May 1979; 1982 UNEP Environmental Guidelines for Coastal Tourism, UNEP EMG No. 6. See also UNEP's Tourism and Environment Programme, www.unep.fr/scp/tourism.

CONCLUSIONS

In 2002, at the WSSD participant countries stated an aim to ensure by 2020 that 'chemicals are used and produced in ways that lead to the minimization of significant adverse effects on human health and the environment, using transparent science-based risk assessment and management procedures, taking into account the precautionary approach'.³¹⁹ Ten years on, a single, overarching institutional and legal framework for governing the variety of environmental and human health risks posed by hazardous substances and activities is still lacking. Instead, the rules of international law relating specifically to hazardous substances and activities are set out in a multitude of sources, many of which are inaccessible and difficult to comprehend easily. For some, the lack of a systematic approach to international legal regulation in the area is in fact an advantage given the complexity of the risk problem posed. For instance, David Wirth comments: 'The wider the array of options, the greater the potential for creatively meeting new challenges.'³²⁰ Nonetheless, this flexibility has to be set against the significant problems for enforcement and consistent domestic implementation posed by the lack of a co-ordinated international regulatory approach.

Since the first edition of this book appeared, there have been a number of significant developments in international law governing hazardous substances and activities, reflected, in particular, in the consolidation and development of existing instruments and the adoption of new international conventions relating to chemicals and pesticides (1998) and persistent organic pollutants (2001). These latter instruments reflect a commitment to establish and implement global minimum standards which are legally binding and (relatively) accessible, and which (at least in respect of POPs) give effect to a more precautionary approach to international regulation. They also reflect a commitment to make use of a mix of regulatory approaches, including trade mechanisms, prohibitions and information requirements (labelling in particular), but not the more innovative economic instruments adopted in other areas of international environmental law, such as in the climate change regime. In the medium term, it is plain that efforts will focus on continuing to encourage broad support for these instruments and their implementation, including through the augmentation of their lists of banned and restricted substances and the establishment of new non-compliance mechanisms. Initiatives are also being undertaken to improve co-ordination between the treaties in different fields, such as convening joint meetings of the Conference of the Parties to the Chemicals, POPs and Basel Conventions.³²¹

Notwithstanding these important developments, much remains to be done. There has been some progress in consolidating arrangements so as to remove disparities in, for example, legal

³¹⁹ Plan of Implementation of the World Summit on Sustainable Development, Chapter III, para. 23.

³²⁰ D. A. Wirth, 'Hazardous Substances and Activities', in D. Bodansky, J. Brunnée and E. Hey (eds.), *The Oxford Handbook of International Environmental Law* (2007), 394, 422. One such new challenge may lie in the area of nanotechnology, which has given rise to a vast number of substances of often unknown environmental and health effects. See further 'Emerging Technologies: Nanotechnology', in D. Leary and B. Pisupati, *The Future of International Environmental Law* (2010).

³²¹ Simultaneous extraordinary meetings of the Conferences of the Parties to the Basel, Rotterdam and Stockholm Conventions were held in the Bali International Convention Centre in Nusa Dua, Bali, Indonesia, from 22 to 24 February 2010, in co-ordination with the eleventh special session of the Governing Council/Global Ministerial Environment Forum (GC/GMEF) of the United Nations Environment Programme which was held at the same venue from 24 to 26 February 2010.

obligations relating to transport, and to institute a globally harmonised classification and registration scheme. However, there has been little easing of the task of collecting and disseminating information and ensuring ease of use by those who need it most: citizens and workers.³²² Other gaps also exist. In most regions of the world, there are no international rules of general application on emergency preparedness and response, and the ILO's Convention on Emergency Preparedness should be accorded high priority as an instrument to be applied in the various regions. Also underdeveloped are arrangements for ensuring technology transfer and financial assistance to developing countries in order to implement international obligations for the safe management of hazardous substances.

In striving to meet the '2020 goal' set by the WSSD, an important milestone has been the establishment of the Strategic Approach to International Chemicals Management (SAICM), a policy framework designed to promote global chemical safety. The SAICM was adopted by an International Conference on Chemicals Management in Dubai in 2006 under the auspices of UNEP, the Inter-organisation Programme for the Sound Management of Chemicals (IOMC) and the Intergovernmental Forum on Chemical Safety (IFCS). It consists of the Dubai Declaration on International Chemicals Management, an Overarching Policy Strategy, and a Global Plan of Action.³²³ The latter two documents contain provisions relating to five broad areas (risk reduction, knowledge and information, governance, capacity-building and technical co-operation) and addressing illegal international traffic. To date, the major activities undertaken under the SAICM appear to be confined to information exchange, convening regional meetings and an innovative 'Quick Start Programme' that includes access to funding to 'support initial enabling capacity-building and implementation activities in developing countries, least developed countries, small island developing states and countries with economies in transition'. Of course, international environmental law is very familiar with soft law documents setting out broad strategic goals and plans of action. Only time will tell whether the SAICM is able to achieve effective, systematic governance in the area of hazardous substances or whether it shares the fate of many other similar initiatives: setting out a number of aspirational objectives and planned actions that are forever waiting full implementation.

³²² In the UNECE region, this task may be eased by initiatives such as the 2003 Pollutant Release and Transfer Register Protocol to the Aarhus Convention, which came into force on 8 October 2009.

³²³ Strategic Approach to International Chemicals Management: Comprising the Dubai Declaration on International Chemicals Management, the Overarching Policy Strategy and the Global Plan of Action, 2006.

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Waste

INTRODUCTION

This chapter describes the rules of international law relating to the management of waste, including: prevention and treatment; disposal; recycling and re-use; and international movement (including trade). Liability for environmental damage caused by wastes is addressed in Chapter 17, and there is an emerging case law at the European Court of Human Rights linking waste with the protection of fundamental human rights.¹ Except for rules on international trade in wastes, this remains a developing area of international law. Other than the particular rules applicable in the Antarctic² and the EU,³ there is no regional or global legal framework for a waste management strategy. Rather, waste has traditionally been regulated incidentally to the attainment of other objectives. Among the relevant international legal measures are those regulating the disposal of wastes at sea;⁴ limiting atmospheric emissions of gaseous wastes;⁵ and preventing the disposal of wastes in rivers and other freshwaters.⁶ This approach does not address the source of the problem by preventing waste generation; it merely shifts the disposal problem to another environmental medium.

In the context of the massive increase in the generation of all types of waste resulting from industrial activity, this is a major shortcoming in the rules of international environmental law. Part of the problem is institutional: at the global level, no UN or other body has overall responsibility for waste, and this has led to a fragmented, *ad hoc* and piecemeal international response. The Stockholm Conference did not focus on the issue of waste as such: without specifically mentioning waste, Principle 6 of the 1972 Stockholm Declaration called for the discharge of toxic or other substances to be halted. The 1982 World Charter for Nature called for 'special precautions' to be taken to prevent discharge of radioactive or toxic wastes, but did not encourage minimisation of the generation of such wastes. At UNCED, the issue of waste was addressed in some detail and in a more concerted fashion in Agenda 21 with the development of proposals, including targets and timetables, for the management of hazardous

¹ E.g. *Lopez Ostra v. Spain* (1995) 20 EHRR 277 (Judgment 41/1993/436/515 of 9 December 1994); *Guerra and Others v. Italy* (1998) 26 EHRR 357 (Judgment 116/1996/735/932 of 19 February 1998); and *Öneriyildiz v. Turkey* (2005) 41 EHRR 20 (Judgment 48939/99 of 30 November 2004); see Chapter 18, pp. 783–4, below.

² Chapter 13, below.

³ See the second edition of this text, at Chapter 15, pp. 786–93.

⁴ See pp. 563–4, below.

⁵ See generally Chapter 7 above. ⁶ See p. 564, below.

wastes,⁷ solid wastes (including sewage)⁸ and radioactive wastes.⁹ Nonetheless, Principle 14 of the Rio Declaration limited itself to calling for effective co-operation to 'discourage or prevent the relocation or transfer to other states of any activities and substances that cause severe environmental degradation or are found to be harmful to human health'. In 1997, the UN General Assembly called for the storage, transportation, transboundary movement and disposal of radioactive wastes to be guided by the principles of Agenda 21 and the Rio Declaration.¹⁰ The WSSD, ten years after the Rio Declaration and Agenda 21, did little to amplify their provisions.¹¹

⁷ Chapter 20 of Agenda 21 identified the overall objective in relation to hazardous waste as being 'to prevent to the extent possible, and minimise, the generation of hazardous wastes, as well as to manage those wastes in such a way that they do not cause harm to health and the environment': Agenda 21, Chapter 20 ('Environmentally Sound Management of Hazardous Wastes, Including Prevention of Illegal International Traffic in Hazardous Wastes'), para. 20.6. To that end, the overall objectives included: developing an integrated cleaner production approach; eliminating or reducing to a minimum transboundary movements; and implementing the 'self-sufficiency principle' to ensure that management should as far as possible take place in the country of origin: para. 20.7(a).

⁸ Chapter 21 of Agenda 21 identified four interrelated programme areas for solid wastes and sewage. These were intended to create a framework for minimising wastes, maximising environmentally sound waste re-use and recycling, promoting environmentally sound waste disposal and treatment, and extending waste service coverage. See Agenda 21, Chapter 21 ('Environmentally Sound Management of Solid Wastes and Sewage-Related Issues'), paras. 21.5 and 21.6. 'Solid wastes' were defined as 'domestic refuse and non-hazardous wastes such as commercial and institutional wastes, street sweepings and construction debris': para. 21.3. Human wastes, ash from incinerators, septic tank sludge and other sludge were to be treated as hazardous wastes if they manifest 'hazardous characteristics': *ibid.* The specific waste minimisation objectives included goals based on waste weight, volume and composition for stabilising or reducing waste production over an agreed timeframe and inducing separation to facilitate recycling and re-use: para. 21.8(a). With regard to environmentally sound waste disposal and treatment, Agenda 21 called for the establishment of waste treatment and disposal quality criteria and capacity in order to ensure that most sewage, wastewaters and solid wastes were treated or disposed of in conformity with national or international guidelines, by 1995 in industrialised countries and by 2005 for developing countries, and disposal of all sewage, wastewaters and solid wastes in conformity with national or international guidelines by 2025: paras. 21.29, 21.39(b) and 21.40(b).

⁹ Chapter 22 of Agenda 21 addressed the management of radioactive wastes, and took as its basis for action the radiological and safety risk resulting from the 200,000 cubic metres of low-level and intermediate-level radioactive waste and 10,000 cubic metres of high-level radioactive waste produced annually: Agenda 21, Chapter 22 ('Safe and Environmentally Sound Management of Radioactive Wastes'), para. 22.1. The chapter (one of the most controversial at UNCED) called for: promoting policies and practical measures to minimise and limit the generation of radioactive wastes and to provide for their safe processing, conditioning, transportation and disposal; supporting efforts within the IAEA to develop and apply radioactive waste safety standards or guidelines and codes of practice; promoting safe storage, transportation and disposal; and promoting proper planning of safe and environmentally sound management, including environmental impact assessment where appropriate: para. 22.4. Specific international co-operation was also called for: to implement the 1990 IAEA Code and keep under review a possible legally binding instrument; to encourage the 1972 London Convention to complete studies on replacing the voluntary moratorium on low-level radioactive waste disposal at sea by a ban, taking into account the precautionary approach; not to promote or allow the storage or disposal of high-, intermediate- or low-level radioactive wastes near the marine environment (this issue is once again likely to come to the fore, following the damage caused to the Fukushima nuclear plant by the earthquake and tsunami of March 2011); not to export radioactive wastes to countries that prohibit the import of such wastes; and to respect, in accordance with international law, the decisions taken by parties to other relevant regional environmental conventions dealing with other aspects of radioactive wastes: para. 22.5(a)-(e).

¹⁰ UNGA Res. A/S-19/29, Programme for the Further Implementation of Agenda 21, 19 September 1997, para. 59.

¹¹ The WSSD Plan of Implementation calls in the most general terms on the need to '[p]revent and minimize waste and maximize reuse, recycling and use of environmentally friendly alternative materials', including actions to '(a) [d]evelop waste management systems, with highest priorities placed on waste prevention and minimization, reuse and recycling, and environmentally sound disposal facilities, including technology to recapture the energy contained in waste, and encourage small-scale waste-recycling initiatives that support urban and rural waste management and provide income-generating opportunities, with international support for developing countries; (b) [p]romote waste prevention and minimization by encouraging production of reusable consumer goods and biodegradable products and developing the infrastructure required'.

The WSSD Plan of Implementation contained only a number of fairly general statements in respect of hazardous wastes,¹² and solid wastes management.¹³

One of the first serious attempts to establish the basis for a more comprehensive international approach to waste management was the 1976 OECD Council Recommendation on a Comprehensive Waste Management Policy. This recommended that member countries implement waste policies to protect the environment and ensure rational use of energy and resources while taking account of economic constraints.¹⁴ Recommended principles included the need: to take environmental protection into account; to encourage waste prevention; to promote recycling; to use policy instruments; and to ensure access to information.¹⁵ The Recommendation also endorsed administrative arrangements, including: inventories of wastes to be disposed; the organisation of waste collection; the establishment of disposal centres; the promotion of research and development on disposal methods and low-waste technology; and encouraging markets for recycled products.¹⁶

Ten years later, the UNEP Governing Council endorsed the 1987 Cairo Guidelines and Principles for the Environmentally Sound Management of Hazardous Wastes, which assist governments to develop policies for environmentally sound management of hazardous wastes from generation to final disposal.¹⁷ The Guidelines include general principles to protect human health and the environment from damage from hazardous waste, including its transfrontier movement, and the requirement that 'all practicable steps' should be taken to ensure that management of hazardous waste is conducted in accordance with applicable international law in matters of environmental protection.¹⁸ Further principles address non-discrimination, international co-operation, transfer of technology, and a recognition that the protection of the environment 'is not achieved by the mere transformation of one form of pollution into another, nor by the mere transfer of the effects of pollution from one location to another, but only by the use of the waste treatment option . . . which minimises the environmental impact'.¹⁹ Subsequent principles address: generation and management (Principles 7 and 8); disposal (Principles 9–18); monitoring, remedial action and record-keeping (Principles 19 and 20); safety and contingency planning (Principles 21–23); transport (Principles 24–28); and liability and compensation (Principle 29). In 1990, the EU adopted a first Community Strategy for Waste Management, to guide waste management policy for member states. Following a Commission review of the Strategy, in 1997, the Council adopted a revised Community Strategy for Waste Management, and in recent years new measures have been adopted to supplement the original Directive 91/689/EEC on hazardous waste.²⁰

¹² These encouraged partnerships to promote environmentally sound management of hazardous wastes, called for the implementation of multilateral environmental agreements and promoted efforts aimed at 'preventing illegal trafficking of hazardous chemicals and wastes to prevent damage resulting from the transboundary movements and disposal of hazardous wastes in a manner consistent with obligations under relevant international instruments, such as the Basel Convention': Plan of Implementation of the World Summit on Sustainable Development, A/CONF.199/20, para. 23.

¹³ The 2002 Johannesburg Plan for Implementation prioritised the need for waste prevention and called for small-scale waste-recycling initiatives. Plan of Implementation of the World Summit on Sustainable Development, Johannesburg, 26 August–4 September 2002, A/CONF.199/20, para. 22. The Commission on Sustainable Development addressed solid waste management in its fourth cycle (2010–11).

¹⁴ OECD C(76) 155 Final (1976). ¹⁵ Annex, paras. 2–6. ¹⁶ Para. 7.

¹⁷ UNEP/GC.14/17 (1987), Annex II, UNEP GC/dec./14/30, UNEP ELPG No. 8.

¹⁸ Principle 2. ¹⁹ Principles 3–6.

²⁰ Waste Directive 2006/12/EC; Regulation (EC) No. 1013/2006 on the shipments of waste; Waste Directive 2008/98/EC; Decision 2000/532/EC on Lists of Waste.

DEFINING AND TREATING WASTE

International legal regulation of waste began in the early 1970s with the adoption of two treaties that prohibited the disposal at sea of certain types of waste. This raised the difficulty of defining waste, a matter that continues to cause legal difficulties today. Human activity generates waste in solid, liquid and gaseous forms, and these wastes have tended to be categorised by regulatory instruments at the national and international level according to two characteristics: their source (municipal or industrial, including agricultural and mining); and/or their hazardous qualities (non-hazardous, hazardous and ultrahazardous). Within these categorisations, international legal instruments adopt a range of different definitions, as the following examples illustrate. One approach, adopted by the Cairo Guidelines, is to define waste by reference to national law, although this approach has not been widely followed. Other efforts establish internationally agreed definitions. Under the 1972 London Convention, wastes or other matters are defined broadly to include ‘material and substance of any kind, form or description’.²¹ The 1989 Basel Convention, on the other hand, defines wastes by reference to their end use: they are ‘substances or objects which are disposed of or are intended to be disposed of or are required to be disposed of by the provisions of national law’.²² Under this definition, a substance which is not to be disposed of (perhaps to be recycled) may not be waste. A similar definition exists under EU law, which originally (in 1975) defined waste as ‘any substance or object which the holder disposes of or is required to dispose of pursuant to the rules of national law’.²³ This definition caused practical problems because it allowed many substances to be excluded if the holder treated the substances other than by disposal. In 1990, the European Court of Justice broadened the definition so that waste did not exclude ‘substances and objects which are capable of economic re-utilisation’,²⁴ and the following year the definition was further amended to mean ‘any substance or object . . . which the holder discards or intends or is required to discard’.²⁵ More recently, the 1992 OSPAR Convention has reversed the traditional approach by defining waste by reference to what it was not, rather than what it was,²⁶ and the 1996 Protocol to the 1972 London Convention defines wastes and other matters as ‘material and substance of any kind, form or description’.²⁷ It is not apparent that this shift in approach has permitted more effective international regulation by limiting the scope for definitional disagreements.

Municipal waste

Municipal waste, which is not deemed to be hazardous, generally includes that generated by households, shops, offices and other commercial units, and includes paper and cardboard, glass,

²¹ Art. III(4). The 1976 Barcelona Dumping Protocol adopted the same definition: Art. 3(2).

²² Art. 2(1). The 1991 Bamako Convention, Art. I(1), and the 1995 Waigani Convention, Art. 1, adopt a similar definition.

²³ Council Directive 75/442/EEC, Art. 1(a).

²⁴ Joined Cases C-206 and C-207/88, *Vessaso and Zanetti* [1990] ECR I-1461; see also Case C-359/88, *Zanetti and Others* [1990] ECR I-1509, holding that national legislation defining waste as excluding substances or objects which are capable of economic re-utilisation was incompatible with Directives 75/442 and 78/319.

²⁵ Council Directive 75/442/EEC, as amended by Council Directive 91/156/EEC, OJ L78, 26 March 1991, 32, Art. 1(a).

²⁶ Art. 1(o); waste does not include human remains, offshore installations, offshore pipelines, and unprocessed fish and fish offal.

²⁷ Art. 1(8).

plastics, metals, organic matter and putrescible material. The generation of municipal wastes is closely related to levels of industrialisation and income: industrialised countries are estimated to have a waste density of 150 kg per cubic metre and a generation rate per capita of 3 kg per day compared with a waste density of 500 kg per cubic metre and a generation rate of only 0.2 kg per day in low-income countries.²⁸ UNEP has estimated that, in 2006, the total amount of municipal solid waste generated globally was 2.02 billion tonnes and that this figure would rise by 37.3 per cent by 2011.²⁹ Rapid industrialisation has resulted in large increases in the generation of waste paper and plastic.³⁰ The two main techniques for disposal of municipal waste are landfill (accounting for over 70 per cent in most OECD countries) and incineration.³¹ The main environmental problems related to landfill are the generation of methane (a greenhouse gas)³² and the production of leachates that may contaminate surface or groundwaters. Incineration contributes to air pollution by generating dust, acidic and greenhouse gases, vapourised metals, metal salts, and dioxins and furans.³³ In addition, solid wastes openly dumped on land represent a breeding ground for disease-causing organisms presenting a public health problem.³⁴

Hazardous and toxic wastes (industrial, agricultural and mining waste and sewage sludge)³⁵

Non-municipal waste tends to be categorised by reference to its source (industrial, mining or agricultural) and, in relation to the applicable rules, its characteristics (non-hazardous, hazardous, toxic, radioactive). Industrial wastes include general factory rubbish, packaging materials, organic wastes, acids, alkalis and metalliferous sludges. Mining wastes are a by-product of the extraction process and include topsoil, rock and dirt, which may be contaminated by metals and coal. Agricultural wastes comprise animal slurries, silage effluents, tank washings following pesticide use, and empty plastic packaging. Non-municipal wastes also include sewage sludge, which is produced by the treatment of industrial and domestic wastes and is often contaminated with heavy metals, organic chemicals, greases and oils. Many industrial and mining wastes are hazardous and require special treatment in their disposal. The options for hazardous waste include physical or chemical treatment, incineration, landfill, sea disposal,

²⁸ UN-Habitat, *Solid Waste Management in the World's Cities: Water and Sanitation in the World's Cities 2010* (2010), 94.

²⁹ UNEP, *Developing Integrated Solid Waste Management Plan*, vol. 2, *Assessment of Current Waste Management System and Gaps Therein* (2009), 2.

³⁰ UNEP, *Environmental Data Report* (3rd edn, 1991), 334 and Table 8.2. See also UN-Habitat, *Solid Waste Management in the World's Cities: Water and Sanitation in the World's Cities 2010* (2010), 94, 108.

³¹ *Ibid.*, 336–7 and Table 8.6.

³² See *Öneryıldız v. Turkey* (Application No. 48939/99, 30 November 2004) in which the European Court of Human Rights held that Turkey was in violation of Arts. 1 (right to a fair hearing), 2 (right to life) and 13 (right to an effective remedy) of the Convention on account of a methane gas explosion at a landfill site near Istanbul which resulted in the death of nine members of the applicant's family.

³³ UNEP, *Environmental Data Report* (1991, 3rd edn), 336–7 and Table 8.6. See also UNEP, *Global Environment Outlook GEO4: Environment for Development* (2007), 76.

³⁴ UN-Habitat, *Solid Waste Management in the World's Cities: Water and Sanitation in the World's Cities 2010* (2010), 94.

³⁵ UNEP, *Environmental Data Report* (1991, 3rd edn), 335–6.

storage or containment, and recycling.³⁶ Large quantities of organic waste, including sewage sludge, animal slurries and silage effluents, are applied to agricultural land.³⁷

The international legal regimes governing the transboundary movement of wastes apply different definitions of hazardous wastes. The 1989 Basel Convention defines hazardous wastes as those belonging to any of the forty-five categories of waste set out in Annex I to the Convention, unless they do not possess any of the characteristics contained in Annex III, as well as wastes defined as or considered to be hazardous wastes under the legislation of export, import or transit parties.³⁸ 'Other wastes', also subject to certain requirements under the 1989 Basel Convention, are those that belong to any category contained in Annex II.³⁹ The 1989 Basel Convention does not apply to radioactive wastes which 'are subject to other international control systems, including international instruments, applying specifically to radioactive materials', or to wastes which 'derive from the normal operations of a ship, the discharge of which is covered by another international instrument'.⁴⁰ Under this approach, it is possible that certain radioactive wastes would not be subject to an 'international control system' within the meaning of the Convention, and could therefore be included as hazardous waste and subject to the Convention.

Under the 1991 Bamako Convention, 'hazardous wastes' are defined more broadly in four categories. These are: wastes belonging to the categories identified in Annex I, which combines Annexes I and II to the Basel Convention; wastes so defined or considered by national legislation of the party of import, export or transit; wastes which possess any of the characteristics contained in Annex II; and 'hazardous substances which have been banned, cancelled or refused registration by government regulatory action, or voluntarily withdrawn from registration in the country of manufacture, for human health or environmental reasons'.⁴¹ The Convention applies to radioactive wastes that are subject to any international control systems applying to radioactive materials, but does not apply to ship wastes.⁴²

The defunct 1989 Lomé Convention defined hazardous wastes as those categories of products listed in Annexes I and II to the 1989 Basel Convention but expressly included radioactive wastes.⁴³ The 1986 Mexico–United States Hazardous Waste Agreement defines hazardous wastes as 'any waste, as designated or defined by the applicable designated authority pursuant to national policies, laws or regulations, which, if improperly dealt with in activities associated with them, may result in health or environmental damage'.⁴⁴ Under EU law, hazardous wastes are redefined by Directive 91/689/EEC as non-domestic wastes which: (a) feature on a list to be

³⁶ *Ibid.*, 348 and Table 8.7. ³⁷ *Ibid.*, 338–9.

³⁸ Art. 1(1). Parties must inform the secretariat of wastes defined as hazardous under their national legislation: Art. 3. Annex I lists categories of wastes to be controlled by reference to eighteen waste streams and twenty-seven constituents. A similar definition is found in the Convention to Ban the Importation into Forum Island Countries of Hazardous and Radioactive Wastes and to Control the Transboundary Movement and Management of Hazardous Wastes within the South Pacific, Waigani, 16 September 1995, in force 21 October 2001, 2161 UNTS 93, http://untreaty.un.org/unts/144078_158780/14/1/5717.pdf.

³⁹ Art. 1(2); Annex II lists household wastes and residues from the incineration of household wastes.

⁴⁰ Art. 1(3) and (4).

⁴¹ Art. 2(1)(a)–(d). Similar definitions are found in the Protocol on the Prevention of Pollution of the Mediterranean Sea by Transboundary Movements of Hazardous Wastes and Their Disposal, Izmir, 1 October 1996, not yet in force, www.unep.ch/regionalseas/main/med/medhaz.html, Art. 3; and the Central America Regional Agreement on the Transboundary Movement of Hazardous Waste, 11 December 1992, in force 17 November 1995, UN Doc. UNEP/CHW/C.1/INF.2 (October 1993), Art. 1(1).

⁴² Art. 2(2) and (3). ⁴³ Art. 39(3).

⁴⁴ Art. 1(2). But cf. the 1986 Canada–United States Hazardous Waste Agreement, Ottawa, 28 October 1986, in force 8 November 1986, TIAS 11099, Art. 1(b).

drawn up on the basis of Annexes I and II to the Directive, which wastes must also have one or more of the properties listed in Annex III;⁴⁵ and (b) any other waste which is considered by a member state to display any of the properties listed in Annex III and notified to the European Commission.⁴⁶ Annex I lists categories or generic types of hazardous waste listed according to their nature or the activity which generated them; Annex II lists the constituents of some of the wastes in Annex I which render them hazardous; and Annex III identifies properties which render wastes hazardous.⁴⁷

Radioactive waste⁴⁸

Radioactive wastes, which are generally subject to special rules, are the product of nuclear power generation, military sources, and medical, industrial and university establishments. Low-level radioactive wastes include contaminated laboratory debris, biological materials, building materials and uranium mine tailings. High-level radioactive wastes include spent fuel from nuclear power reactors and liquid and solid residues from reprocessing of spent nuclear fuels. The disposal of radioactive wastes is generally through storage on land, although it has been estimated that, between 1949 and 1982, at least 46 PBq of radioactive wastes were disposed of at sea.⁴⁹ Radioactive wastes have been defined by the IAEA Code and by EU law.⁵⁰

PREVENTION AND TREATMENT

Few binding international obligations establish targets and timetables, quantitative restrictions or other limits on the generation of municipal and industrial waste, including hazardous and radioactive wastes. Insofar as certain polluting gases, such as sulphur dioxide, nitrogen oxide, volatile organic compounds and carbon dioxide, are waste products, treaties establishing quantitative limits on atmospheric emissions of such gases in effect limit the generation of certain wastes.⁵¹ These treaties, however, are exceptional, and (apart from the climate change regime) are characterised by the few industrial countries, in regional terms, which are bound by their substantive provisions. The EU has adopted legislation establishing quantitative restrictions on the generation of certain categories of waste.⁵²

⁴⁵ Council Directive 91/689/EEC, OJ L377, 31 December 1991, 20, Art. 1(4) and (5) (amended by Commission Decision 2000/532/EC, OJ L226, September 2000, 3); the list must also take into account the origin and composition of the waste and limit values of concentrations.

⁴⁶ *Ibid.*

⁴⁷ These properties include whether the wastes are explosive, oxidising, highly flammable, flammable, irritant, harmful, toxic, carcinogenic, corrosive, infectious, teratogenic, mutagenic or ecotoxic, as well as substances and preparations which release toxic or very toxic gases, capable of yielding a leachate.

⁴⁸ C. A. Mawson, *Management of Radioactive Wastes* (1985); E. Moisé, *International Regulations on Radioactive and Toxic Wastes: Similarities and Differences* (1991); E. Louka, *International Environmental Law: Fairness, Effectiveness and World Order* (2006), Chapter 10 ('Hazardous and Radioactive Wastes'); D. Wirth, 'Hazardous Substances and Activities', in D. Bodansky, J. Brunnée and E. Hey (eds.), *The Oxford Handbook of International Environmental Law* (2007), Chapter 17; D. Caron and H. Scheiber (eds.), *The Oceans in the Nuclear Age: Legacies and Risks* (2010); D. Hunter, J. Salzman and D. Zaelke, *International Environmental Law and Policy* (2011, 4th edn), Chapter 14.

⁴⁹ UNEP, *Environmental Data Report* (1991, 3rd edn), 338 and Table 8.11.

⁵⁰ See pp. 574–5, below. ⁵¹ See generally Chapter 7 above.

⁵² See Council Directive 94/62/EC on packaging and packaging waste, OJ L365, 31 December 1994, 10, as amended by Council Directive 2004/12/EC; and Council Directive 2000/76/EC on the incineration of waste, OJ L322, 28 December 2000, 91.

Acts of international organisations and international agreements have set forth general commitments to limit and prevent waste generation. Invariably, they do not provide specific details as to how this is to be achieved. Resolutions of the Consultative Meetings of the 1972 London Convention have recognised that parties should give priority to no-waste and low-waste technologies.⁵³ The EU Treaty requires EU environmental action to be based upon objectives and principles which ensure a ‘prudent and rational utilisation of natural resources’ based on ‘preventive action’.⁵⁴ The 1989 Basel Convention requires parties to take measures to ‘[e]nsure that the generation of hazardous wastes and other wastes within it is reduced to a minimum, taking into account social, technological and economic aspects’, and to prevent, or minimise the consequences of, pollution due to management of hazardous and other wastes.⁵⁵ The 1989 Basel Convention also requires parties to ensure the availability of ‘adequate disposal facilities, for the environmentally sound management of hazardous wastes and other wastes, that shall be located, to the extent possible, within it [the state], whatever the place of their disposal’.⁵⁶ Co-operation is needed to develop new environmentally sound low-waste technologies and improve existing technologies to eliminate, as far as practicable, the generation of wastes and ensure their environmentally sound management.⁵⁷ The 1999 Conference of the Parties to the Basel Convention determined a number of priority goals for future action, including ‘the prevention, minimisation, recycling, recovery and disposal of hazardous wastes . . . taking into account social, technological and economic concerns’, and ‘the active promotion and use of clean technologies’.⁵⁸ The Declaration was followed by a Strategic Plan for the Implementation of the Basel Convention to assess the effectiveness of the implementation of the Convention covering the period from 2002 to 2011.⁵⁹ The Plan states that one of the fundamental aims of the Convention is the ‘prevention and minimization’ of hazardous waste generation. The 2005–10 phase of the Plan called for ‘active promotion and use of cleaner technologies and production, with the aim of the prevention and minimization of hazardous and other wastes subject to the Basel Convention’.⁶⁰ A new strategic framework was adopted at the tenth meeting of the Conference of the Parties to the Basel Convention held in October 2011.⁶¹

The 1991 Bamako Convention is marginally more ambitious in limiting and preventing hazardous waste generation in Africa. Each party must ensure that hazardous waste generators submit reports to allow the secretariat to produce a hazardous waste audit, and that the

⁵³ Res. LDC.39(13) on the status of incineration of noxious liquid wastes at sea, Preamble; and Res. LDC.51(16) banning ocean dumping of radioactive waste.

⁵⁴ Art. 191(1) and (2) (formerly Art. 174(1) and (2) of the EC Treaty); see also Council Directive 2006/12/EC, which replaced Council Directive 75/442/EEC; Council Directive 2008/98/EC, which replaced Council Directive 91/689/EEC; Council Directive 94/62/EC, as amended by Council Directive 2004/12/EC; Council Directive 99/31/EC; and Council Directive 2000/76/EC.

⁵⁵ Art. 4(2)(a) and (c).

⁵⁶ Art. 4(2)(b). ‘Environmentally sound management’ means ‘taking all practicable steps to ensure that hazardous wastes or other wastes are managed in a manner which will protect human health and the environment against the adverse effects which may result from such wastes’: Art. 2(8).

⁵⁷ Art. 10(2)(c).

⁵⁸ Decision V/33 on Environmentally Sound Management, Report of the Fifth Meeting of the Conference of the Parties to the Basel Convention, UNEP/CHW.5/29, 10 December 1999.

⁵⁹ Strategic Plan for the Implementation of the Basel Convention (2002), available at www.basel.int/stratplan/index.html.

⁶⁰ *Ibid.*, para. 9.

⁶¹ Strategic Framework 2012–2021, www.basel.int/press/bulletin-2011-03-11.pdf.

hazardous waste generation is 'reduced to a minimum taking into account social, technological and economic aspects'.⁶² The parties must also impose strict and unlimited liability on generators, and ensure that persons involved in hazardous waste management take necessary steps to prevent pollution from such waste and minimise the consequence of any such pollution.⁶³ Each party must implement the 'preventive, precautionary approach' and promote 'clean production' methods applicable to the entire product life-cycle, including raw material, production, transportation, usage and the 'reintroduction of the product into industrial systems or nature when it no longer serves a useful function'.⁶⁴ 'Clean production' excludes 'end-of-pipe' pollution controls such as filters or scrubbers or chemical, physical or biological treatment, or measures which reduce the volume of waste by incineration or concentration, mask the hazard by dilution, or transfer pollutants from one medium to another.⁶⁵

The 2001 Stockholm Convention on Persistent Organic Pollutants (2001 POPs Convention) regulates the production, use and transboundary movement of hazardous chemicals known as persistent organic pollutants (POPs).⁶⁶ These are chemicals that remain intact in the environment for long periods, become widely distributed geographically, accumulate in the fatty tissue of living organisms and are toxic to humans and wildlife. The 2001 POPs Convention requires states parties to prohibit and/or take the necessary legal and administrative measures to eliminate the production and use of chemicals listed in Annex A to the Convention.⁶⁷ States parties are required to restrict the use of other harmful chemicals, such as DDT, listed in Annex B.⁶⁸ A 2009 amendment to the Convention added eight more POPs to Annex A, and one to Annex B.⁶⁹

Apart from EU developments and the 2001 POPs Convention discussed above, international commitments establishing binding rules of general application remain limited. In order to become effective, these introductory measures on the prevention and management of waste will have to be supplemented, over time, by clear targets and timetables establishing quantitative limits for waste generation. The basis upon which such targets and timetables are established will raise similar issues to those addressed in other regional and global negotiations, including in particular those relating to ozone depletion and climate change.

DISPOSAL

International environmental law is more developed in limiting or prohibiting certain methods of disposal of particular waste types, although no single instrument comprehensively and globally regulates waste disposal. Treaties now regulate the disposal of waste into the sea, rivers and lakes, by incineration, and into the atmosphere as a by-product of other activities.

⁶² Art. 4(3)(a) and (c). A 'generator' is 'any person whose activity produces hazardous wastes, or, if that person is not known, the person who is in possession and/or control of those wastes': Art. 1(20).

⁶³ Art. 4(3)(b) and (e).

⁶⁴ Art. 4(3)(f) and (g). 'Clean production methods' means 'production or industrial systems which avoid or eliminate the generation of hazardous wastes and hazardous products': Art. 1(5).

⁶⁵ *Ibid.*

⁶⁶ Convention on Persistent Organic Pollutants, Stockholm, 22 May 2001, in force 17 May 2004, 40 ILM 532 (2001); Chapter 11, pp. 524–6, above.

⁶⁷ Art. 3(1)(a)(i). ⁶⁸ Art. 3(1)(b).

⁶⁹ See Decisions SC-4/10 to SC4/18 at the fourth meeting of the Conference of Parties to the Convention held in Geneva, 4–8 May 2009, C.N.524.2009.TREATIES-4 (Depositary Notification).

The General Assembly has called on all states 'to ensure that no nuclear-waste dumping practices occur that would infringe upon the sovereignty of states'.⁷⁰ Other treaties promote safe disposal of asbestos;⁷¹ 'appropriate' disposal of wastes during the demolition of buildings or structures;⁷² and appropriate disposal of chemicals.⁷³ Even the use of certain wastes as packing materials is to be avoided.⁷⁴ With the exception of the EU rules, international regulation of landfill is non-existent.⁷⁵

Disposal at sea⁷⁶

The disposal at sea of different wastes is an increasingly limited option in most regions. Extensive state practice, as reflected in treaties and acts of international organisations, supports the view that the unregulated disposal at sea of any wastes would now violate rules of customary international law, and that the authorised disposal at sea of certain hazardous wastes would also violate customary law.⁷⁷ As described in Chapter 9 above, the disposal of hazardous wastes at sea is subject to regulation by eight regional or global instruments; and specific prohibitions on the disposal of radioactive, hazardous, industrial, sewage sludge and other wastes have been adopted under several of the treaties identified above.

The disposal of radioactive waste at sea has long been discouraged,⁷⁸ and has been addressed by international organisations for many years.⁷⁹ It is prohibited by treaty in the South Pacific⁸⁰ and in Africa,⁸¹ and states have prohibited the dumping of radioactive wastes at sea in the Northeast Atlantic.⁸² The 1972 London Convention prohibits the dumping of all radioactive wastes or matter, following a 1985 non-binding moratorium. The prohibition is also reflected in the 1996 London Protocol.⁸³

Additionally, the disposal of industrial waste at sea has been prohibited in the North Sea since 31 December 1989,⁸⁴ and the other waters of the former 1974 Oslo Convention area after

⁷⁰ UNGA Res. 43/75 (1988). ⁷¹ 1986 Asbestos Convention, Art. 19.

⁷² 1988 Convention Concerning Safety and Health in Construction, Art. 24.

⁷³ 1990 ILO Chemicals Convention, Art. 14. ⁷⁴ 1959 Plant Protection Agreement, Art. VI.

⁷⁵ See Council Directive 99/31/EC on the landfill of waste and Council Decision 2003/33/EC of 19 December 2002, which establishes criteria and procedures for the acceptance of waste at landfills under that Directive.

⁷⁶ See generally Chapter 9, pp. 365–72, above.

⁷⁷ See e.g. UNEP Council Decision, Precautionary Approach to Marine Pollution, Including Waste Dumping at Sea, 25 May 1989, UNEP/GC/dec./15/27.

⁷⁸ 1958 Convention on the High Seas, Art. 25(1).

⁷⁹ See e.g. UNGA Res., Prohibition of Dumping of Radioactive Wastes for Hostile Purposes, 7 December 1988, A/RES./43/75Q; UNGA Res., Dumping of Radioactive Wastes, 7 December 1988, A/RES./43/75T, 10 December 1996, A/RES./51/45J, 4 December 1998, A/RES./53/77C, 1 December 1999, A/RES./54/54C.

⁸⁰ 1985 Rarotonga Treaty, Art. 7; 1986 Noumea Convention, Art. 10(1).

⁸¹ 1991 Bamako Convention, Art. 4(2), which also prohibits disposal in the seabed and sub-seabed. See also OAU Council of Ministers Resolution, Dumping of Nuclear and Industrial Waste in Africa, 23 May 1988, 28 ILM 567 (1989).

⁸² Chapter 9, pp. 365–72, above.

⁸³ Chapter 9, pp. 368–9, above; 1996 London Protocol, Annex 1, para. 3 and Art. 26(2).

⁸⁴ Ministerial Declaration of the Second International Conference on the Protection of the North Sea, 25 November 1987, para. 22(a); OSCOM Decision 89/1, June 1989. The UK agreed to end such dumping by the end of 1992 with an extension to 1993 'only if absolutely necessary on technical grounds and excluding new dumping licences': Third North Sea Ministerial Declaration, para. 18 (1990).

31 December 1995,⁸⁵ and in Africa.⁸⁶ Since December 1998, the disposal of sewage sludge has been prohibited in the North Sea⁸⁷ and in the former 1974 Oslo Convention area.⁸⁸ The disposal of dredged materials at sea, which the IMO estimated accounted for 80–90 per cent of all material dumped at sea in 1997, has also been a matter of international concern and the subject of international regulatory action.⁸⁹ Under the 1996 Protocol to the 1972 London Convention, all dumping is prohibited, except for wastes on the ‘reverse list’ that are potentially acceptable for dumping.⁹⁰ Moreover, the disposal at sea of oily wastes from ships is also prohibited by numerous treaties.

Disposal into rivers and lakes by other land-based sources⁹¹

The disposal of wastes into rivers and lakes is prohibited or regulated by many bilateral and multilateral treaties. Such prohibition and regulation is either intended to protect the environmental quality of freshwater resources or to protect the quality of seas and oceans by limiting the transportation of waste pollutants by rivers and estuaries into the seas and oceans and other land-based sources of pollution.⁹² The Convention on the Protection and Use of Transboundary Watercourses and International Lakes requires states parties to ‘take all appropriate measures to prevent, control and reduce pollution of waters causing or likely to cause transboundary impact’.⁹³ The Convention requires parties to implement measures to ensure the reduction, control and in some cases prohibition of pollutant emissions into transboundary rivers and international lakes; and establishes monitoring, research and development, information exchange, joint monitoring and assessment programmes as well as bilateral and multilateral co-operation schemes.⁹⁴ The EU has also adopted specific legislation on the treatment and disposal of urban wastewater and municipal waste.⁹⁵

Incineration

The incineration of wastes is limited by treaty and acts of international institutions in several regions and, in the case of the EU, subject to conformity with stringent technical standards.

⁸⁵ OSCOM Decision 89/1 on the Reduction and Cessation of Dumping Industrial Wastes at Sea (1989). The Decision creates exceptions for inert materials of natural origin and industrial wastes for which it can be shown that there are no practical alternatives on land, and that the materials cause no harm in the marine environment: para. 1.

⁸⁶ OAU Council of Ministers Resolution, Dumping of Nuclear and Industrial Waste in Africa, 23 May 1988, 28 ILM 567 (1989).

⁸⁷ Third North Sea Ministerial Declaration, paras. 14 and 15 (1990). See also Brussels Agreement on the Implementation of a European Project on Pollution, on the Topic ‘Sewage Sludge Processing’, 23 November 1971, 12 ILM 9 (1973).

⁸⁸ OSPAR Convention, Art. 3(2)(c).

⁸⁹ Focus on IMO, Dumping at Sea: The Evolution of the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matters, July 1997, available at [www.imo.org/KnowledgeCentre/ReferencesAndArchives/FocusOnIMO\(Archives\)/Documents/Focus%20on%20IMO%20-%20Dumping%20at%20sea.pdf](http://www.imo.org/KnowledgeCentre/ReferencesAndArchives/FocusOnIMO(Archives)/Documents/Focus%20on%20IMO%20-%20Dumping%20at%20sea.pdf). See also Third North Sea Ministerial Declaration, paras. 19–22 (1990); see also the Dredged Material Assessment Framework adopted in 1995 under the London Convention (Res. LC52.18) and the 1998 OSPAR Guidelines for the Management of Dredged Material (Agreement 1998-20).

⁹⁰ See Chapter 9, pp. 368–9, above. ⁹¹ See generally Chapter 8, above.

⁹² Chapter 9, pp. 372–8, above. ⁹³ Art. 2(2)(a). ⁹⁴ Arts. 3(1)(a) and (d).

⁹⁵ Council Directive 91/271/EEC (21 May 1991) and amending Directive 98/15/EC (27 February 1998) and amending Regulation 1137/2008 (22 October 2008); see also UNEP Environmental Guidelines for Domestic Wastewater Management, 1988 UNEP EMG No. 14; UNEP/WHO/UN-HABITAT/WSSCC, *Guidelines on Municipal Wastewater Management* (2004).

Incineration of marine waste at sea has been banned in the North Sea since 31 December 1991,⁹⁶ and in the former 1974 Oslo Convention area by the same date.⁹⁷ The 1992 OSPAR Convention prohibits incineration at sea.⁹⁸ In November 1990, parties to the 1972 London Convention agreed to 're-evaluate incineration at sea of noxious liquid wastes as early in 1992 as possible with a view to proceeding towards the termination of this practice by 31 December 1994'.⁹⁹ The re-evaluation was to take into account the practical availability of safer and environmentally more acceptable land-based alternatives, and in the meantime parties were not to export such wastes intended for incineration at sea or allow their disposal in other ways harmful to the environment.¹⁰⁰ In fact, the incineration at sea of such wastes ceased at the end of 1990 with the decommissioning of the last incineration vessel. The *de facto* situation was formally confirmed by amendments to the 1972 London Convention in February 1994 prohibiting the incineration of industrial wastes and sewage sludge at sea, and requiring special permits for the incineration of other types of waste.¹⁰¹ The 1996 Protocol to the 1972 London Convention prohibits the incineration of wastes at sea.¹⁰² The 1991 Bamako Convention similarly prohibits the incineration of hazardous waste at sea.¹⁰³

Land-based incineration of waste is currently dealt with only by EU legislation,¹⁰⁴ although it is considered to be a sufficiently hazardous activity to warrant mandatory environmental impact assessment under the relevant regional arrangements.¹⁰⁵ The 1991 Antarctic Environment Protocol has banned the open burning of wastes since the end of the 1998/9 season, and allows the burning of certain non-hazardous combustible wastes in incinerators which 'to the maximum extent practicable reduce harmful emissions'.¹⁰⁶ The EU's legislation on the limitation of air pollution from new and existing waste incineration plants provides one model that could be followed by other regions.

The incineration of fossil fuels, with its by-product of waste gases, has been the subject of a number of treaties and acts of international institutions. Emissions of waste gases of sulphur dioxide,¹⁰⁷ nitrogen oxide,¹⁰⁸ volatile organic compounds,¹⁰⁹ and carbon dioxide and other greenhouse gases,¹¹⁰ are regulated. Limits have also been placed on the generation of waste gases by combustion from motor vehicles, aircraft¹¹¹ and shipping.¹¹²

⁹⁶ See Third North Sea Ministerial Declaration, para. 23 (1990).

⁹⁷ See Chapter 9, pp. 360 *et seq.*, above; OSCOM Decision 90/2 on the Termination of Incineration at Sea, 23 June 1990, para. 1. The Decision repealed Decision 88/1 on the Termination of Incineration at Sea by 31 December 1994.

⁹⁸ Annex II of the OSPAR Convention on the Prevention of Pollution by Dumping or Incineration. Chapter 9, pp. 360–1, above.

⁹⁹ Res. LDC.39(13), Status of Incineration of Noxious Liquid Wastes at Sea, para. 1. See also Res. LDC.35(11) on the Status of Incineration of Noxious Liquid Wastes at Sea, and Res. LDC.33(11) on Revised Interim Technical Guidelines on Incineration of Wastes and Other Matter at Sea. See also 1972 London Convention, Amendments to Annexes to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter Concerning Incineration at Sea, 12 October 1978, in force 11 March 1979.

¹⁰⁰ Para. 2. ¹⁰¹ Annex I, para. 10.

¹⁰² Art. 5 of the 1996 Protocol established a blanket ban on 'incineration at sea of wastes and other matter' (Art. 5). 'Incineration at sea' encompasses combustion of waste on a vessel or other man-made structure at sea, but does not include wastes 'generated during the normal operation of that vessel ... or other man-made structure' (Art. 1(5)(1) and (2)).

¹⁰³ Art. 4(2). ¹⁰⁴ Directive 2000/76/EC and Regulation (EC) No. 1137/2008 on the incineration of waste.

¹⁰⁵ 1991 Espoo Convention, Appendix 1, para. 10. ¹⁰⁶ Annex III, Art. 3.

¹⁰⁷ Chapter 7, pp. 248–9 and 253–4, above.

¹⁰⁸ Chapter 7, pp. 249–50, above. ¹⁰⁹ Chapter 7, pp. 274 *et seq.*, above. ¹¹⁰ Chapter 7, pp. 274 *et seq.*, above.

¹¹¹ Chapter 7, pp. 260–1, above. ¹¹² Chapter 7, pp. 261–2, above.

Landfill and other land disposal and storage

There is no international regulation of standards for domestic landfill, other than the European Council Directive 99/31/EC establishing minimum standards for the design and management of landfill waste.¹¹³ European Council Decision 2003/33/EC sets out a uniform landfill waste classification and acceptance procedure.¹¹⁴ The 1991 Espoo Convention requires landfill of toxic and dangerous wastes likely to cause a significant adverse transboundary impact to be subjected to environmental impact assessment and notified to potentially affected parties to ensure adequate and effective consultation.¹¹⁵ The Antarctic area is subject to more detailed rules. Here, the disposal of radioactive waste has been prohibited since 1959.¹¹⁶ The 1991 Environmental Protection Protocol prohibits disposal of wastes onto ice-free areas and establishes rules for the disposal of sewage, domestic and other liquid wastes and wastes generated at field camps, which should generally be removed by the generator.¹¹⁷ Wastes to be removed from the Antarctic Treaty area should also be stored to prevent their dispersal into the atmosphere.¹¹⁸ Elsewhere, the 1986 Noumea Convention is one of the few treaties to establish detailed rules on storage, requiring the storage of toxic and hazardous wastes to be subject to measures to prevent pollution, and prohibiting storage of radioactive wastes or matter.¹¹⁹ The 2001 POPs Convention requires states parties to take appropriate measures to dispose of wastes consisting of, containing or contaminated with POPs in such a way that the POP content is destroyed or irreversibly transformed.¹²⁰ Where destruction or irreversible transformation does not represent the environmentally preferable option or the persistent organic pollutant content is low, states parties must ensure that the wastes are disposed of in an environmentally sound manner, taking into account international rules, standards, guidelines and relevant global and regional regimes governing the management of hazardous wastes.¹²¹ States parties are to ensure that POPs wastes are not permitted to be subjected to disposal operations that may lead to recovery, recycling, reclamation, direct re-use or alternative uses of POPs.¹²²

RECYCLING AND RE-USE

Political efforts to encourage recycling, recovery and re-use of materials and products have not yet led to international legal commitments. The OECD's International Energy Agency is committed to research and development on waste heat utilisation and municipal and industrial waste utilisation for energy conservation,¹²³ and the OECD has adopted recommendations on re-use and recycling of beverage containers and on recovery of waste

¹¹³ Council Directive 99/31/EC on the landfill of waste, OJ L182, 16 July 1999, 1.

¹¹⁴ Council Decision 2003/33/EC, OJ L11, 16 January 2003, 27.

¹¹⁵ Chapter 14, pp. 610–13, below; Arts. 2(2), 3(1) and 5, and Appendix I, para. 10.

¹¹⁶ Antarctic Treaty 1959, Art. V(1). ¹¹⁷ Annex III, Art. 4. ¹¹⁸ Annex III, Art. 6. ¹¹⁹ Art. 11.

¹²⁰ Art. 6(d)(ii).

¹²¹ *Ibid.* The Conference of the Parties to the 2001 POPs Convention is required to co-operate closely with the appropriate bodies of the 1989 Basel Convention to: (a) establish levels of destruction and irreversible transformation necessary to remove the hazardous characteristics of POPs; (b) determine what they consider to be methods that constitute environmentally sound disposal; and (c) work to establish, as appropriate, the concentration levels of the chemicals which can be defined as 'low persistent organic pollutant content': Art. 6(2).

¹²² Art. 6(d)(iii).

¹²³ 1974 Agreement on an International Energy Programme (as amended on 25 September 2008), Art. 42(1)(c).

paper.¹²⁴ The 1987 Montreal Protocol calls for research and development and the exchange of information on the best technologies for improving the recovery and recycling of certain controlled and transitional ozone-depleting substances,¹²⁵ but does not establish targets for recovery or recycling.¹²⁶ The 1989 Basel Convention may provide a basis for future international legislation by identifying disposal operations that may lead to recovery, recycling and re-use.¹²⁷ It does not, however, identify recycling, re-use and recovery as a matter for international co-operation or call for any specific international action or measures.¹²⁸ EU law requires member states to encourage the recovery of wastes, including hazardous and toxic wastes, by means of recycling, re-use or reclamation or other processes to extract secondary raw materials and to use waste as a source of energy.¹²⁹

INTERNATIONAL MOVEMENT (INCLUDING TRADE) IN WASTE¹³⁰

International law on waste has focused primarily on the permissibility of international movement and trade in waste. This follows several notorious incidents that occurred in the mid-1980s involving the unlawful dumping in developing countries of hazardous wastes produced in industrialised countries.¹³¹ Among the tensions between different members of the

¹²⁴ OECD Council Recommendation, Re-use and Recycling of Beverage Containers, OECD C(78)8 Final, 3 February 1978; OECD Council Recommendation, Waste Paper Recovery, OECD C(79)218 Final, 30 January 1980. See also Decision of the Council Concerning the Control of Transfrontier Movements of Wastes Destined for Recovery Operations, OECD C(92)39 Final, 6 April 1992.

¹²⁵ Art. 9(1)(a), as amended by the 1990 amendments.

¹²⁶ As amended in 1990, the Montreal Protocol encourages recycling of certain ozone-depleting substances by excluding recycled substances from the definition of 'production': see Chapter 7, p. 266, above.

¹²⁷ Annex IV(B). These operations include use as a fuel (other than in direct incineration) to generate energy, reclamation or regeneration of solvents and non-solvents, recycling or reclamation of metals and metal compounds and other inorganic materials, regeneration of acids, recovery of pollution abatement and catalyst components, refining of used oil, land treatment, and uses of residue materials. The Bamako Convention identifies the same list but does not distinguish these operations from other disposal operations: Annex III.

¹²⁸ Art. 10(2). See also the 1991 Bamako Convention, Art. 10.

¹²⁹ Council Directive 2006/12/EC, which replaced Council Directive 75/442/EEC; Council Directive 2008/98/EC, which replaced Council Directive 91/689/EEC and Council Directive 75/439/EEC.

¹³⁰ H. Smets, 'Transfrontier Movements of Hazardous Wastes: An Examination of the Council Decision and Recommendation', 14 *Environmental Policy and Law* 16 (1985); E. Moisé, 'La Convention de Bâle sur les Mouvements Transfrontières de Déchets Dangereux', 93 *Revue Générale de Droit International Public* 899 (1989); V. Sebek (ed.), 'Marine Transport, Control and Disposal of Hazardous Waste', 14 *Marine Policy* (1990) (special issue); A. Kiss, 'The International Control of Transboundary Movement of Hazardous Waste', 26 *Texas International Law Journal* 521 (1991); E. Louka, *Overcoming National Barriers to International Waste Trade: A New Perspective on the Transnational Movements of Hazardous and Radioactive Wastes* (1994); J. Kitt, 'Waste Exports to the Developing World: A Global Response', 7 *Georgetown International Environmental Law Review* 485 (1995); B. Desai, 'Regulating Transboundary Movement of Hazardous Waste', 37 *Indian Journal of International Law* 43 (1997); F. Bitar, *Les Mouvements Transfrontières de Déchets Dangereux Selon la Convention de Bale* (1997); T. Scovazzi, 'The Transboundary Movement of Hazardous Waste in the Mediterranean Regional Context', 19 *UCLA Journal of Environmental Law and Policy* 231 (2001); Z. Lipman, 'Economic Growth and Ecological Integrity – The Impact of the Hazardous Waste Trade on the Economy and Environment of Developing Countries', 18 *Environmental Law and Management* 252 (2006); P. Birnie, A. Boyle and C. Redgwell, *International Law and the Environment* (3rd edn, 2009), 793.

¹³¹ *The International Trade in Wastes: A Greenpeace Inventory* (1988, 3rd edn); Illegal Traffic in Toxic and Dangerous Products and Wastes: Report of the Secretary General to the UN General Assembly, UN Doc. A/44/362 (1989); Traffic in and Disposal, Control and Transboundary Movements of Toxic and Dangerous Products and Wastes: Report of the Secretary General to the UN General Assembly, UN Doc. A/46/214 (1991); Report of the Special Rapporteur on the Adverse Effects of the Movement and Dumping of Toxic and Dangerous Products and Wastes on the Enjoyment of Human Rights, UN Doc. A/HRC/15/22/Add.3 (2010).

international community, one in particular stood out: the desire of many developing countries, particularly in Africa, to ban the international trade in wastes, and the opposition to such an approach by many industrialised countries wanting to keep their waste disposal options open. As a result, various international legal arrangements were adopted in a two-year period, each of which established different rules and definitions. Prior to the adoption of these agreements, the issue had been addressed by binding and non-binding acts of various international organisations, including the EU, the OECD¹³² and the UN.¹³³ International trade in waste has also been addressed by UN bodies as a human rights issue.¹³⁴ Transboundary movements of hazardous and other wastes are now regulated by several regional or global treaties, each of which establishes different rules, including the 1989 Basel Convention, the 1991 Bamako Convention and the 1995 Waigani Convention.¹³⁵ Other instruments include the 2001 POPs Convention, bilateral treaties such as the 1986 Canada–United States Hazardous Waste Agreement and the 1986 Canada–Mexico Hazardous Waste Agreement, as well as OECD acts and the increasingly complex EU rules established by legislation and by the jurisprudence of the European Court of Justice.

The 1989 Basel Convention¹³⁶

The 1989 Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal (1989 Basel Convention) is intended to establish a global regime for the control

¹³² See e.g. OECD Council Decision/Recommendation, Transfrontier Movements of Hazardous Waste, OECD C(83)180 Final, 1 February 1984; OECD Council Resolution, International Co-operation Concerning Transfrontier Movements of Hazardous Wastes, OECD C(85)100, 20 June 1985; OECD Council Decision/Recommendation, Exports of Hazardous Wastes from the OECD Area, OECD C(86)64 Final, 5 June 1986; OECD Council Decision, Transfrontier Movements of Hazardous Wastes OECD C(88)90 Final, 27 May 1988; OECD Council Decision, the Control of Transfrontier Movements of Wastes Destined for Recovery Operation, OECD C(92)39 Final, 30 March 1992; OECD Council Decision, Document for Transfrontier Movements of Waste, OECD C(94)154 Final, 28 July 1994; OECD Council Decision on the Control of Transboundary Movements of Wastes Destined for Recovery Operations, OECD C(2001)107 Final, 14 June 2001; OECD Council Recommendation on the Environmentally Sound Management of Waste, OECD C(2004)100, 9 June 2004.

¹³³ UNGA Res. 42/183 (1987); UNGA Res. 44/226 (1989); UNGA Res. S-19/2 (1997), 'Programme for Further Implementation of Agenda 21', paras. 58–63; UNGA Res. 62/34 (2008), 'Prohibition on the Dumping of Radioactive Wastes'; UNGA Res. 64/45 (2010), 'Prohibition on the Dumping of Radioactive Wastes'; Plan of Implementation of the World Summit on Sustainable Development, paras. 23 and 68, in Report of the World Summit on Sustainable Development, Johannesburg, South Africa, 26 August–4 September 2002, UN Doc. A/Conf.199/20, Resolution 2 and Annex.

¹³⁴ See Commission on Human Rights Res. E/CN.4/RES/1999/23 on the adverse effects of the illicit movement and dumping of toxic and dangerous products and wastes on the enjoyment of human rights, Chapter 18, pp. 780 *et seq.*, below.

¹³⁵ Several other regional agreements have been adopted: the 1996 Izmir Protocol on the Prevention of Pollution of the Mediterranean Sea by Transboundary Movements of Hazardous Wastes and Their Disposal, Izmir, 1 October 1996, not yet in force, www.unep.ch/regionalseas/main/med/medhaz.html; and the 1998 Protocol on the Control of Marine Transboundary Movements and Disposal of Hazardous Wastes and Other Wastes to the Kuwait Regional Convention for Co-operation on the Protection of the Marine Environment from Pollution, Kuwait, 17 March 1998, in force 26 November 2001.

¹³⁶ D. P. Hackett, 'An Assessment of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal', 5 *American University Journal of International Law and Policy* 295 (1990); C. Shearer, 'Comparative Analysis of the Basel and Bamako Conventions on Hazardous Waste', 23 *Environmental Law* 141 (1993); K. Kummer, *International Management of Hazardous Wastes: The Basel Convention and Related Legal Rules* (2000); A. Sanders and P. Bowal, 'International Trade in Hazardous Wastes and the Basel Convention', 11 *Journal of Environmental Law and Practice* 143 (2001); C. Okereke, *Global Justice and Neoliberal Environmental Governance: Ethics, Sustainable Development and International Co-operation* (2007), Chapter 5.

of international trade in hazardous and other wastes.¹³⁷ It was negotiated under the auspices of UNEP on the basis of texts produced by a working group that had drawn on the Cairo Guidelines. The Convention, which entered into force on 5 May 1992, establishes rules designed to regulate trade in these wastes rather than prohibit it. The Convention sets forth general obligations requiring all parties to ensure that transboundary movements of wastes are reduced to the minimum consistent with environmentally sound and efficient management, and it reflects an approach premised upon the view that wastes should, as far as possible, be disposed of in the state in which they were generated (this has come to be known as the 'proximity principle'). The Convention has attracted broad support, and there is a consensus among commentators that, although 'far from providing a perfect solution to the problem of transboundary movements of hazardous wastes, it does address most of the relevant issues and is therefore a step in the right direction'.¹³⁸

Article 4 sets forth general obligations designed to minimise waste generation and its transboundary movement, and ensure its environmentally sound management. The parties must not allow exports to parties which have prohibited by legislation all imports, or where they have reason to believe that the wastes will not be managed in an environmentally sound manner, and are obliged to co-operate to improve and achieve environmentally sound management of such wastes.¹³⁹ Parties may prohibit the import of such wastes and must consent in writing to any specific imports that they have not prohibited.¹⁴⁰ Parties must provide information on proposed transboundary movements of hazardous and other wastes to the states concerned, and prevent imports if they have reason to believe that the imports will not be managed in an environmentally sound manner.¹⁴¹ In order to encourage states to become parties to the Convention, wastes may not be exported to or imported from a non-party, and they cannot be exported for disposal to the Antarctic area.¹⁴² Traffic that contravenes notification or consent requirements, or fails to conform with its documentation, or results in deliberate disposal in contravention of the Convention and general principles of international law, will be illegal and considered to be criminal.¹⁴³

The Convention discourages exports of hazardous and other wastes, which should only be allowed if the exporting state does not have the capacity, facilities or suitable sites to dispose of them in an environmentally sound or efficient manner, or if the wastes are required as a raw material for recycling or recovery in the importing state, or in accordance with other criteria decided by the parties.¹⁴⁴ Moreover, parties may not transfer to importing or transit states their obligation under the Convention to carry out environmentally sound management, and can impose additional requirements consistent with the Convention to better protect human health and the environment.¹⁴⁵ The transport and disposal of hazardous and other wastes may only be carried out by authorised persons, and transboundary movements must conform with generally accepted and recognised international rules and standards of packaging, labelling and

¹³⁷ Basel, 22 March 1989, in force 24 May 1989, 28 ILM 657 (1989); 175 states and the EU are party. On the definition of hazardous and other wastes under the Basel Convention, see pp. 568–71.

¹³⁸ K. Kummer, 'The International Regulation of Transboundary Traffic in Hazardous Wastes: The 1989 Basel Convention', 41 *International and Comparative Law Quarterly* 530 at 560 (1992).

¹³⁹ Arts. 4(2)(d), (e) and (h) and 10. The criteria for environmentally sound management are to be decided by the first Conference of the Parties: Art. 4(8).

¹⁴⁰ Art. 4(1)(a) and (c). ¹⁴¹ Art. 4(2)(f) and (g). ¹⁴² Art. 4(5) and (6).

¹⁴³ Arts. 4(3) and 9. ¹⁴⁴ Art. 4(9). ¹⁴⁵ Art. 4(10) and (11).

transport, and take account of relevant internationally recognised practices, and be accompanied by a movement document until disposal.¹⁴⁶

The Convention sets forth detailed conditions for the international regulation of transboundary movements of hazardous and other wastes between parties based upon a system of 'prior informed consent'. The exporting state, generator or exporter must notify the states concerned of any proposed transboundary movement, including the information specified in Annex V(A).¹⁴⁷ The importing state responds by giving its consent with or without conditions, denying permission, or requiring additional information, and no transboundary movement may commence until the exporting state has received the written consent of the importing state and confirmation from that state of the existence of a contract between the exporter and the disposer specifying environmentally sound management of the wastes.¹⁴⁸ Transit states can prohibit transit passage, and the exporting state must not allow transboundary movement to commence until it has the written consent of the transit state.¹⁴⁹ The Convention allows for general notifications and consents to cover a twelve-month period where wastes having the same characteristics are shipped regularly to the same disposer via the same exit office of the exporting state, entry office of the importing state and customs office of the transit state.¹⁵⁰ Importing states and transit states that are parties may require the wastes to be covered by insurance or other guarantee.¹⁵¹ When a transboundary movement cannot be completed in accordance with the terms of the contract, the exporting state must take back the wastes if alternative arrangements cannot be made for their disposal in an environmentally sound manner.¹⁵²

Parties can enter into bilateral, multilateral or regional agreements or arrangements regarding transboundary movements of wastes provided that they do not derogate from the requirements of the Convention and provided they stipulate provisions that are no less environmentally sound than the Convention.¹⁵³ The Convention does not affect transboundary movements taking place entirely among the parties to such agreements, which must be notified to the secretariat, provided that they are compatible with the requirements of the Convention.¹⁵⁴ The parties are subject to detailed reporting requirements, and the Convention provided for consultations on liability to be held as soon as possible.¹⁵⁵

The Convention is kept under review by a Conference of the Parties and a secretariat.¹⁵⁶ At the fifth Conference of the Parties, held in December 1999, the parties adopted a Protocol on Liability and Compensation.¹⁵⁷ Compared to many other environmental agreements, the Convention sets out relatively detailed tasks for the secretariat, including gathering and sharing information, and examination of notifications and other aspects of transboundary

¹⁴⁶ Art. 4(7).

¹⁴⁷ Art. 6(1). 'States concerned' are 'parties which are states of export or import, or transit states whether or not parties': Art. 2(13). Art. 6(1) also applies to transboundary movements from a party through a state or states which are not parties: Art. 7.

¹⁴⁸ Art. 6(2) and (3). ¹⁴⁹ Art. 6(4). ¹⁵⁰ Art. 6(6)–(8). ¹⁵¹ Art. 6(11). ¹⁵² Art. 8.

¹⁵³ Art. 11(1). Three such regional agreements or arrangements may fall within this provision: the 1991 Bamako Convention, the 1995 Waigani Convention and the 1993 EU Regulation. See generally J. Crawford and P. Sands, *The Availability of Article 11 Agreements in the Context of the Basel Convention's Export Ban on Recyclables* (International Council on Metals and the Environment, 1997).

¹⁵⁴ Art. 11(2). ¹⁵⁵ Arts. 12 and 13; on liability, see Chapter 17, pp. 757–8, below.

¹⁵⁶ Arts. 15 and 16. Nine meetings of the Conference of the Parties have been held to date with a tenth meeting scheduled for 17–21 October 2011 in Cartagena, Colombia.

¹⁵⁷ Chapter 17, pp. 757–8, below.

movements.¹⁵⁸ Until the first Conference of the Parties, which was held in November 1992, UNEP carried out the secretariat functions on an interim basis.

The second Conference of the Parties, held in March 1994, approved an immediate ban on the export from OECD countries to non-OECD countries of hazardous wastes intended for final disposal and also agreed to ban the export of wastes intended for recovery and recycling by 31 December 1997.¹⁵⁹ The 'Basel Ban', as it became known, was not formally incorporated into the Convention by the second Conference of the Parties, and disputes arose as to whether it was legally binding on the parties. To resolve this dispute, it was proposed at the third Conference of the Parties, in September 1995, that the Basel Ban be formally incorporated into the Basel Convention as an amendment.¹⁶⁰ The Basel Ban Amendment adopted by the third Conference of the Parties does not refer to OECD and non-OECD countries, but rather bans hazardous waste exports for final disposal and recycling from Annex VII parties (members of the EU, OECD and Liechtenstein) to non-Annex VII parties.¹⁶¹ The ambiguous wording of Article 17.5 of the Basel Convention led to three opposing views on the number of ratifications required in order for the Ban Amendment to come into force. The depositary took the view that Article 17.5 requires two-thirds of current members (169 in 2006) to ratify the Amendment; some non-governmental organisations espoused the view that the Amendment requires two-thirds of the total number of states parties at the time of the Amendment's adoption in 1995; others argued that the Amendment requires two-thirds of those states parties present and voting in 1995.¹⁶² Consensus could not be reached at the ninth Conference of the Parties on the adoption of a reinterpretation of Article 17.5 adopting the 'fixed time' approach allowing for the Amendment to come into force. In 2007, the UN Depositary settled for the 'current time' approach, requiring three-quarters of the totality of states parties.¹⁶³ The Basel Ban has not yet entered into force as only sixty-eight parties have so far ratified the Amendment.

1991 Bamako Convention¹⁶⁴

The Convention on the Ban of Imports into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes within Africa (1991 Bamako Convention) was adopted by

¹⁵⁸ Art. 16. ¹⁵⁹ Decision II/12, Report of COP-2, UNEP/CHW.2/30, 25 March 1994.

¹⁶⁰ Decision III/1, Report of COP-3, Part 2, UNEP/CHW.3/34, 17 October 1995; L. de la Fayette, 'Legal and Practical Implications of the Ban Amendment to the Basel Convention', 6 *Yearbook of International Environmental Law* 703 (1995); J. Crawford and P. Sands, *The Availability of Article 11 Agreements in the Context of the Basel Convention's Export Ban on Recyclables* (International Council on Metals and the Environment, 1997).

¹⁶¹ Art. 4A and Annex VII, Basel Ban Amendment. The Amendment will also insert a new preambular para. 7bis into the Convention in the following terms: 'Recognizing that transboundary movements of hazardous wastes, especially to developing countries, have a high risk of not constituting an environmentally sound management of hazardous wastes as required by this Convention ...'.

¹⁶² See A. Daniel, 'Transboundary Movements of Hazardous Waste', 18 *Yearbook of International Environmental Law* 258 (2007).

¹⁶³ A. Daniel, 'Transboundary Movements of Hazardous Waste', 17 *Yearbook of International Environmental Law* 358 (2006).

¹⁶⁴ S. W. Donald, 'The Bamako Convention as a Solution to the Problem of Hazardous Waste Exports to Less Developed Countries', 17 *Columbia Journal of Environmental Law* 419 (1992); F. Ouguergouz, 'La Convention de Bamako sur l'Interdiction d'Importer en Afrique des Déchets Dangereux et sur le Contrôle des Mouvements Transfrontières et la Gestion des Déchets Dangereux Produits en Afrique', *Annuaire Français de Droit International* 871 (1992); K. Kummer, *International Management of Hazardous Wastes: The Basel Convention and Related Legal Rules* (2000); D. Tladi, 'The Quest to Ban Hazardous Waste Import into Africa: First Bamako and Now Basel', 33 *Comparative and International Law Journal of Southern Africa* 210 (2000).

African governments following negotiations under the auspices of the Organization of African Unity.¹⁶⁵ It establishes a regional regime to prohibit trade in waste, giving effect to the positions many African governments had adopted in the negotiations on the 1989 Basel Convention.¹⁶⁶ To a large extent, the 1991 Bamako Convention follows the approach taken in the 1989 Basel Convention, but departs from it in a number of important respects. First, and most notably, like the former 1989 Lomé Convention (which is no longer in force, but had subjected the EU to a blanket prohibition on all direct or indirect exports of hazardous waste and radioactive waste from the EU to the ACP states (African, Caribbean and Pacific Group of States), and required ACP states to prohibit the direct or indirect import of such waste from the EU or from any other country),¹⁶⁷ the Bamako Convention prohibits trade in hazardous waste. Parties must prohibit the import of all hazardous wastes into Africa from non-contracting parties and deem such imports illegal and criminal.¹⁶⁸ A second difference is that parties must ensure that hazardous wastes to be exported are managed in an environmentally sound way in the state of import and transit, and only authorised persons may store such wastes.¹⁶⁹ Third, the definition of hazardous waste adopted by the Bamako Convention is broader than that in the Basel Convention.¹⁷⁰ The Bamako Convention includes several other subtle but significant differences. Wastes to be used as raw materials for recycling and recovery may not be exported, and parties must appoint a national body to act as a 'Dumpwatch' to co-ordinate governmental and non-governmental bodies.¹⁷¹ Moreover, parties may not decide not to require prior written consent; parties must not allow use of general notifications;¹⁷² the rule requiring notification of the transit state applies to transboundary movements from a party through a state or states which is or are not parties,¹⁷³ and illegal traffic may be returned only to the exporter.¹⁷⁴ The Bamako Convention is administered by its own Conference of the Parties and secretariat, the functions of which were carried out on an interim basis by the OAU (now the AU) and the UN Economic Commission for Africa.¹⁷⁵ Significantly, the secretariat of the Bamako Convention is granted greater powers than the secretariat of the Basel Convention since it may verify the substance of allegations of breach of the Convention and submit a report to all parties.¹⁷⁶ Moreover, it provides for the apparently compulsory jurisdiction of an *ad hoc* dispute settlement organ, or the ICJ.¹⁷⁷

1995 Waigani Convention

The Convention to Ban the Importation into Forum Island Countries of Hazardous and Radioactive Wastes and to Control the Transboundary Movement and Management of Hazardous

¹⁶⁵ Bamako, 29 January 1991, in force April 1998, 30 ILM 775 (1991); twenty-four states are party.

¹⁶⁶ See UNEP, *Proposals and Positions of the African States During the Negotiations on the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal and the Status of Their Incorporation into the Basel Convention* (1989).

¹⁶⁷ Lomé, 15 December 1989, in force 1 September 1991; 29 ILM 783 (1990), Art. 39(1). 'Hazardous waste' covered categories of products listed in Annexes I and II to the 1989 Basel Convention, and the definitions and thresholds of 'radioactive waste' are to be 'those laid down in the framework of the IAEA', and, pending that, the definitions and thresholds specified in the declaration in Annex VIII to the 1989 Lomé Convention: Art. 39(3).

¹⁶⁸ Art. 4(1); since only member states of the African Union may become parties to the Convention (Arts. 22 and 23), it effectively prohibits imports from outside Africa. There are currently twenty-four states parties to the Convention.

¹⁶⁹ Art. 4(3)(i) and (m)(i). ¹⁷⁰ See pp. 568–71, above. ¹⁷¹ Art. 5(4).

¹⁷² Art. 6(6); cf. Art. 6(6) of the 1989 Basel Convention. ¹⁷³ Art. 7; cf. Art. 7 of the 1989 Basel Convention.

¹⁷⁴ Art. 9(3) and (4); cf. Art. 9(3) and (4) of the 1989 Basel Convention.

¹⁷⁵ Arts. 15 and 16. ¹⁷⁶ Art. 19. ¹⁷⁷ Art. 20.

Wastes within the South Pacific Region (1995 Waigani Convention) was adopted by governments in the South Pacific region following negotiations under the auspices of the South Pacific Forum.¹⁷⁸ The Waigani Convention was modelled after the Bamako Convention, and, like the latter treaty, it bans the import of hazardous and radioactive wastes into its area of coverage and regulates the transboundary movement of such wastes amongst parties thereto.¹⁷⁹ In addition, 'other parties', namely, Australia and New Zealand, are required to ban the export of hazardous wastes to all Forum Island countries and territories within the Convention area.¹⁸⁰ Other similarities to the Bamako Convention include the Waigani Convention's prohibition on the dumping of hazardous wastes at sea,¹⁸¹ and its requirement that any transboundary movement of hazardous wastes shall be covered by insurance, bond or other guarantees as may be required or agreed to by the importing or transit party.¹⁸² The Waigani Convention also replicates the provisions of the Bamako Convention regarding the national definition of hazardous wastes,¹⁸³ and the duty to re-import, although in the event of an authorised transboundary movement of hazardous wastes that cannot be completed the exporting party need not re-import those wastes if alternative arrangements are made for the disposal of the wastes in an environmentally sound manner.¹⁸⁴ The Waigani Convention also permits the use of a general notification procedure where 'hazardous wastes having the same physical and chemical characteristics are shipped regularly to the same disposer via the same customs office of exit of the exporting Party, via the same Customs office of entry of the importing Party, and, in the case of transit, via the same customs office of entry and exit of the Party or Parties of transit'.¹⁸⁵

Alongside its prohibition on waste trade, other objectives of the Convention are: to reduce the transboundary movement of hazardous wastes to a minimum consistent with their environmentally sound management; to treat and dispose of hazardous wastes as close as possible to their source of generation in an environmentally sound way; and to minimise the generation of hazardous wastes.¹⁸⁶ As under the Bamako Convention, wastes covered by the Waigani Convention include certain radioactive wastes,¹⁸⁷ but exclude wastes arising from the normal operation of a vessel, the discharge of which is covered by another international instrument.¹⁸⁸ The Convention is administered by a Conference of the Parties with assistance from a Secretariat, which is to co-operate with the Basel Convention secretariat.¹⁸⁹ An innovative provision of the Convention requires the Conference of the Parties to establish a 'Revolving Fund' for interim use in emergency situations to minimise damage from disasters or accidents involving transboundary movement or disposal of hazardous wastes within the Convention area.¹⁹⁰

¹⁷⁸ Waigani, 16 September 1995, in force 21 October 2001, 2161 UNTS 93; thirteen states are party. See also D. van Hoogstraten and P. Lawrence, 'Protecting the South Pacific from Hazardous and Nuclear Waste Dumping: the Waigani Convention', 7(3) *Review of European Community and International Environmental Law* 268 (1998); S. Murphy, 'South Pacific Regional Environmental Programme's (SREP) Aptitude in Managing Marine Pollution in the South Pacific', 18 *Australian and New Zealand Maritime Law Journal* 107 (2004).

¹⁷⁹ Art. 4(1).

¹⁸⁰ Art. 4.1(b). The 'Convention area' is defined in Art. 1 and includes the land territory, internal waters, territorial sea, continental shelf, archipelagic waters and exclusive economic zones of twenty-four countries in the South Pacific region. Forum Island countries are all country members of the South Pacific Forum with the exception of Australia and New Zealand.

¹⁸¹ Art. 4(3). ¹⁸² Art. 6(10). ¹⁸³ Art. 3. ¹⁸⁴ Art. 8. ¹⁸⁵ Art. 6(6). ¹⁸⁶ Art. 4(4).

¹⁸⁷ Art. 2(2). ¹⁸⁸ Art. 2(3). ¹⁸⁹ Art. 9(6). ¹⁹⁰ Art. 15.

North America

The 1986 Mexico–United States Hazardous Waste Agreement requires the exporting country to notify the importing country of individual shipments or a series of shipments over a twelve-month period, which the importing country must respond to within forty-five days indicating its consent, with or without conditions, or its objection.¹⁹¹ The exporting country must re-admit any shipment that may be returned for any reason by the country of import.¹⁹² The Agreement Between the United States and Canada Concerning the Transboundary Movement of Hazardous Waste requires the exporting country to notify the importing country of proposed transboundary shipments of hazardous waste, and states that, if no response is received within thirty days, the country of import will be deemed to have granted its consent.¹⁹³ The United States also has bilateral agreements on the export of hazardous wastes from Costa Rica,¹⁹⁴ Malaysia¹⁹⁵ and the Philippines.¹⁹⁶

1990 IAEA Code of Conduct on Radioactive Waste and 1997 Joint Convention on Spent Fuel and Radioactive Waste Management

The IAEA Code of Practice on the International Transboundary Movement of Radioactive Waste was adopted by the IAEA General Conference and establishes a set of non-binding principles designed to serve as guidelines.¹⁹⁷ Whether the Code of Practice constitutes an ‘international control system’ within the meaning of Article 1(3) of the Basel Convention is open to interpretation, but certainly the scheme it applies is less stringent than even the Basel Convention. The Code defines radioactive waste as ‘any material that contains or is contaminated with radionuclides at concentrations or radioactivity levels greater than the “exempt quantities” established by the competent authorities and for which no use is foreseen’.¹⁹⁸ Exempt quantities are levels below which the regulatory requirements do not apply because the individual and collective dose equivalents received from such levels are not significant for the purposes of radiation protection. These should be agreed by the authorities in the countries concerned with the international transboundary movement.¹⁹⁹ Spent nuclear fuel is not, for the purposes of the Code, considered to be radioactive waste.²⁰⁰ Instead, this is dealt with by the Joint Convention

¹⁹¹ Washington, 12 November 1986, in force 29 January 1987, 26 ILM 25 (1987), Art. III(1), (2) and (4); see E. C. Rose, ‘Transboundary Harm: Hazardous Waste Management Problems and Mexico’s Maquiladoras’, 23 *International Law* 223 (1989); A. Moskonite, ‘Criminal Environmental Law: Stopping the Flow of Hazardous Waste to Mexico’, 22 *California Western International Law Journal* 159 (1991/2); V. L. Engfer, G. A. Partida, T. C. Vernon, A. Toulet and D. A. Renas, ‘By-Products of Prosperity: Transboundary Hazardous Waste Issues Confronting the Maquiladora Industry’, 28 *San Diego Law Review* 819 (1991).

¹⁹² Art. IV. ¹⁹³ Ottawa, 28 October 1986, in force 8 November 1986, TIAS 11099.

¹⁹⁴ 1995 Agreement Between the Government of America and the Government of Malaysia Concerning the Transboundary Movement of Hazardous Wastes from Malaysia to the United States.

¹⁹⁵ 1997 Agreement on the Transboundary Movement of Hazardous Waste from Costa Rica to the United States.

¹⁹⁶ 2001 Agreement Between the Government of the United States of America and the Government of the Republic of the Philippines Concerning the Transboundary Movement of Hazardous Wastes from the Philippines to the United States.

¹⁹⁷ IAEA Doc. GC(XXXIV)/920, 21 September 1990, Annex 1; D. Currie and J. van Dyke, ‘The Shipment of Ultrahazardous Nuclear Materials in International Law’, 8 *Review of European Community and International Environmental Law* 113 (1999).

¹⁹⁸ Section II. A ‘competent authority’ is ‘an authority designated or recognised by a government for specific purposes in connection with radiation protection and/or nuclear safety’: *ibid.*

¹⁹⁹ *Ibid.* ²⁰⁰ *Ibid.*

on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (1997 Joint Convention).²⁰¹

Despite its non-binding legal character, the Code is more limited in scope than the more stringent approaches set out in the Basel and Bamako Conventions. Its 'obligations' are so soft that it is questionable whether they provide any enforceable guidance: a state should minimise the amount of radioactive waste and take appropriate steps to ensure that radioactive waste within its territory, jurisdiction or control is safely managed and disposed of.²⁰² The Code recognises the sovereign right of a state to prohibit the movement of radioactive waste into, from or through its territory, and calls on states to ensure that movements are taken in a manner consistent with international safety standards.²⁰³ Under the Code, transboundary movements should only take place 'with the prior notification and consent of the sending, receiving and transit states in accordance with their respective laws and regulations'. States should have a relevant regulatory authority and appropriate procedures, and should not permit the receipt or sending of radioactive waste unless they have the capacity and regulatory structure to manage and dispose of the waste consistently with international safety standards.²⁰⁴ Finally, states are called upon to adopt national laws and regulations giving effect to the requirements of the Code, and to establish provisions for liability, compensation or other remedies arising from international transboundary movements of radioactive waste.²⁰⁵

In contrast to the Code, the 1997 Joint Convention contains more stringent regulation of the transboundary movement of spent nuclear fuel or radioactive waste. The Convention is in part based on the concepts and practices set out in the 1990 Code. Article 27 of the Joint Convention is modelled on the Basel Convention and requires exporting parties to take appropriate steps to ensure that transboundary movement is authorised and takes place only with the prior notification and consent of the state of destination.²⁰⁶ An originating state may only authorise exports of waste if it can satisfy itself that the destination state has the administrative and technical capacity, as well as the regulatory structure, needed to manage the spent fuel or the radioactive waste in a manner consistent with the Joint Convention.²⁰⁷ Where a transboundary movement cannot be completed in conformity with the requirements of Article 27, and no alternative safe arrangement can be made, the originating state must take appropriate steps to allow the re-entry of the waste into its territory.²⁰⁸ Implementation is carried out through the submission of national reports prior to Review Meetings of Contracting Parties that are then scrutinised by other states parties. The third Review Meeting of the Contracting Parties was held in May 2009 at the IAEA headquarters in Vienna, where it was recognised that further work was required on, *inter alia*, national policies on the disposal of high-level waste and spent fuel.²⁰⁹

CONCLUSIONS

The rules of international law relating to waste are, with a few exceptions, aimed at regulating the disposal of waste rather than addressing and preventing its generation. There is now

²⁰¹ Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, 5 September 1997, in force 18 June 2001, 36 ILM 1436 (1997), Art. 27.

²⁰² Section III, paras. 1 and 2. ²⁰³ Section III, paras. 3 and 4. ²⁰⁴ Section III, paras. 5–7.

²⁰⁵ Section III, paras. 8 and 9. ²⁰⁶ Art. 27(1)(i). ²⁰⁷ Art. 27(1)(iii) and (iv). ²⁰⁸ Art. 27(1)(v).

²⁰⁹ See S. Kus, 'Nuclear Waste Management', 20 *Yearbook of International Environmental Law* 321 (2009).

extensive international law regulating or prohibiting the disposal of hazardous and radioactive wastes into the marine environment, or the transboundary movement of such wastes (although the events of 2006, when Dutch-based company Trafigura caused significant environmental and health damage after it dumped some 500 tonnes of hazardous waste originating in Mexico in the Ivory Coast, have underscored the fact that the international rules are far from fully effective).²¹⁰ These obligations are supported, or supplemented, by emerging concepts such as the 'self-sufficiency principle' and the 'proximity principle', which also encourage communities to limit the amount of waste they generate by requiring them to dispose of the waste they themselves produce. There is considerably less international law on other methods of disposal, such as landfill and incineration on land, although in both the EU and the Antarctic rules have been adopted on these forms of disposal, which may well serve as models for other regions. The gaps which plainly exist should be filled in order to complete the range of disposal options which are subject to international regulation.

Regulating disposal has a certain logic: there is some evidence to suggest that a tightening of the international and national disposal regulations will increase costs and that this might act as an incentive to encourage people to generate less waste. On the other hand, it is clear that limiting the avalanche of waste that threatens to engulf all countries requires the development of strategies and legal rules that address the waste problem at source by preventing its generation. There is some suggestion that the rules of international law might be encouraged to move in that direction: the establishment of quantitative targets and timetables for the recovery and re-use of hazardous and non-hazardous wastes is now on the international agenda, as is the emerging effort to encourage the use of cleaner technologies which aim at waste minimisation. Twenty years ago, Agenda 21 endorsed both approaches, and still provides a useful framework against which future international waste management and prevention policies can be judged.²¹¹

²¹⁰ See e.g. R. Evans, 'Trafigura Fined €1m for Exporting Toxic Waste to Africa', *The Guardian* (online), 23 July 2010, www.guardian.co.uk/world/2010/jul/23/trafigura-dutch-fine-waste-export; D. Leigh, 'Trafigura Faces Criminal Charges over Attempt to Offload Toxic Waste', *The Guardian* (online), 1 June 2010, www.guardian.co.uk/world/2010/jun/01/trafigura-trial-toxic-waste-netherlands.

²¹¹ See notes 7–9 above.

13

The polar regions: Antarctica and the Arctic

INTRODUCTION

The Antarctic and the Arctic polar regions are subject to special regional rules of environmental protection.¹ These rules reflect the unique physical conditions of these areas and the important role they play in maintaining regional and global environmental conditions. They also provide useful models for the development of international environmental law in other regions and globally. For the Antarctic, the environmental rules have developed in the context of complex legal issues arising from claims made by some states to sovereign rights over Antarctic territory, and the opposing view of most other states that the Antarctic is part of the global commons and not subject to the exclusive jurisdiction of any state. These differences have not prevented the adoption of innovative and potentially far-reaching rules for the protection of the Antarctic environment and its ecosystem. The Arctic region, on the other hand, is subject to the undisputed jurisdiction of certain states, and for the most part environmental protection in that area is based on national environment laws, although these may implement international environmental obligations. In 1991, Arctic states recognised the need for international co-operation to address

¹ R. D. Hayton, 'The Antarctic Settlement of 1959', 54 *American Journal of International Law* 349 (1960); B. Boczek, 'The Protection of the Antarctic Ecosystem: A Study in International Environmental Law', 13 *Ocean Development and International Law* 347 (1983); J. E. Carroll, 'Of Icebergs, Oil Wells, and Treaties: Hydrocarbon Exploitation Offshore Antarctica', 19 *Stanford Journal of International Law* 207 (1983); C. C. Joyner, 'Protection of the Antarctic Environment: Rethinking the Problems and Prospects', 19 *Cornell International Law Journal* 259 (1986); G. Triggs (ed.), *The Antarctic Treaty Regime: Law, Environment, and Resources* (1987); W. Bush, *Antarctica and International Law* (3 vols., 1982–8); J. Verhoeven, P. Sands and M. Bruce (eds.), *The Antarctic Environment and International Law* (1992); A. Watts, *International Law and the Antarctic Treaty System* (1992); L. A. Kimball, 'Environmental Law and Policy in Antarctica', in P. Sands (ed.), *Greening International Law* (1993), 122; J. Heap, *Handbook of the Antarctic Treaty System* (1994, 8th edn); F. Francioni and T. Scovazzi (eds.), *International Law for Antarctica* (1996, 2nd edn); D. Rothwell, *The Polar Regions and the Development of International Law* (1996); O. S. Stokke and D. Vidas (eds.), *Governing the Antarctic: The Effectiveness and Legitimacy of the Antarctic Treaty System* (1996); J. M. Spector, 'Saving the Ice Princess: NGOs, Antarctica and International Law in the New Millennium', 23 *Suffolk Transnational Law Review* 57 (1999); D. Vidas (ed.), *Implementing the Environmental Protection Regime for the Antarctic* (2000); D. Vidas (ed.), *Protecting the Polar Marine Environment* (2000); E. J. Molenaar, 'Sea-Borne Tourism in Antarctica: Avenues for Further Intergovernmental Regulation', 20 *International Journal of Marine and Coastal Law* 247 (2005); G. Triggs and A. Riddell (eds.), *Antarctica: Legal and Environmental Challenges for the Future* (2007); R. Baird, 'The Antarctic Treaty System and Japan's Scientific Whaling in the Southern Ocean: Is There an Obligation to Protect the Antarctic Marine Ecosystem?', 11 *Asia Pacific Journal of Environmental Law* 193 (2008); C. le Bris, 'Le Degel en Arctique: Briser la Glace entre Etats dans l'Intérêt de l'Humanité', 112 *Revue Générale de Droit International Public* 329 (2008); S. Lyster, *International Wildlife Law* (2010, 2nd edn), 346–75; M. Nordquist, T. Heidar and J. Norton Moore, *Changes in the Arctic Environment and the Law of the Sea* (2010).

threats to the Arctic environment and its ecosystem in the knowledge that it too plays an important role in maintaining the global environmental balance. In 1996, they established the Arctic Council, a high-level intergovernmental forum designed to provide a mechanism to address the common concerns and challenges faced by the Arctic governments and the peoples of the Arctic.

THE ANTARCTIC

The Antarctic continental region extends over 14 million square kilometres and comprises 26 per cent of the world's wilderness area, representing 90 per cent of all terrestrial ice and 70 per cent of planetary freshwater. The Antarctic also extends to a further 36 million square kilometres of ocean. It has a limited terrestrial life and a highly productive marine ecosystem, comprising a few plants (e.g. microscopic algae, fungi and lichen), marine mammals, fish and hordes of birds adapted to the harsh conditions, as well as the krill, which is central to the marine food chain and upon which other animals are dependent. The Antarctic plays an important role in maintaining the climatic system, and deep ice cores provide an important source of information about greenhouse gas concentrations and atmospheric temperatures from thousands of years ago. Since 1959, activities in the area have been limited to scientific research, fishing and tourism. Even these limited activities have not prevented parts of the region from being degraded by waste as a result of oil spills (such as the *Bahia Paraiso* in 1989), by the incidental destruction of flora and fauna and the adverse effects of tourism, and by economic pressures to exploit resources such as the Patagonian toothfish and some species of whales.²

The Antarctic region is subject to a regime comprising five treaties: the 1959 Antarctic Treaty;³ the 1972 Convention for the Conservation of Antarctic Seals (1972 Antarctic Seals Convention);⁴ the 1980 Convention on the Conservation of Antarctic Marine Living Resources (1980 CCAMLR);⁵ the 1988 Convention on the Regulation of Antarctic Mineral Resource Activities (1988 CRAMRA);⁶ and the 1991 Protocol on Environmental Protection to the Antarctic Treaty (1991 Antarctic Environment Protocol).⁷ In addition, under the 1959 Antarctic Treaty, numerous recommendations have been adopted, and under the 1980 CCAMLR a series of conservation measures have been adopted. Several other treaties, such as the 1982 UNCLOS, marine protection treaties, the 1989 Basel Convention and the 1997 Joint Safety Convention (IAEA), also include provisions applicable to the Antarctic region. Since the regime was initiated with the Antarctic Treaty in 1959, the international rules applicable to the region have increasingly addressed environmental concerns, and the area is now subject to a large body of environmental regulation. Apart from the substantive norms establishing environmental standards, including activities that are prohibited or regulated, the Antarctic Treaty regime has contributed significantly to the development of institutional and procedural techniques, which have been applied in other areas of international environmental law. In many ways, the Antarctic region has played a catalytic

² For instance, the minke whales at issue in Australia's whaling case against Japan in the ICJ: see Application Instituting Proceedings filed in the Registry of the Court on 31 May 2010, *Whaling in the Antarctic (Australia v. Japan)*, available at www.icj-cij.org/docket/files/148/15951.pdf.

³ Washington, 1 December 1959, in force 23 June 1961, 402 UNTS 71; forty-eight states are party.

⁴ London, 1 June 1972, in force 11 March 1978, 11 ILM 251 and 417 (1972); sixteen states are party.

⁵ Canberra, 20 May 1980, in force 7 April 1982, 19 ILM 841 (1980); www.ccamlr.org; thirty-three states and the EU are party.

⁶ Wellington, 2 June 1988, not in force; Misc. 6 (1989), Cmnd 634, 27 ILM 868 (1988).

⁷ Madrid, 4 October 1991, in force 14 January 1998, 30 ILM 1461 (1991); thirty-three states are party.

and innovative role, contributing to the progressive development of rules and techniques relating to information exchange, scientific advisory processes, environmental impact assessment, observation and inspection, the management of waste streams, liability for environmental damage, enforcement procedures and institutional arrangements.

From time to time, the issue of a UN role in Antarctica has been raised at the UN General Assembly. Early UN efforts began in the late 1950s, and continued again in 1983 as a result of growing interest in mineral exploitation in the region. In 1994, the General Assembly welcomed the designation of Antarctica as a nature reserve in the 1991 Environmental Protocol and commended the prohibition on mineral resource activities contained in that treaty.⁸ However, the earlier idea proposed by Malaysia and other states, which are not parties to the 1959 Antarctic Treaty, as well as non-governmental organisations, to turn the Antarctic region into a 'world park', prohibiting any human activity, has not met with universal approval. In 2005, the General Assembly, whilst deciding to remain seized on the 'Question of Antarctica', chose not to include the topic on the Assembly's agenda for the 63rd session in 2008.⁹

The Antarctic Treaty regime

1959 Antarctic Treaty

The 1959 Antarctic Treaty, which 'freezes' national claims to sovereignty in the continent,¹⁰ was not primarily intended to establish rules on environmental protection.¹¹ Nevertheless, a number of its provisions contribute incidentally to environmental protection in the region. Under Articles I and II, Antarctica is to be used for peaceful purposes only, including scientific investigation, and military activities are prohibited. Article V prohibits nuclear explosions and the disposal of radioactive waste material in Antarctica. Article IX allows parties having consultative status to take additional measures regarding, *inter alia*, the 'preservation and conservation of living resources in Antarctica'.¹²

The 1959 Antarctic Treaty did not establish a permanent secretariat, although in July 2001 the twenty-fourth Antarctic Treaty Consultative Meeting agreed to establish such a body in Buenos Aires.¹³ The Antarctic Treaty Secretariat was established in September 2004, and is tasked with, *inter alia*, supporting and publishing documents emanating from the Antarctic Treaty Consultative Meetings. The annual Consultative Meetings of the Parties are held to ensure consultation on matters of common interest, to exchange information, to discuss the implementation of agreements and to recommend additional measures to the parties. Twenty-eight parties have consultative status under the Treaty, which allows them to vote, while twenty do not have such status.¹⁴ Decisions are taken by consensus among the consultative parties.

⁸ UNGA Res. 49/80 (1994). See also UNGA Res. 51/56 (1996) and UNGA Res. 54/45 (1999).

⁹ UNGA Res. 60/47 (2005). See P. Beck, 'The United Nations and Antarctica, 2005: The End of the "Question of Antarctica"?', 42(3) *Polar Record* 217–27 (2006).

¹⁰ Seven states claim sovereign rights over parts of Antarctic territory: Argentina, Australia, Chile, France, New Zealand, Norway and the United Kingdom. To the extent that sovereign claims are maintained by these states the Antarctic area would not, at least in their eyes, be considered as part of the 'global commons'. Nevertheless, the area is often referred to as an example of the 'global commons' or of 'areas beyond the limits of national jurisdiction' within the meaning of Art. 21 of the Stockholm Declaration and Art. 2 of the Rio Declaration.

¹¹ The Antarctic Treaty applies to the area south of 60° South latitude, including all ice shelves: Art. VI.

¹² Art. IX(1)(f). ¹³ Antarctic Treaty Consultative Meeting XXIV, Decision 1 (2001).

¹⁴ Art. IX. Parties achieve consultative status by 'conducting substantial scientific research activity' in the region: Art. IX(2).

The meetings of the consultative parties to the Antarctic Treaty led to the first dedicated environmental measures for the area with the adoption in 1964 of the Brussels Agreed Measures for the Conservation of Antarctic Fauna and Flora.¹⁵ The 1964 Agreed Measures designate the Antarctic region as a 'Special Conservation Area'; the Measures apply to the continent and to ice shelves and do not prejudice high seas rights in which the parties must prohibit interference with native mammals or birds without prior authorisation, such authorisation to be granted only in specified circumstances, including scientific and educational research.¹⁶ The 1964 Agreed Measures also create 'Specially Protected Areas' with even stricter authorisation requirements.¹⁷

1972 Antarctic Seals Convention

The 1972 Antarctic Seals Convention applies to the sea area regulated by the 1959 Treaty. It requires parties to limit annually the number of seals that can be killed or captured, and grants complete protection to certain species.¹⁸ For those seals that can be taken, the hunting season is limited to a specified period in defined zones; the method of hunting is regulated; and scientific and breeding reserves are established. The Convention establishes more detailed obligations on exchange of information, according to which each party must provide annual reports to the contracting parties and to the non-governmental Scientific Committee for Antarctic Research (SCAR).¹⁹ The reports require fairly comprehensive information on the number of seals killed or taken, their sex and age, and details about the ships used in the hunt. No institutions are created, although meetings of the contracting parties are envisaged at least every five years and may be convened more regularly.²⁰

1980 CCAMLR²¹

The objective of the 1980 CCAMLR is the conservation (including 'rational use') of the marine living resources in the Antarctic Treaty area and in the surrounding area that forms part of the Antarctic marine ecosystem. Harvesting and associated activities are to be carried out in accordance with three principles of conservation adopted under the Convention:

1. preventing decreases in the size of any harvested population to a level below that which ensures its stable recruitment;
2. maintaining the ecological relationships between harvested, dependent and related populations of Antarctic marine living resources and the restoration of depleted populations to the levels defined in paragraph (1) above; and
3. preventing changes or minimising risk of changes in the marine ecosystem which are not potentially reversible over two or three decades with the aim of making possible the sustained conservation of Antarctic marine living resources.²²

¹⁵ Brussels, 13 June 1964, 17 UST 992, TIAS 6058. See also the London Arrangements for the Regulation of Antarctic Pelagic Whaling, 6 June 1962, 486 UNTS 263; C. C. Joyner, 'Recommended Measures under the Antarctic Treaty: Hardening Compliance with Soft International Law', 19 *Michigan Journal of International Law* 401 (1998).

¹⁶ Preamble.

¹⁷ Arts. VI(3) and VIII. By 1991, twenty Specially Protected Areas had been designated; the system was replaced with the entry into force in 1998 of the 1991 Protocol: see pp. 586–91, below.

¹⁸ Arts. 3 and 4 and Annex. ¹⁹ Art. 5(1) and (2). ²⁰ Arts. 6 and 7.

²¹ D. Vignes, 'La Convention sur la Conservation de la Faune et de la Flore Marines de l'Antarctique', 26 *Annuaire Français de Droit International* 741 (1980).

²² Art. II(3).

These principles go some way towards establishing criteria for 'rational use', and provide a legal basis for approaching 'sustainable development'. The ecosystem approach is an early example of a novel concept subsequently relied upon in other environmental agreements. The 1980 CCAMLR approach combines prevention (even 'precaution'), sustainability and restoration. The overall effort is similar to that adopted in subsequent agreements addressing other global environmental concerns, such as ozone depletion, climate change and biological diversity.

The 1980 CCAMLR provides that, for the Antarctic Treaty area, all parties are bound by Articles IV and VI of the 1959 Antarctic Treaty, irrespective of whether they are parties to that Treaty.²³ It also requires parties to observe, as and when appropriate, the 1964 Agreed Measures and such other environmental measures as recommended by the Antarctic Treaty consultative parties in the fulfilment of their 'special obligations and responsibilities . . . for the protection and preservation of the environment of the Antarctic Treaty area'.²⁴ Under the 1980 CCAMLR, no derogation is intended from the rights and obligations of parties to the 1946 International Whaling Convention or the 1972 Antarctic Seals Convention.²⁵

The 1980 CCAMLR is mainly administered by a Commission for the Conservation of Antarctic Marine Living Resources, membership of which is open to parties with full decision-making rights. The function of the Commission is to give effect to the objective and principles of the Convention, including the formulation, adoption and revision of conservation measures on the basis of the best scientific evidence available.²⁶ The Commission has legal personality and wide-ranging powers, particularly to acquire and disseminate information and notify parties of activities that are contrary to the Convention. The Commission compiles data on Antarctic marine living resources, gathers statistics on catches of harvested populations, and analyses and publishes this information.²⁷ The Commission has a limited compliance role: it can draw the attention of all parties to any activity which, in its opinion, affects the implementation by a party of obligations, as well as activities undertaken by nationals or vessels of non-parties.²⁸ The Commission is assisted by a consultative Scientific Committee for the Conservation of Antarctic Marine Living Resources.²⁹

²³ Art. IV(1). ²⁴ Art. V(1).

²⁵ Art. VI. On the 1946 Convention, see Chapter 9, pp. 425–8, above.

²⁶ Arts. VII–XIII, at Art. IX(1)(f). The Commission has adopted a significant body of conservation measures, relating, *inter alia*, to mesh sizes, fisheries, precautionary catches, scientific research, compliance, inspection, driftnet fishing and catch documentation schemes (those currently in force are available on the CCAMLR website, www.ccamlr.org/pu/e/e_pubs/cm/drt.htm).

²⁷ Art. IX(1)(b), (c) and (d). Its catch documentation scheme for toothfish (Conservation Measure 170/XIX) came into force on 7 May 2000.

²⁸ Art. X(1) and (2). The Commission has also adopted a number of conservation measures dealing with the enforcement of fisheries regulations in the CCAMLR area, including: Conservation Measure 147/XIX, Provisions to Ensure Compliance with CCAMLR Conservation Measures by Vessels, Including Co-operation Between Contracting Parties; Conservation Measure 118/XX, Scheme to Promote Compliance by Non-Contracting Party Vessels with CCAMLR Conservation Measures; Conservation Measure 10-06 (2008), Scheme to Promote Compliance by Contracting Party Vessels with CCAMLR Conservation Measures; Conservation Measure 10-07 (2009), Scheme to Promote Compliance by Non-Contracting Party Vessels with CCAMLR Conservation Measures; and Conservation Measure 10-08 (2009), Scheme to Promote Compliance by Contracting Party Nationals with CCAMLR Conservation Measures.

²⁹ Arts. XIV–XVI.

Provisions on environmental impact assessment were also included for the first time in a multilateral international treaty, albeit in embryonic form: the Scientific Committee must 'assess the effects of proposed changes in the methods or levels of harvesting and proposed conservation measures'.³⁰ The Convention also establishes a system of observation and inspection to ensure compliance with the Convention, including procedures for boarding and inspection by designated observers and inspectors.³¹

1988 CRAMRA³²

The 1988 CRAMRA marked a further stage in the development of international law for the protection of the Antarctic environment and the adoption of rules, procedures and institutions that go significantly beyond anything previously adopted in international law.³³ By the time of its adoption, however, CRAMRA was widely considered not to go far enough in protecting the Antarctic environment. The decision by France and Australia in the autumn of 1989 not to ratify CRAMRA made it unlikely that it will ever be brought into force.³⁴ The adoption in October 1991 of the Protocol on Environmental Protection left CRAMRA on ice, but the possibility of it re-emerging cannot, in theory at least, be excluded. In the meantime, many of its innovative provisions have influenced developments in relation to other international environmental treaties, and it remains an important model for the further development of international environmental law concerning rules on liability for environmental damage, environmental impact assessment, international supervision, institutional arrangements and dispute settlement.

CRAMRA was intended to be an integral part of the Antarctic Treaty system to establish the framework for determining whether Antarctic mineral resource³⁵ activities were acceptable and, if so, under what conditions they could be carried out.³⁶ Antarctic mineral resource activities comprised prospecting, exploration and development,³⁷ but did not include scientific research. CRAMRA recognised the dangers posed by mineral resource activities for the

³⁰ Art. XV(2)(d). ³¹ Art. XXIV.

³² J. Barnes, *The Emerging Convention on the Conservation of Antarctic Marine Living Resources: An Attempt to Meet the New Realities of Resource Exploitation in the Southern Ocean* (1982); C. C. Joyner, 'The Antarctic Minerals Negotiating Process', 81 *American Journal of International Law* 888 (1987); L. A. Kimball, 'The Antarctic Minerals Convention' (Special Report for the World Resources Institute, 1988); F. Orrega Vicuña, *Antarctic Mineral Exploitation* (1988); M. P. Jacobsen, 'Convention on the Regulation of Antarctic Mineral Resources', 30 *Harvard International Law Journal* 237 (1989); A. Watts, 'The Convention on the Regulation of Antarctic Mineral Resource Activities', 39 *International and Comparative Law Quarterly* 169 (1990); R. Wolfrum, *The Convention on the Regulation of Antarctic Mineral Resource Activities* (1991).

³³ See also the Antarctic Treaty Consultative Meeting Recommendation XI-I on Antarctic Mineral Resources, which led to negotiation of a legal regime for Antarctic mineral resources, 7 July 1981, 20 *ILM* 1265 (1981).

³⁴ CRAMRA will only enter into force after ratification by sixteen of the Antarctic Treaty consultative parties which participated in the final session of the fourth Special Antarctic Treaty Consultative Meeting provided that number includes all the states necessary to establish all of the institutions of the Convention in respect of every area of the Antarctica, including five developing countries and eleven developed countries: Art. 62(1).

³⁵ 'Mineral resources' are defined as 'all non-living natural non-renewable resources, including fossil fuels, metallic and non-metallic minerals': Art. 1(6).

³⁶ Arts. 2(1) and 5. The CRAMRA area is generally the same as that for the 1959 Antarctic Treaty, and CRAMRA expressly applies to impacts from activities conducted within that area which are felt outside the area, including impacts on dependent or associated ecosystems: Art. 5(1) and (4). CRAMRA is also without prejudice to high seas rights, but it governs mineral activities on the continent's islands and ice shelves, and activities taking place in the seabed and subsoil of adjacent offshore areas up to the deep seabed, which could extend north of the 60° South line (Art. 5(3)).

³⁷ See p. 584, below.

environment, and elaborated a range of measures designed to ensure environmental protection. CRAMRA also reflected an acknowledgment of the special responsibility of the Antarctic Treaty consultative parties to protect the Antarctic environment and dependent and associated ecosystems; to respect Antarctica's significance for the global environment and its scientific value and aesthetic and wilderness qualities; and to take into account the interests of the international community as a whole.³⁸ To that end, decisions on Antarctic mineral resource activities were to be based upon the availability of adequate information and a precautionary approach: no such activities would be allowed to take place until it was judged, based upon assessment of possible impacts on the Antarctic environment and on dependent and associated ecosystems, that the activity in question would not cause environmental harm.³⁹ CRAMRA also established, for the first time in a treaty, a comprehensive environmental impact assessment process, which was stated to be an objective and a principle of the Convention.⁴⁰ The operation of the assessment process is set out in some detail,⁴¹ and applications for permits were to be accompanied by an assessment.⁴²

CRAMRA would also have prohibited activities until it could be judged that they would 'not cause significant adverse effects on global or regional climate or weather patterns', that safe technologies and procedures were available, and that there was a capacity to monitor key environmental parameters and to respond to accidents.⁴³ This would have established a high burden of proof on the person wishing to engage in such activities.

Under CRAMRA, Antarctic mineral resource activities would be prohibited outright in an area designated as a 'Specially Protected Area' or a 'Site of Special Scientific Interest' under Article IX of the Antarctic Treaty, or in any other area designated by the Commission as a protected area, and may be prohibited or restricted in adjacent areas.⁴⁴ Mineral resource activities would be required to respect other established uses of Antarctica, including the operation of stations, scientific research, conservation and rational use of marine living resources, tourism, preservation of historic monuments, and navigation and aviation.⁴⁵

Institutions

CRAMRA would have established several new institutions. Primary among them would have been the Antarctic Minerals Resource Commission, which would be granted broad powers: to facilitate and promote information; to designate areas in which mineral activities are prohibited; to determine maximum drilling depths; and to adopt other measures relating to information, exploration and development.⁴⁶ Membership in the Commission would be open to decision-making states,⁴⁷ and its powers would include monitoring and the adoption of measures for the protection of the environment and dependent and associated ecosystems.⁴⁸

CRAMRA would also have established Antarctic Mineral Resources Regulatory Committees for geographic areas identified by the Commission, and a Scientific, Technical and Environmental

³⁸ Art. 2(3)(a), (b), (d) and (g).

³⁹ Art. 4(1) and (2). Assessment is to include the possible effects on air and water quality, changes in atmospheric, terrestrial or marine environments, significant changes to flora and fauna, jeopardy to endangered species, and other degradation: Art. 4(2).

⁴⁰ Arts. 2(1)(a) and 4(1)–(5). ⁴¹ Art. 26(2), (3) and (4).

⁴² Arts. 37(7)(d), 39(2)(e), 44(2)(b) and 53(2)(b). ⁴³ Art. 4(3) and (4). ⁴⁴ Art. 13.

⁴⁵ Art. 15. ⁴⁶ Arts. 18–22. ⁴⁷ Art. 18(2). ⁴⁸ Art. 21(1)(a) and (c).

Advisory Committee.⁴⁹ The primary functions of the Regulatory Committees would have included the grant and monitoring of exploration and development activities; each Regulatory Committee would have comprised ten members determined by the Commission, including members that assert rights or claims in the identified area.⁵⁰ The Advisory Committee would have advised the Commission and Regulatory Committees on the scientific, technical and environmental aspects of Antarctic mineral resource activities; the role would be advisory, and participation in the Committee would be open to all parties.⁵¹ CRAMRA would also require special Meetings of the Parties,⁵² and establish a single secretariat to serve the Commission, the Regulatory Committees, the Advisory Committee, the special Meeting of the Parties, and any subsidiary bodies established.⁵³

Resource activities

CRAMRA divided mineral resource activities into three categories: prospecting, exploration and development. Prospecting is governed by Articles 37 and 38, and must be conducted in compliance with CRAMRA but without a requirement of authorisation by any CRAMRA institution.⁵⁴ The sponsoring state would be subject to obligations to ensure compliance by the operator with all provisions of the Convention, such as environmental impact assessment, monitoring, emergency response and liability. Additional obligations upon the sponsoring state would include notification to the Commission of planned prospecting at least nine months in advance, notification of the cessation of prospecting, and the provision of a general annual report.⁵⁵ Each operator would be responsible for the removal of all installations and equipment and site rehabilitation.⁵⁶ The Commission could be convened to consider whether prospecting was consistent with the CRAMRA, and would be able to take appropriate action.⁵⁷

Exploration is governed by Articles 39–52 (Chapter IV).⁵⁸ Although not in force, the procedure establishes a useful model illustrating the potential relationship between the private sector, a state and an international organisation. The process for identification of areas for exploration would go through several stages. After having established its desire to engage in exploration, any party would submit to the Executive Secretary a notification requesting the Commission to identify areas for exploration (and development). The notification would be referred to all parties, and circulated to observers attending a meeting of the Commission that would have to be held within two months of the receipt of the notification.⁵⁹ The Commission would receive advice from the Advisory Committee on the notification, and a special Meeting of the Parties, comprising all parties (unlike the Commission), would consider whether the

⁴⁹ Arts. 23–27 and 29–32. ⁵⁰ Art. 29(2). ⁵¹ Art. 23(2). ⁵² Art. 28. ⁵³ Art. 33.

⁵⁴ Art. 37(2). ‘Prospecting’ is defined as, *inter alia*, ‘activities, including logistical support, aimed at identifying areas of mineral resource potential for possible exploration and development, including geological, geochemical and geophysical investigations and field observations, the use of remote sensing techniques and collection of surface, seafloor and sub-ice samples’: Art. 1(8).

⁵⁵ Art. 37(3), (7) and (8). The sponsoring state would be required to ensure that its operations maintain financial capacity ‘commensurate with the nature and level of the activity undertaken and the risks involved’ to comply with the strict liability provisions under Art. 8(2): Art. 37(3)(b).

⁵⁶ Art. 37(6). ⁵⁷ Art. 38(1).

⁵⁸ ‘Exploration’ is defined as ‘activities, including logistical support, aimed at identifying and evaluating specific mineral resource occurrences or deposits, including exploratory drilling, dredging and other surface or subsurface excavations required to determine the nature and size of mineral resource deposits and the feasibility of their development, but excluding pilot projects or commercial production’: Art. 1(9).

⁵⁹ Arts. 19(2)(a) and 39(3).

identification of an area by the Commission was compatible with CRAMRA, and adopt a report setting out its conclusions.⁶⁰ The Commission would then decide whether to identify an area for exploration and development as requested, taking full account of, and giving special weight to, the conclusions of the special Meeting of the Parties, and taking full account also of the conclusions of the Advisory Committee.⁶¹ The Commission may decide only by consensus that identification of an area was consistent with CRAMRA.⁶²

If an area was identified, the Regulatory Committee would carry out the preparatory work for exploration, including the division of the area into blocks, and establish procedures for making applications for exploration and development.⁶³ Applications could be lodged with the Regulatory Committee by any party on behalf of an operator for which it was the sponsoring state.⁶⁴ The Regulatory Committee would elaborate a Management Scheme setting out specific terms and conditions for exploration and development including: measures to minimise environmental risks and damage; provision for restoration to the *status quo ante*; contingency plans; performance requirements; technical and safety specifications; monitoring and inspection; liability; resource conservation requirements; financial obligations; financial guarantees and insurance; applicable law; enforcement of the Scheme; and dispute settlement.⁶⁵ Once the Management Scheme had been approved, exclusive exploration (and development) permits could be issued by the Regulatory Committee.⁶⁶ The Commission could review the decision by the Regulatory Committee to approve a Management Scheme or issue a development permit at the request of any member of the Commission or Regulatory Committee, and could request the Regulatory Committee to reconsider its decision.⁶⁷ The Regulatory Committee would monitor compliance by operators and could under certain circumstances suspend, modify or cancel the Management Scheme and permits.⁶⁸

Articles 53 and 54 (Chapter V) establish procedures for applications to proceed from exploration to development in the area. Once a Management Scheme and an exploration permit were in force for an operator, the sponsoring state could apply for a development permit, on behalf of the operator, to the Regulatory Committee, which in turn could issue a development permit after taking full account of the views of the Advisory Committee.⁶⁹ The specific terms and conditions for exploration and development would be set out in the Management Scheme and could be modified at this stage.

Compliance

CRAMRA significantly develops the provisions included in the earlier treaties for compliance with international environmental obligations. Apart from the obligations of any sponsoring state, independent compliance is provided for, including additional inspection powers and rights of aerial inspection.⁷⁰ Data and information would be made freely available, subject to rules on confidentiality of commercial information.⁷¹ The Commission and an Advisory

⁶⁰ Art. 40.

⁶¹ Art. 41(1); the Commission may consider whether there are any areas in which exploration or development should be prohibited or restricted: Art. 41(1)(b).

⁶² Art. 41(2). ⁶³ Art. 43. ⁶⁴ Art. 44. ⁶⁵ Art. 47. ⁶⁶ Art. 48. ⁶⁷ Art. 49. ⁶⁸ Arts. 51 and 52.

⁶⁹ Arts. 53 and 54. 'Development' is defined as 'activities, including logistical support, which takes place following exploration and are aimed at or associated with exploitation of specific mineral resource deposits, including pilot projects, processing, storage and transport activities': Art. 1(10).

⁷⁰ Art. 12. ⁷¹ Art. 16.

Committee would have powers to gather information, and both the Commission and the Advisory Committee would themselves be subject to the obligation to give advance public notice of matters on which advice from the Advisory Committee had been requested.⁷² The Commission would be required to co-operate with relevant international organisations including non-governmental organisations having a scientific, technical or environmental interest in the Antarctic.⁷³ Finally, activities relating to prospecting, exploration and exploitation would be subject to additional information requirements.⁷⁴

Liability and dispute settlement

The 1988 CRAMRA also includes new approaches to liability for environmental damage, and a link between civil and state liability. These are considered in more detail in Chapter 17 below.⁷⁵ Significant advances are envisaged for dispute settlement under CRAMRA, including detailed provisions on arbitration and the role of the ICJ.⁷⁶ Of particular note is the express role to be given to national courts, recourse to which is envisaged, and to which the Commission would have access.⁷⁷ Additionally, management schemes relating to terms and conditions of exploration and development would also be required to make express provision for the settlement of disputes.⁷⁸

1991 Environment Protocol

On 4 October 1991, twenty-three of the then twenty-six Antarctic Treaty consultative parties and eight non-consultative parties signed the 1991 Antarctic Environmental Protocol, including its then four Annexes, which established a fifty-year moratorium on Antarctic mineral resource activities from its entry into force on 14 January 1998.⁷⁹ A fifth Annex was adopted shortly thereafter, followed by a sixth in 2005. The Protocol and Annexes, to which no reservations are permitted,⁸⁰ comprise the most comprehensive and stringent regime of environmental protection rules ever established under the rules of public international law anywhere in the world. The Protocol was negotiated following the decision by France and Australia not to ratify CRAMRA on the grounds that it failed to provide adequate protection to the Antarctic environment.

At the heart of the Protocol is Article 7, which provides in unambiguous terms that '[a]ny activity relating to mineral resources, other than scientific research, shall be prohibited'.⁸¹ The

⁷² Arts. 21(1) and 25(3). ⁷³ Art. 34. ⁷⁴ Arts. 37, 47 and 53.

⁷⁵ Chapter 17, pp. 733–4; 760–1, below. ⁷⁶ Arts. 55–59, and Annex. ⁷⁷ Art. 8(10). ⁷⁸ Art. 47.

⁷⁹ J. P. Puissechet, 'Le Protocole au Traité sur l'Antarctique Relatif à la Protection de l'Environnement', *Annuaire Français de Droit International* 755 (1991); C. C. Joyner, 'The 1991 Madrid Environmental Protocol: Rethinking the World Park Status for Antarctica', 1 *Review of European Community and International Environmental Law* 328 (1992); F. Francioni, 'The Madrid Protocol on the Protection of the Antarctic Environment', 28 *Texas International Law Journal* 47 (1993); C. Redgwell, 'Environmental Protection in Antarctica: The 1991 Protocol', 43 *International and Comparative Law Quarterly* 599 (1994); L. Cordonery, 'Area Protection and Management in Antarctica: A Proposed Strategy for the Implementation of Annex V of the Madrid Protocol Based on Information Management', 14 *Environmental and Planning Law Journal* 38 (1997); D. French, 'Sustainable Development and the 1991 Madrid Protocol to the 1959 Antarctic Treaty: The Primacy of Protection of the Particularly Sensitive Environment', 2 *Journal of International Wildlife Law and Policy* 291 (1999).

⁸⁰ Art. 24.

⁸¹ The Final Act of the eleventh Antarctic Treaty Special Consultative Meeting notes that 'the harvesting of ice was not considered to be an Antarctic mineral resource activity': cited in J. Verhoeven, P. Sands and M. Bruce (eds.), *The Antarctic Environment and International Law* (1992), 218.

Protocol adopts a fifty-year moratorium on any mineral resource activities in the Antarctic area. However, the Protocol permits modifications and amendments to be made at any time in accordance with the relevant provisions of the Antarctic Treaty, which require the agreement of all the Antarctic Treaty consultative parties.⁸² To overcome the unanimity problem, the Protocol allows a review conference to be called at the request of any of the Antarctic Treaty consultative parties fifty years after its entry into force. The review conference will be able to adopt modifications or amendments to the Protocol, but only under strict conditions. They must be supported by a majority of the parties, including three-fourths of the Antarctic Treaty consultative parties at the time of the adoption of the Protocol.⁸³ They will only enter into force after ratification by three-fourths of the Antarctic Treaty consultative parties, including all states that were consultative parties at the time of the adoption of the Protocol.⁸⁴ Moreover, any modification or amendment to Article 7 must be accompanied by a binding legal regime on 'Antarctic mineral resource activities that includes an agreed means for determining whether, and if so, under which conditions, any such activities would be acceptable', and must fully safeguard the interests of states referred to in Article IV of the Antarctic Treaty and apply the principles of the Antarctic Treaty.⁸⁵ Recognising the real possibility that the modification and amendment procedure will make it virtually impossible to adopt changes to Article 7, any party may give notice of its withdrawal from the Protocol if a modification or amendment has not entered into force within three years of the date of its communication to the parties.⁸⁶

The objective of the Protocol, which supplements the Antarctic Treaty without modifying or amending its provisions or derogating from rights and obligations of parties under other international instruments in force within the Antarctic Treaty system, is the comprehensive protection of the Antarctic environment and dependent and associated ecosystems, based upon the conviction that such a goal is 'in the interest of mankind as a whole'.⁸⁷ Antarctica is designated as a 'natural reserve, devoted to peace and science', but is not formally called a 'world park', as some states had wished.⁸⁸ The Protocol includes guiding principles to support environmental protection in the planning and conduct of the non-mineral resource activities that are permitted, principally scientific research and tourism, including research that is essential to the understanding of the global environment.⁸⁹ These principles include: the obligation to plan and conduct activities so as to limit adverse environmental impacts; to ensure the prior assessment of, and informed judgments about, possible impacts; and to carry out regular and effective monitoring to allow assessment of impacts and early detection of possible unforeseen effects.⁹⁰

Apart from Article 7, the Protocol requires co-operation, and includes provisions on environmental impact assessment,⁹¹ together with six other Annexes that form an integral part of the

⁸² Art. 25(1). The relevant procedures in the Antarctic Treaty are set out in Art. XII(1)(a) and (b).

⁸³ Art. 25(2) and (3). ⁸⁴ Art. 25(4). ⁸⁵ Art. 25(5).

⁸⁶ Art. 25(6); withdrawal will take effect two years after receipt of the notice of withdrawal.

⁸⁷ Preamble and Arts. 2 and 4. Under Art. 5, the parties to the Protocol undertake to avoid any inconsistency with other instruments of the Antarctic Treaty system.

⁸⁸ Art. 2. ⁸⁹ Art. 3(1) and (3).

⁹⁰ Art. 3(1) and (2). The Protocol specifically requires activities to avoid: adverse effects on climate or weather patterns, air or water quality; changes in atmospheric, terrestrial, glacial or marine environments; changes in fauna and flora; further jeopardy to endangered species; and degradation of or substantial risk to areas of biological, scientific, historic, aesthetic or wilderness significance: Art. 3(2)(b).

⁹¹ Art. 8 and Annex I; on environmental impact assessment, see Chapter 14, below.

Protocol.⁹² Annex II, on 'Conservation of Fauna and Flora', which was amended at the thirty-second Antarctic Treaty Consultative Meeting in 2009,⁹³ prohibits the taking of or harmful interference with flora and fauna except in accordance with a permit, which may only be granted in relation to scientific or educational activities.⁹⁴ Permits may be granted only in exceptional circumstances for the Specially Protected Species designated in Appendix A to Annex II.⁹⁵ A proposal to designate a species as a Specially Protected Species can be submitted to the Antarctic Treaty Consultative Meeting by any party, the Committee for Environmental Protection (CEP),⁹⁶ the Scientific Committee on Antarctic Research or the Scientific Committee of the CCAMLR.⁹⁷ Species of animal or plant that are not native to the Antarctic Treaty area may only be introduced by permit for controlled use, and the rationale justifying the introduction as well as precautions to be taken to prevent escape or contact with flora or fauna must be provided.⁹⁸ Dogs are prohibited in the Antarctic Treaty area,⁹⁹ and precautions are to be taken to prevent the accidental introduction of non-native micro-organisms.¹⁰⁰

Annex III, on 'Waste Disposal and Waste Management', represents an advanced attempt by the international community to develop treaty obligations giving effect to a comprehensive waste prevention and minimisation strategy. It applies to all activities in the Antarctic Treaty area, and requires wastes produced or disposed of in the area to be reduced to minimise the impact on the Antarctic environment or interference with the natural conditions of Antarctica.¹⁰¹ Waste storage, disposal and removal, as well as recycling and source reduction, are essential for all activities, and wastes should be returned to the country from which the activities generating the waste were organised or to any other country in accordance with international agreements.¹⁰² Past and present waste disposal sites on land, and abandoned work sites, are to be cleaned up by the generator of such wastes and the user of the sites.¹⁰³ Annex III requires the removal by the generator of eight categories of waste generated after entry into force of the Annex and for certain other wastes to be removed to the maximum extent practicable.¹⁰⁴ Disposal by incineration of certain combustible wastes will be permitted in accordance with certain conditions, but open burning of waste was to be phased out by the 1998/9 season.¹⁰⁵ The Annex limits disposal of other wastes on land and in the sea, requires all wastes to be stored to prevent their dispersal in the environment, and prohibits the introduction of certain products into the Antarctic Treaty area.¹⁰⁶ Finally, each party must establish a waste disposal classification system and prepare waste management plans and an inventory of locations of past activities.¹⁰⁷

Annex IV, on 'Prevention of Marine Pollution', applies to ships of parties that are used to support their operations while operating in the Antarctic Treaty area.¹⁰⁸ The Annex prohibits or

⁹² Art. 9(1). The Annexes have their own rules on, *inter alia*, emergency situations, review and amendment.

⁹³ Final Report of the Thirty-Second Antarctic Treaty Consultative Meeting, Baltimore, 6–17 April 2009, available at www.ats.aq/documents/ATCM32/fr/ATCM32_fr002_e.pdf, Measure 16 (2009): Amendment of Annex II to the Protocol on Environmental Protection to the Antarctic Treaty: Conservation of Antarctic Fauna and Flora.

⁹⁴ Annex II, Art. 3(1) and (2). This revises and updates the 1964 Agreed Measures.

⁹⁵ Annex II, Art. 3(4) and (5). ⁹⁶ The Committee was established by Art. 11 of the 1991 Protocol.

⁹⁷ Annex II, Art. 3(7). ⁹⁸ Annex II, Art. 4(1), (3) and (5). ⁹⁹ Annex II, Art. 4(2). ¹⁰⁰ Annex II, Art. 4(7).

¹⁰¹ Annex III, Art. 1(1) and (2). ¹⁰² Annex III, Art. 1(3) and (4). ¹⁰³ Annex III, Art. 1(5).

¹⁰⁴ Annex III, Art. 2. ¹⁰⁵ Annex III, Art. 3.

¹⁰⁶ Annex III, Arts. 4–7. Prohibited products include PCBs, non-sterile soil, polystyrene or similar packaging, or pesticides other than those required for scientific, medical or hygiene purposes: Art. 7.

¹⁰⁷ Annex III, Art. 8. These are all subject to review by the Environment Committee: Art. 9.

¹⁰⁸ Annex IV, Art. 2.

regulates the discharge of oil and oily and other mixtures into the sea, and prohibits the discharge of noxious liquid substances, certain garbage and certain sewage.¹⁰⁹ Annex IV also establishes rules on ship retention capacity and retention facilities, design, construction and manning of ships, and preventive measures and emergency preparedness and response.¹¹⁰ The Annex is consistent with MARPOL 73/78 provisions on special areas and does not derogate from the rights and obligations of parties to MARPOL 73/78.¹¹¹

Annex V, on 'Area Protection and Management',¹¹² provides for the designation of Antarctic Specially Protected Areas and Antarctic Specially Managed Areas in which activities must be prohibited, restricted or managed in accordance with Management Plans adopted under the Annex.¹¹³ Antarctic Specially Protected Areas are designated to protect outstanding environmental, scientific, historic, aesthetic or wilderness values or scientific research, and entry to these areas is prohibited except by permit.¹¹⁴ Annex V redesignates Specially Protected Areas and Sites of Special Scientific Interests designated by Antarctic Treaty Consultative Meetings as Antarctic Specially Protected Areas.¹¹⁵ Antarctic Specially Managed Areas are established to assist in the planning and co-ordination of activities, to avoid conflicts and to improve co-operation, and entry is not permitted without a permit.¹¹⁶ Antarctic Specially Managed Areas may contain Antarctic Specially Protected Areas.¹¹⁷ The Annex envisages Management Plans, designation procedures, the issuing of permits, the listing of historic sites and monuments, and information exchange and publicity.¹¹⁸

Annex VI, on 'Liability Arising from Environmental Emergencies', was adopted in 2005 but is yet to come into force.¹¹⁹ Each party must require operators to take reasonable preventative measures to reduce the risk of environmental emergencies and to have in place contingency plans.¹²⁰ Parties must also require operators to take prompt and effective response actions in the aftermath of an environmental emergency; if they fail to do so, all parties are encouraged to take such action.¹²¹ Operators that have failed to fulfil their response action obligations will be strictly liable to pay the costs incurred by any parties which have taken response action on their behalf and can be subject to legal action in the courts of not more than one party where the operator is incorporated, has its place of business or has its principal or habitual place of residence.¹²² Annex VI will enter into force as soon as all the states that were consultative parties in 2005 have approved it. At present, only five states have approved the measure: Sweden, Peru, Poland, Spain and, most recently, Finland.

Tourism has been discussed on an *ad hoc* basis at Antarctic Treaty Consultative Meetings for more than two decades. At the seventeenth Antarctic Treaty Consultative Meeting, in November 1992, five parties proposed an additional Annex to cover tourism and other non-governmental

¹⁰⁹ Annex IV, Arts. 3–6. ¹¹⁰ Annex IV, Arts. 9–12.

¹¹¹ Annex IV, Art. 14; on MARPOL 73/78, see Chapter 9, pp. 381–5, above.

¹¹² Annex V was adopted at the sixteenth Antarctic Treaty Consultative Meeting, Bonn, 18 October 1991.

¹¹³ Annex V, Art. 2. ¹¹⁴ Annex V, Art. 3(1) and (4).

¹¹⁵ Annex V, Art. 3(3). There are currently 171 Specially Protected Areas: www.ats.aq/documents/cep/Register_Updated_2010_e.pdf.

¹¹⁶ Annex V, Art. 4(1) and (3). There are currently seven Specially Managed Areas: www.ats.aq/documents/cep/Register_Updated_2010_e.pdf.

¹¹⁷ Annex V, Art. 4(4). ¹¹⁸ Annex V, Arts. 5–10.

¹¹⁹ Annex VI was adopted at the twenty-eighth Antarctic Treaty Consultative Meeting, Stockholm, 6–17 June 2005.

¹²⁰ Annex VI, Arts. 3(1) and 4(1). ¹²¹ Annex VI, Art. 5(1) and (2).

¹²² Annex VI, Arts. 6(1) and (3) and 7(1).

activities, which would require advance approval for tourist visas, limiting the areas which tourists could visit, and limiting the overall number of tourists and visits by NGOs. No agreement was then reached. The number of Antarctic tourists continues to increase annually, but there are different views among the parties as to how to manage tourism policy and on the adoption of concrete and binding measures. At the thirty-second Consultative Meeting, the parties adopted a resolution setting out general principles to be used to inform further work on managing Antarctic tourism activities: scientific research is accorded priority over all tourism activities and it must not contribute to the degradation of the Antarctic environment and associated ecosystems, and tourism must be undertaken in accordance with the Antarctic Treaty and all associated instruments as well as measures and resolutions of the Consultative Meeting.¹²³

Institutional arrangements

The operation of the Protocol is placed under the supervision of the Antarctic Treaty Consultative Meetings and a newly created Committee for Environmental Protection. The meetings define general policy for the comprehensive protection of the Antarctic environment and dependent and associated ecosystems and adopt measures under Article IX of the Antarctic Treaty to implement the Protocol.¹²⁴ The Committee, subject to review by the meetings, provides advice and recommendations on implementation, including on: the effectiveness of measures taken under the Protocol, and the need for improvements or additional measures; the application of environmental impact assessment procedures; the means of minimising environmental impacts; the procedures for urgent actions, including environmental emergencies; the operation and elaboration of the Protected Area system; inspection procedures; environmental information; the state of the Antarctic environment; and the need for scientific research.¹²⁵ Each party is a member of the Committee, and observer status is open to any contracting party, to the President of SCAR and to the Chair of the Scientific Committee of the CCAMLR, as well as to other relevant scientific, environmental and technical organisations who have received the approval of the Antarctic Treaty Consultative Meeting.¹²⁶

Compliance and related matters

The Committee does not have a formal role in the compliance process. Rather, each party must take 'appropriate measures within its competence' to ensure compliance with the Protocol.¹²⁷ Additionally, each party must exert appropriate efforts consistent with the UN Charter to ensure that no one engages in any activity contrary to the Protocol, and to draw to the attention of all other parties any activity that affects implementation.¹²⁸ The Antarctic Treaty Consultative Meeting must draw to the attention of non-parties activities by it or those under its control, on any activity that affects implementation.¹²⁹ The Protocol also provides for inspections by observers in accordance with Article VII of the Antarctic Treaty, and for the formulation,

¹²³ Antarctic Treaty Consultative Meeting, Res. 7 (2009).

¹²⁴ Art. 10(1). The meetings are to draw upon the advice and recommendations of the Committee, and the advice of SCAR: Art. 10(2).

¹²⁵ Art. 12(1). The Committee may consult with SCAR and the Scientific Committee for the Conservation of Antarctic Marine Living Resources, as well as other relevant organisations: Art. 12(2).

¹²⁶ Art. 11(3) and (4). ¹²⁷ Art. 13(1). Each party is to provide an annual report on its implementation: Art. 17.

¹²⁸ Art. 13(2) and (4). ¹²⁹ Art. 13(5).

establishment and implementation of contingency plans for response to emergencies and incidents with potential adverse effects on the environment, as well as procedures for the immediate notification of and co-operative response to environmental emergencies.¹³⁰ The Protocol provides for mandatory dispute settlement in respect of certain provisions, including Articles 7, 8, 15, the provisions of any Annex (except to the extent that the Annex provides otherwise) and Article 13 (insofar as it relates to these particular Articles or the Annexes).¹³¹

Other treaty provisions

There are also a number of other international legal instruments of global application that have important provisions of great relevance to the Antarctic. Particularly significant among these are the 1982 UNCLOS, the provisions of which apply to the Antarctic marine environment,¹³² and the 1989 Basel Convention which prohibits the export of hazardous wastes or other wastes for disposal within the Antarctic region.¹³³ Other treaties whose provisions apply to the Antarctic marine environment include the 1972 London Convention and MARPOL 73/78.

THE ARCTIC¹³⁴

Unlike the Antarctic area, the Arctic area is part of the sovereign land or marine territory of eight states: Canada, Denmark, Finland, Iceland, Norway, Sweden, Russia and the United States. Respective parts of the Arctic area, which are under the jurisdiction of these states, are subject to their international legal obligations, including those relating to environmental protection. Nevertheless, beginning in September 1989, on the initiative of Finland, these eight states began co-operation on measures to combat threats to the Arctic ecosystem that could not

¹³⁰ Art. 15. ¹³¹ Arts. 18–20; a Schedule to the Protocol defines an Arbitral Tribunal.

¹³² Part XII, Protection and Preservation of the Marine Environment, Arts. 192–237; M. Peterson, 'Antarctic Implications of the New Law of the Sea', 16 *Ocean Development and International Law* 137 (1986).

¹³³ Art. 4(6).

¹³⁴ R. M'Gonigle, 'Unilateralism and International Law: The Arctic Waters Pollution Prevention Act', 34 *University of Toronto Faculty Law Review* 180 (1976); B. Feder, 'Legal Regime for the Arctic', 6 *Ecology Law Quarterly* 785 (1978); D. McRae and D. Goundrey, 'Environmental Jurisdiction in Arctic Waters: The Extent of Article 234', 16 *University of British Columbia Law Review* 197 (1982); D. J. Bederman, 'High Stakes in the High Arctic: Jurisdiction and Compensation for Oil Pollution from Offshore Operations in the Beaufort Sea', 4 *Alaska Law Review* 37 (1987); D. Rothwell, 'The Arctic Environmental Protection Strategy and International Environmental Co-operation in the Far North', 6 *Yearbook of International Environmental Law* 65 (1995); R. J. Ansson, 'The North American Agreement on Environmental Protection and the Arctic Council Agreement: Will These Multinational Agreements Adequately Protect the Environment?', 29 *California Western International Law Journal* 101 (1998); O. R. Young, *Creating Regimes: Arctic Accords and International Governance* (1998); E. T. Bloom, 'Establishment of the Arctic Council', 93 *American Journal of International Law* 712 (1999); M. H. Nordquist, T. H. Heidar and J. N. Moore (eds.), *Changes in the Arctic Environment and the Law of the Sea* (2010); K. N. Scott, 'Drilling at the Poles: Environmental Protection in the Antarctic and Arctic', in M. Fitzmaurice, D. Ong and P. Merkouris (eds.), *Research Handbook on International Environmental Law* (2010), Chapter 30. See also D. Pharand, *Canada's Arctic Waters in International Law* (2010); M. H. Nordquist, J. N. Moore and A. S. Skaridov, *International Energy Policy, the Arctic and the Law of the Sea* (2005); T. Koivurova, 'Alternatives for an Arctic Treaty – Evaluation and a New Proposal', 17(1) *Review of European Community and International Environmental Law* 14 (2008); C. C. Joyner, 'The Legal Regime for the Arctic Ocean', 18(2) *Journal of Transnational Law and Policy* 195 (2009); O. S. Stokke, 'A Legal Regime for the Arctic? Interplay with the Law of the Sea Convention', 31(4) *Marine Policy* 402 (2007); L. A. de la Fayette, 'Oceans Governance in the Arctic', 23(3) *International Journal of Marine and Coastal Law* 531 (2008); S. Holmes, 'Breaking the Ice: Emerging Legal Issues in Arctic Sovereignty', 9(1) *Chicago Journal of International Law* 323 (2008); E. J. Molenaar, 'Arctic Marine Shipping: Overview of the International Legal Framework, Gaps, and Options', 18(2) *Journal of Transnational Law and Policy* 289 (2009).

effectively be addressed by each acting alone. This resulted in the adoption of the Arctic Environmental Protection Strategy (AEPS) 'to ensure the protection of the Arctic environment and its sustainable and equitable development, while protecting the cultures of indigenous peoples'.¹³⁵ Although not legally binding, the AEPS contains detailed commitments relating to objectives and principles, identifies problems and priorities for which actions are to be taken, and adopts measures for monitoring and assessment, the protection of the marine environment, emergency preparedness, and conservation of flora and fauna. The objectives of the AEPS include: protection of the Arctic ecosystem; protection, enhancement and restoration of the environmental quality and sustainable utilisation of natural resources; recognition and accommodation of the needs, values and practices of indigenous peoples; reviewing the state of the Arctic environment; and identifying, reducing and, as a final goal, eliminating pollution.¹³⁶ Guiding principles to implement the AEPS include:

- conservation, sustainable utilisation and protection for the benefit of and enjoyment of present and future generations;
- consideration for the value and interdependent nature of ecosystem components;
- informed assessment of the possible impacts of activities on the environment, including cumulative impacts;
- maintaining ecological systems and biodiversity;
- respecting the relationship with the global climate;
- taking into account scientific investigations and traditional knowledge;
- developing and sharing information and knowledge;
- developing a network of protected areas;
- promoting international co-operation; and
- ensuring mutual co-operation in fulfilling national and international responsibilities, including the use and transfer of and trade in effective and appropriate technology.¹³⁷

An Arctic Plan, with specific commitments, has been adopted to address six serious environmental issues. With respect to persistent organic contaminants, the Arctic countries agree to: undertake co-operative monitoring and research; consider the feasibility of developing national inventories on production, use and emissions; develop proposals for international action under the 1979 LRTAP Convention, the 1974 Paris Convention and the 1974 Helsinki Convention; reduce or control the use of chlordane, DDT, toxaphene and PCBs; and establish priorities and timetables for a programme of emissions elimination.¹³⁸ To prevent oil pollution, the Arctic countries agree to: co-operate in monitoring; consider establishing a reporting system on discharges and spills; take measures as soon as possible to adhere to 'the strictest relevant international standards within the conventions, to which the countries are parties, regarding discharges irrespective of origin'; and undertake joint action to strengthen recognition of the particularly sensitive character of ice-covered parts of the Arctic Ocean.¹³⁹ With regard to heavy metals, it is agreed to undertake a programme of co-ordinated monitoring and

¹³⁵ Arctic Environmental Protection Strategy (Rovaniemi, Finland), 14 June 1991, available at http://arctic-council.org/filearchive/artic_environment.pdf, 7.

¹³⁶ AEPS, para. 2.1. ¹³⁷ Para. 2.2. ¹³⁸ Para. 5.1.

¹³⁹ Para. 5.2. The AEPS refers to the 1969 CLC, the 1969 Intervention Convention, the 1971 Oil Pollution Fund Convention, the 1972 London Convention, the 1974 Paris Convention, MARPOL 73/78, the 1982 UNCLOS and the 1990 Oil Pollution Preparedness Convention.

research and to implement measures to control conditions that allow the release of heavy metals, including the implementation of best available technology.¹⁴⁰ For noise, the Arctic countries agree to implement measures to avoid or mitigate the impact of noise on marine mammals, to improve their knowledge of the auditory function, communication and behaviour of marine mammals, and to determine the exposure of migrating stocks to noise.¹⁴¹ With respect to radioactivity, the commitments are more general, and include little more than the development of common standards and techniques for monitoring and analysis, considering the development of more specific measures of co-operation to deal with emergencies, and the collation and exchange of data and information.¹⁴² In the context of the radiation damage caused by the Chernobyl accident in 1986, and the evidence of illegal dumping in Arctic waters of nuclear-powered submarines and other radioactive material by the former Soviet Union, these measures of the AEPS appear to be inadequate. Finally, in respect of oxidification, the AEPS calls for: research on the current loadings and potential effects of acid deposition; consideration to be given to expanding deposition monitoring programmes; defining critical loads and setting and meeting target loads for sensitive ecosystems; and reducing emissions of sulphur and nitrogen by the use of 'best available technology'.¹⁴³

The Arctic Council

In 1996, the Arctic states established a high-level intergovernmental forum, the Arctic Council, to provide a mechanism for co-ordinating their activities in the region and to oversee and co-ordinate the programmes established under the AEPS.¹⁴⁴ Membership of the Council is restricted to the eight Arctic states. In addition, the Russian Association of Indigenous Peoples of the North, the Inuit Circumpolar Conference, the Saami Council, the Aleutian International Association, the Arctic Athabaskan Council and the Gwich'in Council International are granted status as 'permanent participants' in the Council.¹⁴⁵ There is also provision for non-Arctic states, global and regional intergovernmental and inter-parliamentary organisations and non-governmental organisations to be granted observer status.¹⁴⁶ The Chair and Secretariat of the Council rotate every two years among the members, beginning with Canada in 1996. The Council normally meets at the ministerial level biannually in the country holding the chairmanship.¹⁴⁷ Outside of the Council's ministerial meetings, activities relating to the protection of the Arctic environment primarily take place within the Council's working groups and at meetings of Senior Arctic Officials held every six months. The Arctic Council's six Working Groups all have a Chair, Management Board or Steering Committee and a Secretariat. The Working Groups meet regularly to carry out programmes and projects mandated through Arctic

¹⁴⁰ Para. 5.3. ¹⁴¹ Para. 5.4. ¹⁴² Para. 5.5. ¹⁴³ Para. 5.6.

¹⁴⁴ Declaration on the Establishment of the Arctic Council, Ottawa, 19 September 1996, reprinted in 35 ILM 1382 (1996).

¹⁴⁵ Para. 2.

¹⁴⁶ Para. 3. At present, six non-Arctic countries are Permanent Observer States to the Arctic Council: France, Germany, the Netherlands, Poland, Spain and the United Kingdom. In addition, nine international organisations and eleven non-governmental organisations are Arctic Council observers.

¹⁴⁷ Paras. 4 and 5. The chairmanship of the Council was held by the United States in 1998–2000, Finland in 2000–2, Iceland in 2002–4, Russia in 2004–6, Norway in 2006–9, Denmark in 2009–11 and Sweden will chair the Council in 2011–13. For the Norwegian, Danish and Swedish chairmanships, the Secretariat is located in Norway.

Council Ministerial Declarations and other official documents resulting from the biannual ministerial meetings.

Arctic Monitoring and Assessment Programme

The Arctic Monitoring and Assessment Programme (AMAP) was established in 1991 to implement AEPS. The Arctic countries agreed: to develop AMAP to measure levels of anthropogenic pollutants and assess their effects;¹⁴⁸ to take preventive measures regarding marine pollution in the Arctic, including by applying the principles reflected in the 1982 UNCLOS, by taking measures as soon as possible to adhere to the strictest relevant international standards within the conventions to which they are parties, and by jointly supporting the development of mandatory standards to improve protection from accidental pollution;¹⁴⁹ and to adopt measures for emergency prevention, preparedness and response.¹⁵⁰ The measures envisaged for the protection of Arctic flora and fauna are more specific, recognising that the 1973 Polar Bears Agreement is the only agreement specifically adopted for the Arctic region. Apart from general co-operation, the Arctic countries agree to exchange information and experts; develop more effective laws, regulations and practices for the conservation of flora, fauna, diversity and their habitat; and propose strategies for enhanced conservation.¹⁵¹

In June 1997, following the submission of a report by AMAP on Arctic pollution issues, the Arctic Council agreed to a number of measures designed to increase efforts to limit and reduce the emissions of pollutants into the Arctic environment, and to promote international co-operation in order to reduce the identified pollution risks. In September 1998, the Arctic Council gave instructions for the development of an overall plan identifying actions to address the pollution sources identified by AMAP. This provided the basis for the development of the Action Plan to Eliminate Pollution of the Arctic (ACAP).

AMAP has produced a number of scientific assessments; one of the most notable is the Arctic Climate Impact Assessment (ACIA) that reviewed Arctic climate vulnerability. The Assessment made a number of key findings: the Arctic climate is warming rapidly at almost twice the rate as that of the rest of the world and much larger changes are projected; it is estimated that Arctic temperatures over the next century will increase by 4–7°C; Arctic warming will have global implications; Arctic ice-melt will increase absorption of the sun's heat, and raise global sea levels; there will likely be a shift in the diversity and distribution of Arctic animal species as well as vegetation zones; coastal communities will face increasing exposure to storms and a reduction in sea ice will increase marine transport and allow for increased offshore oil and gas activities.¹⁵² The Assessment was endorsed by the Arctic Council at its fourth ministerial meeting in 2004, and also acknowledged 'the need to further organize the work of the Arctic Council and its subsidiary bodies based on the findings of the ACIA'.¹⁵³

Arctic Council Action Plan to Eliminate Pollution of the Arctic

The Arctic Council Action Plan to Eliminate Pollution of the Arctic (ACAP) establishes a framework for co-operation and an accompanying Action Plan that is intended to evolve

¹⁴⁸ Arctic Monitoring and Assessment Programme (AMAP), para. 6. ¹⁴⁹ Para. 7.

¹⁵⁰ Para. 8. ¹⁵¹ Para. 9.1.

¹⁵² C. Symon, L. Arris and B. Heal (eds.), *Arctic Climate Impact Assessment* (2005).

¹⁵³ Reykjavik Declaration on the Occasion of the Fourth Ministerial Meeting of the Arctic Council, 24 November 2004.

dynamically in response to changing priorities for action in the region.¹⁵⁴ During the first phase of the ACAP, priority is to be given to addressing the following sources of pollution: persistent organic pollutants; heavy metals; radioactivity; and depletion of the ozone layer.¹⁵⁵ ACAP was renamed the Arctic Contaminants Action Programme and formally designated a working group of the Arctic Council in 2006, but its objective to reduce emissions of pollutants into the Arctic environment has remained unchanged. ACAP's work plan for 2009–11 includes projects addressing pesticides, dioxin, mercury and furan releases.¹⁵⁶

Protection of the Arctic Marine Environment Working Group

The Protection of the Arctic Marine Environment Working Group (PAME) was established in 1991 and serves to review and address global and regional policies related to Arctic marine environmental protection. One of PAME's most important projects has been the Arctic Marine Strategic Plan (AMSP), which was endorsed at the fourth Arctic Council Ministerial Meeting. The Council requested PAME 'to conduct a comprehensive Arctic marine shipping assessment as outlined in the AMSP'.¹⁵⁷ This led to the publication of the Arctic Marine Shipping Assessment, which projects future Arctic shipping scenarios and makes recommendations on enhancing Arctic marine safety, protection of the Arctic people and the environment and on building the Arctic marine infrastructure. The assessment was approved by the Arctic Council at its sixth Ministerial Meeting in 2009 and Senior Arctic Officials were requested to develop follow-up actions. In particular, the Council noted the increased marine access and navigation highlighted in the assessment and called for the 'development and implementation of suitable national and international regulations, where appropriate, to advance the safety of Arctic marine shipping, including marine pollution prevention, reduce accident risk and facilitate effective emergency response'.¹⁵⁸

In 2009, PAME also led the publication of the Arctic Council Offshore Oil and Gas Guidelines encouraging oil and gas regulators to adopt common environmental principles. Its current work plan for 2009–11 includes determining the adequacy of applicable international and regional commitments and promoting their implementation and compliance.

Conservation of Arctic Flora and Fauna Working Group

The Conservation of Arctic Flora and Fauna Working Group (CAFF) provides policy recommendations on the conservation of Arctic biodiversity. It consists of national representatives from each of the eight Arctic Council member states, permanent participants and observers to the Council. A set of Operating Guidelines issued in 2007 calls for CAFF to meet at least twice a year, and sets out the management of meetings. CAFF itself is supported by three Expert Groups: the Circumpolar Seabird Expert Group; the Flora Group; and the Protected Areas Network (not currently active).

¹⁵⁴ ACAP, *Arctic Council Action Plan to Eliminate Pollution of the Arctic*, Barrow, Alaska, October 2000, available at <http://acap.arctic-council.org/admin/media.php?mid=11>. The Steering Committee is now known as the Arctic Contaminants Action Programme: see <http://acap.arctic-council.org>.

¹⁵⁵ The Action Plan gives priority to actions that are complementary to existing action plans and actions under the Arctic Council such as the Regional Programme of Action for the Protection of the Arctic Marine Environment from Land-Based Activities, established in September 1998.

¹⁵⁶ D. VanderZwaag, 'Arctic', 20 *Yearbook International Environmental Law* 375 (2009).

¹⁵⁷ Reykjavik Declaration on the Occasion of the Fourth Ministerial Meeting of the Arctic Council, 24 November 2004.

¹⁵⁸ Tromsø Declaration on the Occasion of the Sixth Ministerial Meeting of the Arctic Council, 29 April 2009.

Emergency Prevention, Preparedness, and Response Working Group

The Emergency Prevention, Preparedness, and Response Working Group (EPPR) was established in 1991 under the AEPS 'to provide a framework for future cooperation in responding to the threat of environmental emergencies',¹⁵⁹ though its mandate was expanded in 2004 to encompass natural disasters. EPPR has completed projects on, *inter alia*: Arctic Shoreline Clean-up; a Circumpolar Map of Resources at Risk from Oil Spills; a Field Guide for Oil Spill Response in Arctic Waters; and Environmental Risk Analysis of Arctic Activities. The current work plan envisages a number of further programmes encompassing oil pollution, radiological and other hazards and natural disasters.

Sustainable Development Working Group

The Sustainable Development Working Group (SDWG) was established in 1998 at the first Arctic Council Ministerial Meeting. Its objective is to protect and enhance the culture, health and economies of Arctic communities and inhabitants in an environmentally sustainable manner. From 2001 to 2006, the SDWG undertook fieldwork for a Survey of Living Conditions in the Arctic in Canada, Alaska, Greenland and Chukotka and has also produced reports on Arctic Human Health, Arctic Energy and Best Practices in Ecosystem-Based Ocean Management. Its current work plan envisages projects and activities on, *inter alia*, Arctic socio-economic issues and Arctic cultures and languages, and is also conducting further fieldwork for the Survey of Living Conditions in the Arctic in Denmark, Greenland and the Faroe Islands.

CONCLUSIONS

The Antarctic Treaty system has served 'as a microcosm for the evolution of international environmental law and policy'. Environmental policies were put in place before there were 'environmentalists', and rules of a substantive, procedural and institutional nature were developed, on which other international agreements have frequently drawn.¹⁶⁰ The various treaties adopted under the Antarctic system have provided important precedents that have internationalised domestic techniques and have significantly expanded upon existing international techniques. The Antarctic regime reflects an incremental approach to environmental protection for a region that forms part of the global commons, although its precedential value extends also to areas that are indisputably subject to national jurisdiction. Examples of the significant contribution made by the Antarctic system relate to: decision-making by international organisations, including the broad range of conservation measures adopted under CCAMLR; expanded use of techniques for environmental impact assessment, monitoring and access to information; the participation of non-governmental organisations in the legal process; and the development of new approaches to liability, including for environmental damage, which link civil and state liability approaches. Many of the provisions on the enforcement of rules also introduced novel elements to international law. The challenge over the coming few years will be to continue efforts to increase the number of states which are party to the 1991 Antarctic Environment Protocol, and to develop the rules to make it work effectively,

¹⁵⁹ AEPS, p. 3.

¹⁶⁰ L. Kimball, 'Environmental Law and Policy in Antarctica', in P. Sands (ed.), *Greening International Law* (1993), 122 at 138–9.

efficiently and equitably to protect the Antarctic environment. Since the Protocol does not incorporate all of the procedural and institutional innovations of the 1988 CRAMRA, further work is needed to develop such rules, including those on information and enforcement. In the meantime, the challenges facing the regime will include, increasingly, its decision-making authority and its relationship with other regimes, such as CITES and those for fisheries.

On the occasion of the fourth International Polar Year, the first ever Joint Session of the Antarctic Treaty Consultative Meeting and the Arctic Council took place in Washington on 6 April 2009. Consultative parties to the Antarctic Treaty and representatives of the Arctic Council adopted the Washington Declaration in which they encouraged 'the development of coordinated research and scientific observations at both poles to compare the current dynamics of polar areas and their contributions to the Earth's processes and changes'.¹⁶¹ However, despite these new co-ordinated efforts, the development of further institutional arrangements and the implementation of binding substantive obligations in the Arctic appear unlikely after the adoption of the Ilulissat Declaration in 2008. Representatives of five of the Arctic Council members (Canada, Denmark, Norway, Russia and the United States) set out their collective position on the future of the Arctic legal regime. The Declaration recognises that the Arctic Ocean is a unique ecosystem that requires protection and highlights the potential impact of climate change in the Arctic. However, the Declaration emphasises that the five Arctic coastal states 'are in a unique position to address these possibilities and challenges' and that the existing international legal framework, in particular the law of the sea, 'provides for important rights and obligations concerning the delineation of the outer limits of the continental shelf, the protection of the marine environment, including ice-covered areas, freedom of navigation, marine scientific research, and other uses of the sea'.¹⁶² The Declaration states that the five Arctic Council members remain committed to the law of the sea framework and will 'continue to contribute actively to the work of the Arctic Council and other relevant international fora'. However, the states concerned could see 'no need to develop a new comprehensive international legal regime to govern the Arctic Ocean'.¹⁶³

The adoption of the Arctic Environmental Protection Strategy and the establishment of the Arctic Council have provided a useful opportunity to develop new legal arrangements and institutions to govern an ecosystem which transcends national boundaries and requires international co-operation for its adequate protection to be assured. The soft law approach currently envisaged provides a first step; ultimately, it will be necessary to establish appropriate institutional arrangements and substantive rules, perhaps similar to those applied in the Antarctic, to ensure that agreed obligations are respected and enforced. In the meantime, the increased accessibility of the Arctic that results from decreases in the ice cover associated with climate change means that the pressures for commercial and other activity, including access to resources, is likely to increase significantly.

¹⁶¹ Antarctic Treaty–Arctic Council Joint Meeting, Washington Ministerial Declaration on the International Polar Year and Polar Science, Washington, 6 April 2009.

¹⁶² Ilulissat Declaration, Arctic Ocean Conference, Greenland, 27–29 May 2008, available at <http://arctic-council.org/filearchive/Ilulissat-declaration.pdf>.

¹⁶³ *Ibid.*

PART III

Techniques for implementing
international principles and rules

14

Environmental impact assessment

INTRODUCTION

Environmental impact assessments emerged internationally after the 1972 Stockholm Conference and are now an established international and domestic legal technique for integrating environmental considerations into socio-economic development and decision-making processes.¹ An environmental impact assessment (EIA) describes a *process* that produces a written *statement* to be used to guide decision-making, with several related functions. First, it should provide decision-makers with information on the environmental consequences of proposed activities and, in some cases, programmes and policies, and their alternatives. Second, it requires decisions to be influenced by that information. And, third, it provides a mechanism for ensuring the participation of potentially affected persons in the decision-making process.

Since environmental impact assessments were first established in the domestic law of the United States under the 1969 National Environmental Policy Act, they have been progressively adopted in a very large number of national legal systems. Internationally, environmental impact assessments are required under numerous international conventions, in the requirements of various multilateral development banks, and in various non-binding instruments adopted at the regional and global levels. Principle 17 of the Rio Declaration states that:

environmental impact assessment, as a national instrument, shall be undertaken for proposed activities that are likely to have a significant adverse impact on the environment and are subject to a decision of a competent national authority.

¹ P. Okowa, 'Procedural Obligations in International Environmental Agreements', 67 *British Year Book of International Law* 275 (1996); UNEP, *Environmental Impact Assessment: Issues, Trends and Practise* (1996); J. Glasson, J. Chadwick and R. Therivel, *An Introduction to Environmental Impact Assessment* (1999, 2nd edn); J. Ebbeson, 'Innovative Elements and Expected Effectiveness of the 1991 EIA Convention', 19 *Environmental Impact Assessment Review* 47 (1999); K. Gray, 'International Environmental Impact Assessment: Potential for a Multilateral Environmental Agreement', 11 *Colorado Journal of Environmental Law and Policy* 83 (2000); J. Knox, 'The Myth and Reality of Transboundary Environmental Impact Assessment', 96 *American Journal of International Law* 291 (2002); N. Craik, *The International Law of Environmental Impact Assessment: Process, Substance and Integration* (2008); K. Bastmeijer and T. Koivurova (eds.), *Theory and Practice of Transboundary Environmental Impact Assessment* (2008).

The mandatory language of Principle 17 confirmed that environmental impact assessments are now required by general international law, particularly in respect of environmentally harmful activities which may have transboundary consequences, in order to meet a state's obligation to ensure that activities within its jurisdiction and control 'respect the environment of other States or of areas beyond national control'.² The language of Principle 17, however, is general, and does not provide the detail as to the minimum requirements that states need to satisfy. To a certain extent the details relating to common approaches are reflected in the instruments described in this chapter and in the international cases which have arisen since Principle 17 was adopted: New Zealand's application to the ICJ concerning the resumption by France of underground nuclear testing (1995), the case concerning the Gabčíkovo-Nagymaros project (1997), the dispute between Ireland and the United Kingdom concerning the MOX plant (2001), the *Pulp Mills* case (2010) and the ITLOS advisory opinion on *Responsibilities and Obligations in the Area* (2011). These cases confirm the circumstances in which international law requires the preparation of a prior environmental impact assessment before a state engages in, or permits, an activity which may have serious adverse impacts on the environment. Other developments, described below, reflect the growing role of strategic environmental assessment (for instance, the 2003 Protocol on Strategic Environmental Assessment to the Espoo Convention)³ and risk assessments associated, in particular, with foodstuffs, genetically modified organisms and hazardous chemicals.

NON-BINDING INSTRUMENTS

The Principles of the 1972 Stockholm Declaration did not expressly identify environmental impact assessment as an instrument of national or international policy. However, the rationale underlying environmental impact assessment can be identified in the principle that 'rational planning constitutes an essential tool' for reconciling development and environment needs, and that planning 'must be applied to human settlements and urbanisation with a view to avoiding adverse effects on the environment and obtaining maximum social, economic and environmental benefits for all'.⁴ An earlier draft of the Stockholm Declaration contained a draft Principle 20 which would have provided the elements of a clearer commitment to environmental impact assessment. The proposal set out in draft Principle 20 was not agreed at Stockholm following the objections of several developing countries, which maintained that the obligation to consult, dependent upon a prior determination that activities or developments could lead to significant adverse effects on the environment, might be abused by developed states to impede projects by developing countries. UN General Assembly Resolution 2995 (XXVII) (1972) partially revived draft Principle 20 by providing that technical information on proposed works should be supplied to other states where there is a risk of significant transboundary environmental harm, but that this information should be received in good faith and not used to delay or impede the development of natural resources.

² Chapter 6, p. 199, above.

³ See also EU Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment, OJ L73, 14 March 1997, 5; and Strategic Impact Assessment Guidelines under the African Development Bank's 2004 Environment Policy.

⁴ Principles 14 and 15.

Subsequent non-binding instruments developed the approach underlying draft Principle 20. Principle 5 of the 1978 UNEP draft Principles of Conduct proposed that:

states should make an environmental impact assessment before engaging in any activity with respect to a shared natural resource which may create a risk of significantly affecting the environment of another state or states sharing that resource.⁵

Whilst Principle 5 was innovative, it did not provide any detail on how the assessment should be carried out, who should participate in it, and to what purpose it should be put. This gap was partly remedied by the 1982 UNEP Conclusions of the Study on the Legal Aspects Concerning the Environment Related to Offshore Mining and Drilling within the Limits of National Jurisdiction, which provided more detailed guidance on the appropriate modalities for carrying out an environmental impact assessment.⁶

Support for environmental impact assessment is found in a range of other acts of international institutions adopted after the Stockholm Conference,⁷ including in relation to development assistance.⁸ The 1982 World Charter for Nature supports the ‘exhaustive examination’ and ‘assessment’ of activities likely to pose a significant risk to nature or which may disturb nature, and requires that activities should not proceed or should minimise potential adverse effects on the basis of the findings of the assessment or examination.⁹ By 1986, the Experts Group on Environmental Law of the World Commission on Environment and Development had identified environmental impact assessment as an ‘emerging principle of international law’, taking the view that states planning to carry out or permit activities which may significantly affect a natural resource or the environment should make or require an assessment of their effects before carrying out or permitting the planned activities.¹⁰ In 1987, UNEP prepared guidelines on the nature and extent of the obligation to carry out an assessment.¹¹ The UNEP Goals and Principles include three related objectives in ensuring the ‘environmentally sound and sustainable development’ of

⁵ Principle 5. ⁶ UNEP/GC/Dec./10/14VI (1982).

⁷ See e.g. OECD Council Recommendation C(74)216, Analysis of the Environmental Consequences of Significant Public and Private Projects, 14 November 1974; OECD Council Recommendation C(79)116, Assessment of Projects with Significant Impact on the Environment, 8 May 1979; FAO Comparative Legal Strategy on Environmental Impact Assessment and Agricultural Development, 1982, FAO Environmental Paper. International Seabed Authority Agreement Relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea, 28 July 1994, Annex, Section 7, UN Doc. A/RES/48/263; UNFCCC Modalities and Procedures for a Clean Development Mechanism defined by Art. 12 of the Kyoto Protocol, Decision 3/CMP.1, Annex, para. 37, in Report of the Conference of the Parties on Its First Session, Montreal, 28 November–10 December 2005, UN Doc. FCCC/KP/CMP/2005/8/Add.1; and see the discussion in Neil Craik, *The International Law of Environmental Impact Assessment: Process, Substance and Integration* (2008), 108–11.

⁸ OECD Council Recommendation C(85)104, Environmental Assessment of Development Assistance Projects and Programmes, 20 June 1985; OECD Revised Council Recommendation TAD/ECG(2007)9, Common Approaches on Environment and Officially Supported Export Credits; and see OECD, *Applying Strategic Environmental Assessment: Good Practice Guidance for Development Co-operation* (2006). See also the Millennium Development Goals, Target 7. A, calling for integration of the principles of sustainable development into country policies and programmes.

⁹ Paras. 11(b) and (c).

¹⁰ *Environmental Protection and Sustainable Development: Legal Principles and Recommendations* (1986), 58–62.

¹¹ Goals and Principles of Environmental Impact Assessment, UNEP/GC/Dec./14/25 (1987); see also UNGA Res. 42/184 (1987) and UNEP, *Environmental Impact Assessment and Strategic Environmental Assessment: Towards an Integrated Approach* (2004).

planned activities: ensuring that environmental effects should be taken into account before decisions are taken to allow activities to be carried out; providing for the implementation of national environmental impact assessment procedures; and encouraging reciprocal procedures for notification, information exchange and consultation on activities likely to have significant transboundary effects. The Principles, which propose bilateral, regional or multi-lateral arrangements, reflect a minimum set of standards, which have been broadly endorsed and are reflected in state practice, at the national level and in binding international instruments.

UNCED and the WSSD

References to environmental impact assessment abound in Agenda 21. It called on all countries to 'assess the environmental suitability of infrastructure in human settlements', ensure that 'relevant decisions are preceded by environmental impact assessments and also take into account the costs of any ecological consequences', integrate environmental considerations in decision-making at all levels and in all ministries, and ensure the transparency of and accountability for the environmental implications of economic and other policies.¹² Agenda 21 also endorsed 'comprehensive analytical procedures for prior and simultaneous assessment of the impacts of decisions', including their environmental impacts and the assessment of 'costs, benefits and risks', and the systematic application of techniques and procedures for assessing environmental impacts.¹³ Environmental impact assessment was encouraged in specific Agenda 21 programmes, including deforestation, atmospheric protection and energy use, fragile mountain ecosystems, conservation of biological diversity, management of biotechnology, protection of oceans and seas, protection of freshwater resources, management of toxic chemicals, solid wastes and sewage, and radioactive wastes.¹⁴ Further, Agenda 21 endorsed the need for individuals, groups and organisations to participate in environmental impact assessment procedures.¹⁵

The WSSD broadly confirmed UNCED's requirements,¹⁶ and called for states to 'develop and promote the wider application of environmental impact assessments ... to provide essential decision-support information on projects that could cause significant adverse effects to the environment'.¹⁷ The Plan of Implementation introduced a new impetus for integrated forms of assessment with frequent references to the need for integrated and multi-sectoral approaches throughout the document. It also called for EIA to link more effectively with economic and social impact assessment tools (prior to development occurring) and environment management tools (during the operational phase of development).¹⁸ Initiatives to introduce strategic environmental assessment under international instruments (discussed further below) have been one response.

¹² Paras. 7.41(b) and 8.4. ¹³ Paras. 8.5(b) and 10.8(b).

¹⁴ Paras. 9.12(b), 11.24(a), 13.17(a), 15.5(k), 16.45(c), 17.5(d), 18.22(c), 19.21(d), 21.31(a) and 22.4(d).

¹⁵ Para. 23.2. ¹⁶ Plan of Implementation, e.g. paras. 19(e), 34(c) and 36(i).

¹⁷ Plan of Implementation, para. 135.

¹⁸ UNEP, *Environmental Impact Assessment and Strategic Environmental Assessment: Towards an Integrated Approach* (2004), 15.

ILC draft Articles on Prevention of Transboundary Harm

Article 7 of the ILC's draft Articles on the Prevention of Transboundary Harm from Hazardous Activities draws upon the output of UNCED, and in particular Principle 17 of the Rio Declaration. Article 7 provides that:

Any decision in respect of the authorization of an activity within the scope of the present Articles shall, in particular, be based on an assessment of the possible transboundary harm caused by that activity, including any environmental impact assessment.

The ILC's commentary to its draft Articles notes that the requirement of assessment of adverse effects of activities has been incorporated in many international agreements, and that the practice of requiring an environmental impact assessment 'has become very prevalent' in order to assess whether a particular activity has the potential to cause significant transboundary harm.¹⁹

While Article 7 refers to environmental impact assessment, it is noteworthy that the animating concept of the draft Articles is not 'impact' but instead the potentially narrower notion of a 'risk of causing significant transboundary harm'.²⁰ The commentary to the draft Articles defines such risks as referring 'to the combined effect of the probability of occurrence of an accident and the magnitude of its injurious impact'.²¹ This terminology is reminiscent of technical understandings of risk,²² and may reflect the growing prominence of the technique of risk assessment in international law alongside, and perhaps to some extent displacing, environmental impact assessment.

TREATIES AND OTHER BINDING INSTRUMENTS

A number of treaties and other binding instruments include provisions requiring the performance of an environmental impact assessment in specified circumstances. The 1985 EC Directive on Environmental Impact Assessment²³ led the way in providing international guidance on the nature and extent of an environmental impact assessment and the use to which it should be put, an approach subsequently adopted and extended in the 1991 UNECE Convention on

¹⁹ A/56/10, 402–3 (2001).

²⁰ Art. 1. Compare with the notion of an 'impact' in treaties concerning environmental impact assessment such as the Espoo Convention, p. 610, below.

²¹ Commentary to Art. 2, Draft Articles on Prevention of Transboundary Harm from Hazardous Activities with commentaries, 'Report of the International Law Commission on the Work of Its Fifty-Third Session', *Yearbook of the International Law Commission* (2001-II), Part 2, 148, 152, para. 2.

²² Technical understandings of risk define it in terms of the probability of a given event coupled with the severity of its likely consequences: see J. Adams, *Risk* (1995).

²³ Council Directive 85/337/EEC, OJ L175, 5 July 1985, 40 (the EIA Directive). The EIA Directive has been amended three times, in 1997, 2003 and 2009, by Council Directives 97/11/EC, 2003/35/EC and 2009/31/EC, respectively. The European Commission is currently reviewing the EIA Directive, with the public consultation phase launched in June 2010 and concluded by a conference for the twenty-fifth anniversary of the EIA Directive on 18–19 November 2010 in Leuven, Belgium. The findings of the public consultation and conference will feed into the Commission's own review process. In 1999, the Commission published guidance on the assessment of indirect and cumulative impacts; on the screening and scoping of projects in 2001; and on the interpretation of definitions of certain project categories of Annexes I and II to the EIA Directive in 2008: see <http://ec.europa.eu/environment/eia/eia-support.htm>.

Environmental Impact Assessment in a Transboundary Context (1991 Espoo Convention),²⁴ and in the 1991 Protocol on Environmental Protection to the Antarctic Treaty. But these were by no means the first instruments supporting, in general terms, the use of environmental assessment. The 1974 Nordic Environmental Protection Convention required an assessment of the effects in the territory of one party of activities carried out in the territory of another party:²⁵ the Convention allows authorities to require an applicant for a permit to carry out environmentally harmful activities to 'submit such additional particulars, drawings and technical specifications' as are deemed necessary for evaluating the effects in another state. The UNEP Regional Seas Conventions, such as the 1986 Noumea Convention governing the marine and coastal environment of the South Pacific region, include general language on environmental impact assessment,²⁶ as does the 1982 UNCLOS (see further below). Article 14(1) of the 1985 ASEAN Agreement similarly delimits the extent of the obligation to carry out an environmental impact assessment, requiring that the contracting parties:

undertake that proposals for any activity which may significantly affect the natural environment shall as far as possible be subjected to an assessment of their consequences before they are adopted, and they shall take into consideration the results of their assessment in their decision-making process.

Many other international agreements addressing specific environmental media or particular activities provide for express or implied general obligations on environmental impact assessment. Such agreements include those governing the Antarctic,²⁷ atmospheric emissions of nitrogen oxide,²⁸ occupational health,²⁹ asbestos use,³⁰ transboundary movements of waste,³¹ transboundary watercourses,³² industrial accidents,³³ the energy sector,³⁴ public participation,³⁵ protection of mountainous areas,³⁶ and mining on the seabed of the high seas.³⁷ For some early conventions, which did not include provisions on environmental impact assessment,

²⁴ See pp. 610–13, below. ²⁵ Stockholm, 19 February 1974, in force 5 October 1976; 13 ILM 511 (1974), Art. 6.

²⁶ 1976 Barcelona Dumping Protocol, Annex III; 1978 Kuwait Convention, Art. XI; 1981 Abidjan Convention, Art. 13; 1981 Lima Convention, Art. 8; 1982 Jeddah Convention, Art. XI; 1983 Cartagena Convention, Art. 12; 1985 Nairobi Convention, Art. 13; 1986 Noumea Convention, Art. 16; 1992 Black Sea Convention, Art. XV; 2002 Prevention and Emergency Protocol to the 1995 Barcelona Convention, Preamble and Art. 10; 1996 LBS Protocol to the 1995 Barcelona Convention, Preamble; 1995 SPA and Biodiversity Protocol to the 1995 Barcelona Convention, Preamble and Arts. 9, 13 and 17; 2008 Integrated Coastal Zone Management Protocol, Art. 19; and 2002 Antigua Convention, Arts. 6(2)(b), 10(2)(b) and 12(1)(c). See also Recommendation 17/3 of the Helsinki Commission (1996), recommending consultations with potentially affected contracting parties 'where an Environmental Impact Assessment is required by either national or international law'.

²⁷ 1980 CCAMLR, Art. XV(2)(d); 1988 CRAMRA, Arts. 2(1)(a) and 4. ²⁸ 1988 NO_x Protocol, Art. 6.

²⁹ 1985 Occupational Health Services Convention, Art. 5. ³⁰ 1986 Asbestos Convention, Art. 1(2).

³¹ 1989 Basel Convention, Art. 4(2)(f) and Annex V(A).

³² 1992 Watercourses Convention, Arts. 3(1)(h) and 9(2)(j), and its 1999 Protocol on Water and Health, Art. 4(6). See also 1997 Watercourses Convention, Art. 12 (requiring notification of results of any environmental impact assessment).

³³ 1992 Industrial Accidents Convention, Art. 4 and Annex III.

³⁴ 1994 Energy Charter Treaty, Art. 19 ('each Contracting Party shall strive to minimize in an economically efficient manner harmful Environmental Impacts occurring either within or outside its Area from all operations within the Energy Cycle in its Area'). See also its 1994 Protocol on Energy Efficiency and Related Environmental Aspects, Arts. 3(7) and 9.

³⁵ 1998 Aarhus Convention, Art. 6(2)(e) and Annex I.

³⁶ 2003 Carpathians Convention, Art. 12. ³⁷ Chapter 9, pp. 388–9, above.

such as the 1971 Ramsar Convention, the parties have subsequently adopted guidelines.³⁸ The 1985 Vienna Convention and its 1987 Montreal Protocol do not expressly require that the development of replacement technologies for prohibited ozone-depleting substances be subject to an environmental impact assessment; this may limit the effectiveness of those treaties. The convoluted language of the 1992 Climate Change Convention appears to require an impact assessment of the measures taken to mitigate or adapt to climate change on a range of factors including the environment, and requires all parties to:

take climate change considerations into account, to the extent feasible, in their relevant social, economic and environmental policies and actions, and employ appropriate methods, for example impact assessments, formulated and determined nationally, with a view to minimizing adverse effects on the economy, on public health and on the quality of the environment, of projects or measures undertaken by them to mitigate or adapt to climate change.³⁹

1982 UNCLOS

The 1982 UNCLOS requires the prior assessment of the effects of activities on the marine environment. Under Article 206:

When states have reasonable grounds for believing that planned activities under their jurisdiction or control may cause substantial pollution of or significant and harmful changes to the marine environment, they shall, as far as practicable, assess the potential effects of such activities on the marine environment and shall communicate reports of the results of such assessments at appropriate intervals to the competent international organisations, which should make them available to all states.⁴⁰

The authoritative Virginia Commentary describes the obligation as being ‘similar to the requirements of some national environmental legislation, for example, the United States National Environmental Policy Act (NEPA) of 1969, to prepare environmental impact statements in respect of actions likely to affect the quality of the environment in a significant way’, its purpose being to ensure that such activities may be effectively controlled, and to keep other states informed of the potential risks and effects of such activities.⁴¹ The Virginia Commentary describes prior

³⁸ Recommendation 6.2 on Environmental Impact Assessment (1996), requested parties and national and international organisations to submit guidelines on EIAs, and called for the drafting of EIA guidelines; Res. VII.16 on Impact Assessment (1999) calls on parties to ‘reinforce and strengthen their efforts to ensure that any projects, plans, programmes and policies with the potential to alter the ecological character of wetlands in the Ramsar List, or impact negatively on other wetlands within their territories, are subjected to rigorous impact assessment procedures and to formalise such procedures under policy, legal, institutional and organisational arrangements’. More recently, Res. VIII.9 urged parties to make use of the ‘Guidelines for Incorporating Biodiversity-Related Issues into Environmental Impact Assessment Legislation and/or Processes and in Strategic Environmental Assessment’ produced by the Convention on Biological Diversity and appended to Res. VIII.9. See also Res. X.17 on Environmental Impact Assessment and Strategic Environmental Assessment: Updated Scientific and Technical Guidance (2008).

³⁹ Art. 4(1)(f). ⁴⁰ Arts. 205 and 206.

⁴¹ M. H. Nordquist, S. Rosenne, A. Yancov and N. Grandy (eds.), *United Nations Convention on the Law of the Sea 1982: A Commentary* (1990), vol. IV, 122.

assessment as ‘an essential part of a comprehensive environmental management system, and is a particular application of the obligation on States, enunciated in Art. 194, paragraph 2, to “take all necessary measures to ensure that activities under their jurisdiction or control are so conducted as not to cause damage by pollution to other States and their environment”’.⁴²

Article 206 has been the subject of an international dispute between Ireland and the United Kingdom. In October 2001, Ireland brought proceedings against the United Kingdom under UNCLOS concerning the authorisation by the United Kingdom of a new nuclear plant to manufacture mixed oxide (MOX) fuel. Ireland claimed, *inter alia*, that the United Kingdom had violated the obligation set forth in Article 206 of UNCLOS, in particular for authorising the plant on the basis of a 1993 environment impact statement which failed to assess the potential effects of the operation of the MOX plant on the marine environment of the Irish Sea,⁴³ including in relation to international movements of radioactive materials to be transported to and from the MOX plant, and which had not been updated to take into account the factual and legal developments which had occurred between 1993 and the plant’s authorisation in 2001.⁴⁴ In December 2001, ITLOS prescribed provisional measures but declined to suspend the operation of the plant, as Ireland had requested, pending the constitution of the arbitral tribunal which would address the merits. In this regard, Judge Mensah expressed the view that:

none of the violations of the procedural rights arising from the duty to . . . undertake appropriate environmental assessments are ‘irreversible’ in the sense that they cannot effectively be enforced against the United Kingdom by decision of the Annex VII arbitral tribunal, if the arbitral tribunal were to conclude that any such violations have in fact occurred.⁴⁵

A different – but minority – view was expressed by Ad Hoc Judge Szekely, to the effect that the inadequacy of the 1993 environmental impact statement justified more extensive provisional measures, ‘since the environmental impact assessment is a central tool of the international law of prevention’.⁴⁶

The case never proceeded to the merits phase as the Annex VII arbitral tribunal suspended proceedings pending judgment of the European Court of Justice (ECJ) in a case brought by the European Commission against Ireland. The ECJ duly issued its judgment on 30 May 2006, finding that the provisions of UNCLOS dealing with protection of the marine environment came within the scope of Community competence and formed part of the Community legal order, thus giving the ECJ jurisdiction to deal with disputes relating to the interpretation and application of those provisions and to assess a member state’s compliance with them.⁴⁷

⁴² *Ibid.*

⁴³ Ireland, Statement of Claim, 25 October 2000, paras. 7 and 31 (Ireland’s concerns related, *inter alia*, to the failure of the 1993 Environmental Impact Statement to consider properly or at all: the topography, seismology, geology, demography and meteorology of the site and its relation to the Irish Sea; the relationship with the marine environment of the Irish Sea and the assessment of the environmental impact of radioactive discharges into the sea; the impacts on flora and fauna in the Irish Sea, including commercial fisheries; the impacts of international transports of radioactive materials on the Irish Sea).

⁴⁴ ITLOS Order, 3 December 2001, 41 ILM 405 (2002), para. 26; see Chapter 9, p. 373, above.

⁴⁵ Separate Opinion of Judge Mensah, 7.

⁴⁶ Separate Opinion of Judge Szekely, paras. 12–17.

⁴⁷ Case C-459/03, *Commission v. Ireland* [2006] ECR I-4635, para. 121.

The Annex VII arbitral proceedings were eventually terminated after Ireland withdrew its claim before the tribunal.⁴⁸ Questions raised by the Irish claim regarding the extent of the obligations flowing from Article 206, including the relationship between that provision and other applicable environmental assessment obligations, thus remain unresolved.

Provisions requiring environmental impact assessment are also found in the 1994 Agreement relating to the implementation of Part XI of UNCLOS, governing the deep seabed area. Section 1.7 of the Annex to the 1994 Agreement requires applications for approval of exploration activities in the deep seabed of the high seas to be ‘accompanied by an assessment of the potential environmental impacts of the proposed activities’. In addition, Regulations adopted by the International Seabed Authority governing prospecting and exploration for polymetallic nodules and sulphides⁴⁹ establish further obligations of states regarding environmental impact assessment as part of their duty to ‘cooperate with the Authority in the establishment and implementation of programmes for monitoring and evaluating the impacts of deep seabed mining on the marine environment’.⁵⁰ The nature and content of environmental impact assessment required by these provisions was considered by the ITLOS Seabed Disputes Chamber in its 2011 *Advisory Opinion on Responsibilities and Obligations in the Area*, discussed below.⁵¹

1986 Noumea Convention

Article 16 of the 1986 Noumea Convention requires each party to assess, within its capabilities, ‘the potential effects of [major projects which might affect the marine environment] so that appropriate measures can be taken to prevent any substantial pollution of, or significant harm within, the Convention Area’.⁵² On 21 June 1995, New Zealand filed proceedings at the ICJ challenging France’s resumption of underground nuclear tests, on the ground, among others, that the tests violated France’s obligation to carry out a prior assessment of their impacts on the environment, in accordance with Article 16 of the 1986 Noumea Convention.⁵³ New Zealand also asserted that customary international law required an environmental impact assessment to be carried out ‘in relation to any activity which is likely to cause significant damage to the environment, particularly where such effects are likely to be transboundary in nature’.⁵⁴ The approach was endorsed by four South Pacific states and Australia, which had sought to intervene in the ICJ proceedings.⁵⁵ In response, France did not deny the existence of obligations under the 1986 Noumea Convention or customary law, but rather stated that too much should not be read into either source, and that environmental assessment requirements permitted a considerable ‘margin of appreciation’ to states as to the manner in which they sought to avoid causing damage.⁵⁶

⁴⁸ Order No. 6, Termination of Proceedings, PCA, 6 June 2008.

⁴⁹ Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area of 2000 and the Regulations on Prospecting and Exploration for Polymetallic Sulphides in the Area of 2010.

⁵⁰ Regulation 31(6) of the Nodules Regulation; Regulation 33(6) of the Sulphides Regulation.

⁵¹ See pp. 621–2, below. ⁵² Art. 16(2).

⁵³ New Zealand Request, paras. 74–88, and CR/95/20, 10–25.

⁵⁴ New Zealand Request, para. 89.

⁵⁵ See e.g. Solomon Islands statement, para. 11; Australia statement, para. 33.

⁵⁶ CR/95/20, 71–2 (‘on ne doit pas faire dire au droit coutumier en general, ni à la convention de Nouméa, plus qu’ils ne dissent eux-mêmes ... [EIA] laisse ... une marge considerable d’appréciation à chaque Etat concerné quant à la façon de s’assurer préalablement à l’entreprise d’activités qui seraient potentiellement dangeureuse, que leur incidence sur l’environnement ne serait pas dommageable’).

As the Court found that it did not have jurisdiction to entertain the application, the arguments were not addressed by the majority. Two dissenting opinions, however, reflected an emerging recognition of the potential place of environmental assessment in customary law. Of particular note is Judge Weeramantry's opinion that the requirement to carry out an environmental impact assessment was 'gathering strength and international acceptance, and has reached the level of general recognition at which [the ICJ] should take notice of it'.⁵⁷ As described below, that opinion would appear to have informed the Court's decision two years later in the case concerning the Gabčíkovo-Nagymaros project, and has culminated with the ICJ's declaration in the *Pulp Mills* case that transboundary environmental impact assessment may now be considered a requirement under general international law.

1991 Espoo Convention

The 1991 Espoo Convention was adopted under the auspices of the UNECE, and in several aspects it imposes more onerous requirements than the 1985 EC Directive on which it is based.⁵⁸ It came into force on 10 September 1997, and commits parties to take all appropriate and effective measures to prevent, reduce and control significant adverse transboundary environmental impacts from proposed activities. The Convention requires that parties of origin must notify affected parties of certain proposed activities which are likely to cause a significant adverse transboundary impact, and requires discussions between concerned parties.⁵⁹ The Convention defines 'impact' broadly to include:

any effect caused by a proposed activity on the environment including human health and safety, flora, fauna, soil, air, water, climate, landscape and historical monuments or other physical structures or the interaction among these factors; it also includes effects on cultural heritage or socio-economic conditions resulting from alterations to those factors.⁶⁰

A 'transboundary impact' is defined as:

any impact, not exclusively of a global nature, within an area under the jurisdiction of a party caused by a proposed activity the physical origin of which is situated wholly or in part within the area under the jurisdiction of another party.⁶¹

⁵⁷ (1995) ICJ Reports 344. See also the Dissenting Opinion of Ad Hoc Judge Palmer that 'customary international law may have developed a norm of requiring [EIA] where activities may have a significant effect on the environment': *ibid.*, 412, para. 91.

⁵⁸ W. Schrage, 'The Convention on Environmental Impact Assessment in a Trans-Boundary Context', 12 *Environmental Liability* 151 (2004).

⁵⁹ Espoo, 25 February 1991, in force 10 September 1997; 30 ILM 802 (1991), Art. 2(1), (4) and (5); forty-five states and the EU are party. 'Party of origin' means the party or parties 'under whose jurisdiction a proposed activity is envisaged to take place' (Art. 1(ii)); 'affected party' means the party or parties 'likely to be affected by the transboundary impact of a proposed activity' (Art. 1(iii)); assessment under the Convention may also fulfil requirements under the 1992 Industrial Accidents Convention: see Art. 4(4) of the latter Convention.

⁶⁰ Art. 1(vii). ⁶¹ Art. 1(viii).

The party of origin is required to ensure that, in accordance with the provisions of the Convention, an environmental impact assessment is undertaken 'prior to a decision to authorise or undertake a proposed activity listed in Appendix I that is likely to cause a significant adverse transboundary impact'.⁶² Appendix III provides guidance for determining the environmental significance of activities not listed.⁶³ The assessment procedure must allow public participation in the preparation of the documentation, ensure an opportunity to the public living in areas likely to be affected to participate in procedures, and ensure that the opportunity provided to the public in the affected country is equivalent to that provided to the public of the party of origin.⁶⁴

The Convention requires transboundary co-operation. Under Article 3, the party of origin must notify any of the seventeen proposed activities listed in Appendix I which is likely to cause a significant adverse transboundary impact, as early as possible, to 'any party which it considers may be an affected party' and no later than when informing its own public.⁶⁵ The notification must include information on the proposed activity, its possible transboundary impact, and the nature of the possible decision, and should allow a reasonable time for a response as to whether the affected party will participate in the procedure. Where the affected party decides not to participate, the operational provisions of the Convention will not apply, and the party of origin can decide on the basis of its national law and practice whether to carry out an assessment.⁶⁶

Once the affected party decides to participate in the procedure, and after it has received information relevant to the proposed activity and its possible significant transboundary impact, it must promptly provide the party of origin, at its request, with reasonably obtainable information relating to the potentially affected environment under its jurisdiction, where such information is necessary for the preparation of the environmental impact assessment.⁶⁷ Where a party considers that it is likely to be affected by a significant adverse transboundary impact of a proposed activity listed in Appendix I, and it has not been notified in accordance with Article 3(1), an exchange of 'sufficient information' must take place at the request of the affected party 'for the purposes of holding discussions on whether there is likely to be a significant adverse

⁶² Art. 2(3). 'Proposed activity' means 'any activity or any major change to an activity subject to a decision of a competent authority in accordance with an applicable national procedure': Art. 1(v). The Convention applies, at a minimum, to the 'project level' of the proposed activity, although parties undertake to 'endeavour to apply the principles of environmental impact assessment to policies, plans and programmes': *ibid.*, Art. 2(7).

⁶³ Factors include: the size of the activity; its proposed location (not in or close to an area of special environmental sensitivity or importance); and its effects (will they be particularly complex and potentially adverse, and will they threaten the existing or potential use of an area, or will they cause additional loading which cannot be sustained by the carrying capacity of the environment?).

⁶⁴ Art. 2(2) and (6). An amendment to the Convention adopted in 2001, but not yet in force, seeks to extend public participation rights to civil society, particularly NGOs.

⁶⁵ The activities listed in Appendix I include: crude oil and certain other refineries; thermal power stations and other combustion installations with an output of 300 megawatts or more and nuclear installations; nuclear facilities; major cast iron and steel installations; asbestos plants; integrated chemical installations; construction of motorways, express roads, long-distance railway lines and long airport runways; pipelines; large trading ports; toxic and dangerous waste disposal installations; large dams and reservoirs; groundwater abstraction; pulp and paper manufacturing; major mining; offshore hydrocarbon production; major oil and chemical storage facilities; and deforestation of large areas. In an amendment to the Convention adopted in 2004 (not yet in force), the parties agreed to add the following additional activities to Appendix I: certain works for the transfer of water between river basins, wastewater treatment plants with a capacity exceeding 150,000 population equivalent, construction of overhead electrical power lines, and wind farms.

⁶⁶ Art. 3(4). The operational provisions are Arts. 4–7. ⁶⁷ Art. 3(6).

transboundary impact'.⁶⁸ If the parties agree that such an impact is likely, the provisions of the Convention are to apply. If there is no such agreement, any such party may submit the question to an inquiry commission established under Appendix IV unless another method of settling the question is agreed.⁶⁹ Concerned parties must ensure that the affected party's public is informed about the proposed activity and is provided with an opportunity to make comments or objections to the competent authority of the party of origin.⁷⁰

The documentation to be submitted to the competent authority of the party of origin must contain the information required in Appendix II. This includes, but is not limited to, descriptions of: the proposed activity and its purpose; reasonable alternatives and the 'no-action alternative'; the environment likely to be significantly affected and its alternatives; the potential environmental impact, its alternatives and an estimation of its significance; and mitigation measures.⁷¹ Indications should also be given of predictive methods, underlying assumptions and relevant environmental data used, gaps in knowledge and uncertainties, an outline for monitoring and management and any plans for post-project analysis, and a non-technical summary with appropriate visual presentations.⁷² The documentation must be provided to the affected party and distributed to its authorities and public in areas likely to be affected, and the comments of those authorities and that public are to be submitted to the competent authority of the party of origin 'within a reasonable time before the final decision is taken on the proposed activity'.⁷³

Under Article 5, consultations must take place between the party of origin and the affected parties concerning the potential transboundary impact and measures to reduce or eliminate the impact. These may relate to alternatives to the proposed activity (including the 'no-action alternative' and mitigating measures), other forms of mutual assistance, and any other appropriate matters. In taking the final decision on the proposed activity, the parties must take due account of the outcome of the environmental impact assessment, including the documentation, as well as the comments received under Articles 3(8) and 4(2) and consultations under Article 5.⁷⁴ The party of origin must inform the affected party of the final decision and the reasons and considerations on which it was based.⁷⁵ If new information that could have materially affected the decision becomes available to a concerned party after the decision was made, that party shall inform other concerned parties and, as requested, hold consultations on revision of the decision.⁷⁶

A further innovation of the Convention is the provision of requirements on post-project analysis and follow-up. Concerned parties must decide, at the request of any one of them, whether and to what extent a post-project analysis is to be carried out, including surveillance of the activity and a determination of any adverse transboundary impact.⁷⁷ The objectives of a post-project analysis are set out in Appendix V; they include monitoring compliance with authorisation conditions and the effectiveness of mitigation measures; a management review; and verification of past predictions. Where the post-project analysis establishes reasonable grounds for concluding that there is a significant adverse transboundary impact or factors which may result in such an impact, the concerned parties must consult on 'necessary measures' to reduce or eliminate the impact.⁷⁸

⁶⁸ Art. 3(7). Decision 1/IV of the Meeting of the Parties establishes an agreed format for notification.

⁶⁹ Appendix IV sets out the rules of procedure for the establishment of a compulsory inquiry commission.

⁷⁰ Art. 3(8). See Decision II/3 of the Meeting of the Parties, on public participation.

⁷¹ Art. 4(1) and Appendix II. ⁷² Appendix II. ⁷³ Art. 4(2). ⁷⁴ Art. 6(1).

⁷⁵ Art. 6(2). ⁷⁶ Art. 6(3). ⁷⁷ Art. 7(1). ⁷⁸ Art. 7(2).

The Convention also provides for bilateral and multilateral co-operation to implement its provisions in accordance with the elements set out in Appendix VI, and on the development of research programmes.⁷⁹ Institutional arrangements include an annual Meeting of the Parties, which is charged with keeping the implementation of the Convention under review, with the assistance of the secretariat.⁸⁰ In 2001, an Implementation Committee was established to review compliance by the parties with their obligations under the Convention, with a view to assisting them fully to meet their commitments.⁸¹

A number of more general provisions of the Convention are also relevant to the further development of international law in relation to environmental assessment, information and co-operation. Concerned parties must enter into discussions, at the request of any such party, on whether a proposed activity not listed in Appendix I is likely to cause a significant adverse transboundary impact, and therefore should be treated as if so listed.⁸² Appendix III provides general guidance to assist in the determination of the environmental significance of activities not listed in Appendix I, by virtue of one or more criteria, including its size, location and effects. The Convention does not affect parties' rights under national laws, provisions or practices to protect information the supply of which would be prejudicial to industrial and commercial secrecy or national security, and does not affect the right of a party to implement more stringent measures.⁸³ Moreover, the Convention does not prejudice 'any obligations of the parties under international law with regard to activities having or likely to have a transboundary impact'.⁸⁴

2003 Strategic Environmental Assessment Protocol

On 21 May 2003, in Kiev, a Protocol on Strategic Environmental Assessment was adopted that came into force on 11 July 2010.⁸⁵ Under the Protocol, parties are required to evaluate the environmental consequences of their official draft plans and programmes, including effects on human health. The Protocol also addresses proposals for policies and legislation in states, but strategic environmental assessment is not mandatory in this context.⁸⁶ Strategic environmental assessment differs from conventional environmental impact assessment in that it takes place earlier in the decision-making process and has a much broader scope than the single project that is generally the subject of environmental impact assessment. In theory, therefore, strategic environmental assessment is a key tool for achieving sustainable development allowing 'upstream' planning to minimise the potential for environmental impact from the implementation of subsequent specific projects.⁸⁷

⁷⁹ Arts. 8 and 9. ⁸⁰ Art. 13.

⁸¹ Decision II/IV (2001), revised as Decision III/2, which provides the structure and functions of the Implementation Committee and procedures for review of compliance.

⁸² Art. 2(5). ⁸³ Art. 2(8) and (9). ⁸⁴ Art. 2(10).

⁸⁵ Protocol on Pollutant Release and Transfer Registers to the Aarhus Convention, Kiev, 21 May 2003, in force 8 October 2009, UN Doc. MP.PP/2003/1. On 15 May 2011, there were thirty-eight signatories and twenty-two parties to the Protocol. See also J. De Mulder, 'The Expansion of Environmental Assessment in International Law: The Protocol on Strategic Environmental Assessment to the Espoo Convention', 18 *Environmental Law and Management* 269 (2006).

⁸⁶ Art. 13.

⁸⁷ K. Ahmed and E. Sánchez-Triana (eds.), *Strategic Environmental Assessment for Policies: An Instrument for Good Governance* (World Bank, 2008); S. Marsden, *Strategic Environmental Assessment in International and European Law* (2008).

The principal obligation established by the Protocol is for parties to undertake strategic environmental assessment for specified plans and programmes that are likely to have significant environmental, including health, effects.⁸⁸ As in the parent Convention, relevant effects for assessment are defined broadly extending to ‘any effect on the environment, including human health, flora, fauna, biodiversity, soil, climate, air, water, landscape, natural sites, material assets, cultural heritage and the interaction among these factors’.⁸⁹ Plans and programmes that attract a requirement for strategic environmental assessment include those prepared for agriculture, forestry, fisheries, energy, industry including mining, transport, regional development, waste management, telecommunications, tourism, town and country planning or land use, and which set the framework for future development consent for projects listed in Annex I to the Protocol (mirroring Appendix I to the Convention), as well as any other project listed in Annex II that requires an environmental impact assessment under national legislation.⁹⁰ For other plans and programmes that fall outside these categories, a party may still decide to carry out a strategic environmental assessment if it determines there will be significant environmental or health effects, applying the criteria set out in Annex III.

Like the Espoo Convention, the Protocol contains a number of innovative provisions. These include requirements for transparency and public participation (including by NGOs) in strategic decision-making,⁹¹ provision for transboundary consultations,⁹² and post-decision monitoring. The relevant provisions of the Protocol apply also to the Aarhus Convention.⁹³

1991 Antarctic Environment Protocol

Article 8 of the 1991 Antarctic Environment Protocol (which supersedes the environmental assessment provisions under the 1988 CRAMRA) requires prior assessment of the impacts of activities on the Antarctic environment or on dependent or associated ecosystems. The detailed obligations take a different approach from the 1991 Espoo Convention. They establish a range of procedures, the use of which will be dependent on whether the activity is expected to have (a) less than a minor or transitory impact; or (b) a minor or transitory impact; or (c) more than a minor or transitory impact.⁹⁴ This approach is similar to that recommended in paragraph 11 of the 1982 World Charter for Nature. The assessment must be:

applied in the planning processes leading to decisions about any activities undertaken in the Antarctic Treaty area pursuant to scientific research programmes, tourism and all other governmental and non-governmental activities in the Antarctic Treaty area for which advance notice is required under Article VII(5) of the Antarctic Treaty, including associated logistic support activities.⁹⁵

⁸⁸ Art. 4.1. ⁸⁹ Art. 2.7.

⁹⁰ Art. 4.2. Annex II covers some ninety activities ranging from intensive agriculture projects, to manufacturing installations and tourist facilities.

⁹¹ Art. 10. ⁹² Art. 12. ⁹³ Chapter 15, pp. 652–5, below.

⁹⁴ Art. 8(1). Annex I to the Protocol does not apply to emergencies relating to the safety of human life or of ships or aircraft or other high-value equipment or facilities, or the protection of the environment: Annex I, Art. 7.

⁹⁵ Art. 8(2).

Assessments are also required for any change in activity, including an increase or decrease of intensity, the decommissioning of a facility, or otherwise.⁹⁶

Annex I to the Protocol sets out a five-stage procedure for carrying out the assessment.

- (1) In the preliminary stage, the proposed activity is considered in accordance with national procedures, and, if the activity is determined to have less than a minor or transitory impact, the activity may proceed.⁹⁷
- (2) If the activity will have a minor or transitory impact or more, an Initial Environmental Evaluation will be prepared, which should contain sufficient information to assess whether the activity will have more than a minor or transitory impact.⁹⁸ The information should include a description of the proposed activity, including its purpose, location, duration and intensity, and a consideration of any alternatives and impacts, including cumulative impacts. If this evaluation indicates that a proposed activity is likely to have no more than a minor or transitory impact, the activity may proceed subject to compliance with appropriate procedures, including monitoring of impacts.⁹⁹
- (3) If this evaluation indicates a likelihood of more than a minor or transitory impact, a Comprehensive Environmental Evaluation must be prepared, and must include descriptions of the proposed activity, the initial and predicted future environment reference state, and methods and data used to forecast impacts.¹⁰⁰ The Comprehensive Evaluation will also include: an estimation of likely and direct impacts; indirect or second order and cumulative impacts; mitigation measures; unavoidable impacts; effects on the conduct of scientific research; gaps in knowledge and uncertainties; a non-technical summary; and a contact person or organisation.¹⁰¹
- (4) The draft Evaluation is to be made publicly available, circulated to all parties and forwarded to the Protocol's Committee on Environmental Protection, with a ninety-day comment period and at least 120 days before the next Antarctic Treaty Consultative Meeting.¹⁰² The proposed activity may not proceed until the draft Evaluation has been considered by the Antarctic Treaty Consultative Meeting on the advice of the Committee, within a maximum period of fifteen months from the date of the draft's circulation.¹⁰³
- (5) A final Evaluation must address comments received and be circulated to all parties and made publicly available at least sixty days before the commencement of the proposed activity.¹⁰⁴ The decision on whether to proceed with a proposed activity must be based on the Comprehensive Evaluation and other relevant considerations.¹⁰⁵ Procedures must be put in place to assess and verify the impact of activities following the Comprehensive Evaluation, including the monitoring of key environmental indicators.¹⁰⁶

1992 Biodiversity Convention

The 1992 Biodiversity Convention requires parties to identify 'processes and categories of activities which have or are likely to have significant adverse impacts on the conservation and sustainable use of biological diversity, and monitor their effects through sampling and

⁹⁶ Art. 8(3). ⁹⁷ Annex I, Art. 1. ⁹⁸ Annex I, Art. 2(1). ⁹⁹ Annex I, Art. 2(2).

¹⁰⁰ Annex I, Art. 3(1) and (2)(a)–(c). ¹⁰¹ Annex I, Art. 3(2)(d)–(l).

¹⁰² Annex I, Art. 3(3) and (4). See also Art. 6. ¹⁰³ Art. 3(5).

¹⁰⁴ Art. 3(6). ¹⁰⁵ Art. 4. ¹⁰⁶ Annex I, Art. 5.

other techniques', and to require environmental impact assessment of proposed projects that are likely to have 'significant adverse effects on biological diversity'.¹⁰⁷ Article 14 also requires parties to promote notification, exchange of information and consultation on activities under their jurisdiction or control which are likely to affect significantly and adversely the biological diversity of other states or areas beyond the limits of national jurisdiction, and to provide for immediate notification in any case of imminent or grave danger or damage.¹⁰⁸ The sixth Conference of the Parties endorsed draft guidelines for incorporating biodiversity-related issues into environmental impact assessment legislation and processes, and in strategic environmental assessment, and urged parties and other governments and organisations to apply the guidelines in the context of their implementation of Article 14(1) of the Convention.¹⁰⁹ The Guidelines provide considerable detail as to the content of an environmental impact assessment (following the approach set forth in other international instruments), and the conditions under which assessments must and should be carried out.

Risk assessment procedures

Risk assessment requirements are an increasingly common feature of international law addressing risks to human health and the environment. The genesis of this trend lies in international trade law and the adoption in 1995 of the WTO Agreement on Sanitary and Phytosanitary Measures (SPS Agreement).¹¹⁰ This Agreement applies to trade-restrictive measures adopted by member states for the purposes of protecting human, animal and plant life or health from the effects of introduced diseases, pests or contaminants in foodstuffs. The SPS Agreement imposes novel requirements for such measures to be based on scientific principles and risk assessment.¹¹¹ Following the conclusion of the SPS Agreement, risk assessment requirements have been adopted in a number of multilateral environmental agreements where there is the potential for overlap between the requirements of international environmental law and trade law. These treaties include the 1998 Chemicals Convention,¹¹² the 2001 POPs Convention¹¹³ and the 2000 Biosafety Protocol to the Convention on Biological Diversity.¹¹⁴

The risk assessment requirements of the Biosafety Protocol are illustrative of the penetration of notions of 'risk assessment' – more commonly associated with the public health and engineering fields – into more conventional environmental areas. The Protocol requires risk assessments to be carried out in respect of import decisions relating to living modified organisms, in order

¹⁰⁷ Arts. 7(c) and 14(1)(a). These requirements are supplemented by decisions of the Conference of the Parties, including: Decision IV/10 (calling on parties to submit to the secretariat impact assessments, reports on the effectiveness of EIAs, reports relating to national legislation on EIAs, and incentive schemes to encourage participation in EIA programmes); Decision V/18 (calling on parties, *inter alia*, to 'integrate environmental impact assessment into the work programs' in all areas of biological diversity; to use the loss of biological diversity as a factor in determining impact when conducting an EIA; to ensure wide involvement of all impacted when conducting an EIA; to look at the cumulative impact of multiple projects; and to report on national practices and experiences with EIAs); and Decision VI/7 (endorsing guidelines for incorporating biodiversity-related issues into environmental impact assessment legislation and processes and in strategic environmental assessment contained in the Annex to the Decision).

¹⁰⁸ Art. 14(1)(c) and (d). ¹⁰⁹ Decision VI/7 (identification, monitoring, indicators and assessments) (2002).

¹¹⁰ Chapter 19, pp. 830 *et seq.*, below. ¹¹¹ Arts. 2.2 and 5.1. ¹¹² Chapter 11, pp. 530–2, above.

¹¹³ Chapter 11, pp. 524–6, above. ¹¹⁴ Chapter 10, pp. 466–71, above.

to identify and evaluate the possible adverse effects of living modified organisms on the conservation and sustainable use of biological diversity, taking also into account risks to human health.¹¹⁵

The risk assessments are to be carried out in a 'scientifically sound manner, in accordance with Annex III and taking into account recognized risk assessment techniques', and may be carried out by the exporter.¹¹⁶ In addition, the Protocol requires parties to maintain appropriate risk management measures, 'based on risk assessment' and imposed only to the extent 'necessary' to prevent adverse effects on biodiversity, also taking into account human health risks.¹¹⁷ Annex III identifies the methodology to be applied in carrying out a risk assessment, including:

- (a) An identification of any novel genotypic and phenotypic characteristics associated with the living modified organism that may have adverse effects on biological diversity in the likely potential receiving environment, taking also into account risks to human health;
- (b) An evaluation of the likelihood of these adverse effects being realized . . .
- (c) An evaluation of the consequences should these adverse effects be realized;
- (d) An estimation of the overall risk posed by the living modified organism based on the evaluation of the likelihood and consequences of the identified adverse effects being realized;
- (e) A recommendation as to whether or not the risks are acceptable or manageable . . . and
- (f) Where there is uncertainty regarding the level of risk, it may be addressed by requesting further information on the specific issues of concern or by implementing appropriate risk management strategies and/or monitoring the living modified organism in the receiving environment.¹¹⁸

Although the Protocol recognises a role for the precautionary principle in the process of biosafety risk assessment, the mode of assessment differs markedly from conventional environmental impact assessment given the emphasis placed on scientific evidence and the requirement for an evaluation of risk defined in technical terms as the product of the likelihood and consequences of identified adverse effects being realised.

WORLD BANK AND OTHER MULTILATERAL LENDING INSTITUTIONS

Many international organisations, including multilateral development banks, have developed their own environmental impact assessment procedures,¹¹⁹ of which the most widely studied is that adopted by the World Bank in 1989.¹²⁰ World Bank Operational Directive 4.01 was adopted

¹¹⁵ Biosafety Protocol, Art. 15(1). ¹¹⁶ Art. 15(2). ¹¹⁷ Art. 16.2.

¹¹⁸ Annex III, para. 8. 'Risk assessment' is to take into account the relevant technical and scientific details regarding the characteristics of: recipient organism or parental organisms; donor organism or organisms; vector; insert or inserts and/or characteristics of modification; detection and identification of the living modified organism; information relating to the intended use; and the receiving environment.

¹¹⁹ On environmental assessment of overseas development assistance, see Chapter 16, pp. 667–8, below.

¹²⁰ See also International Finance Corporation, OP 4.01; European Bank for Reconstruction and Development, Environmental Procedures (1996); Asian Development Bank, Environmental Assessment Requirements (1998); North American Development Bank, 1993 Agreement, 32 ILM 1545 (1993), Art. II(3)(c), www.nadbank.org, and Border Environment Cooperation Commission Guidelines (in particular Art. VII), 21 September 1995, 60 US Fed. Reg. 48982. In relation to regional development banks and EIA, see M. Somarajah, 'Foreign Investment and International Environmental Law', in Sun Lin and Lal Kurukulasuriya (eds.), *UNEP's New Way Forward: Environmental Law and Sustainable Development* (1995), 283, 288.

in 1989, its objective being to ensure that the development options adopted were sound and enduring from an environmental perspective and that environmental consequences were recognised at an early stage in the project cycle and included in the project scheme.¹²¹ The Operational Directive was the subject of significant criticism, including the failure to provide for a 'no-action alternative' whereby the project may be stopped because the environmental risks are too great to allow the project to proceed at all, and its silence as to mandatory requirements concerning the provision of information to local populations and their right to participate in the environmental impact assessment process. In 1999, the policy was converted into a new format, now reflected in Operation Policy (OP) 4.01 and Bank Procedures (BP) 4.01, which have sought to address these and other issues.

Under OP 4.01, the World Bank requires environmental assessment (EA) of projects proposed for Bank financing to help ensure that they are environmentally sound and sustainable, thereby improving decision-making.¹²² EA is described as a process, which: evaluates a project's potential environmental risks and impacts in its area of influence; examines project alternatives; identifies ways of improving project selection, siting, planning, design and implementation; and includes the process of mitigating and managing adverse environmental impacts throughout the implementation of the project. It is premised on the Bank's preference for 'preventive measures over mitigatory or compensatory measures, whenever feasible'.¹²³ The borrower is responsible for carrying out the EA, which may comprise one or more of an environmental impact assessment (EIA), a regional or sectoral EA, an environmental audit, a hazard or risk assessment, and an environmental management plan (EMP).¹²⁴ The Bank is responsible for environmental screening of each proposed project to determine the appropriate extent and type of EA, and classifies the proposed project into one of four categories. A proposed project is classified as Category A if it is 'likely to have significant adverse environmental impacts that are sensitive, diverse, or unprecedented', and will normally require an EIA (or a comprehensive regional or sectoral EA).¹²⁵ A proposed project is classified as Category B if its potential adverse environmental impacts are site-specific, if few of the impacts are irreversible, and if mitigatory measures can be designed more readily than for Category A projects. The scope of EA for a Category B project will be narrower than for a Category A project. A proposed project is classified as Category C if it is likely to have minimal or no adverse environmental impacts. A proposed project is classified as Category FI if it involves investment of Bank funds through a financial intermediary, in sub-projects that may result in adverse environmental impacts. Environmental assessments are also required for special project types. Category A and B projects must be subject to public consultation.

The adequacy of the application of OP 4.01 is reflected in the fact that thirteen of the twenty-three requests filed at the World Bank Inspection Panel by July 2001 alleged inadequate environmental assessments. In some cases, the Panel found no violations, but in others the Panel found violations which led or contributed to a decision to withdraw

¹²¹ Operational Directive 4.00, Annex A, Environmental Assessment (1989).

¹²² See OP 4.01, Annex A (definitions). The Bank's internal procedures are governed by BP 4.01.

¹²³ Para. 2. ¹²⁴ OP 4.01, Annex C, describes the environmental management plan.

¹²⁵ OP 4.01, Annex B, describes the content of a Category A environmental assessment report (to include: executive summary; policy, legal and administrative framework; project description; baseline data; environmental impacts; analysis of alternatives; and environmental management plan (EMP)).

financing,¹²⁶ or other proposed remedial actions.¹²⁷ This general trend has continued, with policy issues relating to environmental assessment representing the second most frequent basis of requests made to the Panel as of 30 June 2009.¹²⁸

INTERNATIONAL CASES

The developments described in this chapter, which largely took place in the late 1980s and during the 1990s, provided the background against which international courts and tribunals increasingly addressed the requirement to carry out an environmental impact assessment. Beyond the increasing case law of the European Court of Human Rights and the Inter-American Court of Human Rights recognising the relationship between human rights protection and the performance of environmental impact assessments,¹²⁹ a central part of Hungary's case in the *Gabčíkovo-Nagymaros* case was that the two parties to the 1977 Treaty had failed, by 1989, to assess adequately the project's impact on the environment, in particular the impacts on freshwaters and biodiversity.¹³⁰ The ICJ considered that Hungary was not entitled (in 1989) to suspend construction on its part of the project, or (in 1992) to terminate the 1977 Treaty, and that the 1977 Treaty therefore remained in force between the parties. However, the Court recognised that the project's impact upon, and its implications for, the environment were a key issue, and that the impact and implications were considerable, and ruled that Articles 15 and 19 of the 1977 Treaty prescribed 'a continuing – and thus necessarily evolving – obligation on the parties to maintain the quality of the water of the Danube and to protect nature'.¹³¹ Noting that 'vigilance and prevention are required on account of the often irreversible character of damage to the environment and of the limitations inherent in the very mechanism of reparation of this type of damage', the Court ruled that:

the Parties together should look afresh at the effects on the environment of the operation of the Gabčíkovo power plant. In particular they must find a satisfactory solution for the volume of water to be released into the old bed of the Danube and into the side-arms on both sides of the river.

In effect, the Court read into the two provisions of the 1977 Treaty a requirement that the parties carry out a continuing environmental assessment of the project's impacts on the environment. The rationale behind the Court's approach was reflected in the Separate Opinion

¹²⁶ *Nepal/Arun III* (25 October 1994); *China/Western Poverty Reduction Project* (18 June 1999); see generally Chapter 5, pp. 167–8, above.

¹²⁷ *Ecuador/Mining Development and Environmental Control Technical Assistance* (7 May 2000).

¹²⁸ World Bank Inspection Panel, *The Inspection Panel at 15 Years* (2009), Appendix V, Figure V-A, p. 200.

¹²⁹ At the European Court of Human Rights, see e.g. *Taşkın and Others v. Turkey*, para. 118; *Öçkan and Others v. Turkey*, Judgment of 28 March 2006, para. 43; and *Brândușe v. Romania*, Judgment of 7 April 2009, para. 63; at the Inter-American Court of Human Rights, see *San Mateo de Huanchor v. Peru*; see Chapter 18, pp. 782–6, below.

¹³⁰ (1997) ICJ Reports 7, at para. 35; see Chapter 10, pp. 313–19, above.

¹³¹ Para. 140. Art. 15 specified that the contracting parties 'shall ensure, by the means specified in the joint contractual plan, that the quality of the water in the Danube is not impaired as a result of the construction and operation of the System of Locks'; Art. 19 provided that: 'The Contracting Parties shall, through the means specified in the joint contractual plan, ensure compliance with the obligations for the protection of nature arising in connection with the construction and operation of the System of Locks.'

of Judge Weeramantry, who was in the majority and a member of the Court's drafting committee. Developing his Opinion in the 1995 New Zealand nuclear tests case, Judge Weeramantry stated:

In the present case, the incorporation of environmental considerations into the Treaty by Articles 15 and 19 meant that the principle of EIA was also built into the Treaty. These provisions were clearly not restricted to EIA before the project commenced, but also included the concept of monitoring during the continuance of the project . . . Environmental law in its current state of development would read into treaties which may reasonably be considered to have a significant impact upon the environment, a duty of environmental impact assessment and this means also, whether the treaty expressly so provides or not, a duty of monitoring the environmental impacts of any substantial project during the operation of the scheme.¹³²

Moreover, according to Judge Weeramantry, the 'principle of contemporaneity' in the application of environmental norms supplemented his observations regarding continuing assessment and provided the standard by which the continuing assessment is to be made:

It matters little that an undertaking has been commenced under a treaty of 1950, if in fact that undertaking continues in operation in the year 2000. The relevant environmental standards that will be applicable will be those of the year 2000.¹³³

Judge Weeramantry's approach was taken up by the ICJ in the *Pulp Mills* case, a dispute in which Argentina and Uruguay agreed on the need to carry out an environmental impact assessment.¹³⁴ The Court ruled that it was inherent in the obligation to protect and preserve the aquatic environment of the Uruguay River that they should 'carry out an environmental impact assessment . . . with respect to activities which may be liable to cause transboundary harm'.¹³⁵ Having regard to the practice that in recent years had gained widespread acceptance among states, the Court concluded that:

it may now be considered a requirement under general international law to undertake an environmental impact assessment where there is a risk that the proposed industrial activity may have a significant adverse impact in a transboundary context, in particular, on a shared resource. Moreover, due diligence, and the duty of vigilance and prevention which it implies, would not be considered to have been exercised, if a party planning works liable to affect the régime of the river or the quality of its waters did not undertake an environmental impact assessment on the potential effects of such works.¹³⁶

The Court then considered what that requirement entailed in practice. It noted that the 1975 Uruguay River Statute was silent on the matter, and that general international law did not 'specify the scope and content of an environmental impact assessment'. Argentina and Uruguay

¹³² (1997) ICJ Reports 7 at 111.
¹³⁵ *Ibid.*, para. 204.

¹³³ *Ibid.*, 114.

¹³⁴ (2010) ICJ Reports, at para. 203.

¹³⁶ *Ibid.*

were not parties to the Espoo Convention, and the 1978 UNEP Goals and Principles were only guidelines and not binding.¹³⁷ The Court stated that the Guidelines provided ‘only that the “environmental effects in an EIA should be assessed with a degree of detail commensurate with their likely environmental significance” (Principle 5) without giving any indication of minimum core components of the assessment’, but did not engage in any effort to ascertain the minimum content of environmental impact assessments that are readily identifiable in the great volume of international and national practice that has followed the adoption of the 1978 UNEP Guidelines, as noted in the earlier parts of this chapter. The Court concluded that:

it is for each State to determine in its domestic legislation or in the authorization process for the project, the specific content of the environmental impact assessment required in each case, having regard to the nature and magnitude of the proposed development and its likely adverse impact on the environment as well as to the need to exercise due diligence in conducting such an assessment.¹³⁸

The only guidance given by the Court to states is that the assessment ‘must be conducted prior to the implementation of a project’ and as necessary after operations have started and throughout the life of the project there should be ‘continuous monitoring of [the project’s] effects on the environment shall be undertaken’.¹³⁹ On the facts, the Court rejected Argentina’s claim that Uruguay failed properly to assess possible alternative sites before determination of the final site, or that the location of the plant had failed to take into account the capacity of the waters of the river to receive, dilute and disperse discharges of effluent, or that affected populations had been inadequately consulted.¹⁴⁰ Whilst the judgment is welcome in recognising an obligation under customary international law to carry out a prior environmental assessment, it has surely missed an opportunity to clarify also what the minimum requirements of such an assessment should be. By leaving it to each state to determine the specific content, without referring even to the matters that should at a minimum be addressed, the Court is likely to face criticism for recognising a customary norm that appears, on one possible reading, to have no real substantive content. On another reading, it may be that this was not what the Court intended, so that one might read into the parsimonious words the bare elements of what any state might be required to do when it engages in an activity that gives rise to a risk of a significant adverse impact in a transboundary context. If so, it would have been helpful for the Court to state its views with greater clarity, and in so doing provide states with some of the certainty and predictability that any legal order requires.

Shortly after the ICJ gave its judgment, the ITLOS Seabed Disputes Chamber addressed the obligation to conduct an environmental impact assessment in relation to activities in the Area, as required by Section 1(7) of the Annex to the 1994 Agreement.¹⁴¹ The Chamber confirmed

¹³⁷ *Ibid.*, para. 205. ¹³⁸ *Ibid.*

¹³⁹ *Ibid.* The Court also indicates that, under the 1975 River Uruguay Statute (rather than general international law), the assessment should be notified to the other state party, to enable it ‘to participate in the process of ensuring that the assessment is complete, so that it can then consider the plan and its effects with a full knowledge of the facts’: *ibid.*, paras. 119–20.

¹⁴⁰ *Ibid.*, paras. 207–19.

¹⁴¹ *Responsibilities and Obligations in the Area*, Advisory Opinion, paras. 141–50 (Section 1(7) provides: ‘An application for approval of a plan of work shall be accompanied by an assessment of the potential environmental impacts of the proposed activities . . .’).

that the sponsoring state 'is under a due diligence obligation to ensure compliance by the sponsored contractor with this obligation'. The Chamber went further, affirming that the obligation to conduct an environmental impact assessment is 'a general obligation under customary international law'. As regards the ICJ's view that general international law does not 'specify the scope and content of an environmental impact assessment', the Chamber noted that the indications in the Nodules Regulations (2000) and the Sulphides Regulations (2010), and in Recommendations for the Assessment of Possible Environmental Impacts (2002), added 'precision and specificity to the obligation as it applies in the context of activities in the Area'.¹⁴²

CONCLUSIONS

The judgments in the *Gabčíkovo-Nagymaros* and *Pulp Mills* cases indicate the extent to which the concept of environmental assessment has developed and become established since the first edition of this book.¹⁴³ A broad range of international instruments now establishes general obligations requiring prior environmental assessment of projects which may cause environmental harm; a smaller number set forth more detailed criteria for the conduct of such assessments, whether in particular geographic areas, to protect particular resources, or in respect of particular categories of activities. Moreover, an obligation to carry out prior assessment of certain projects now exists in customary law, even if the scope of any assessment remains to be finally determined.

In addition, most multilateral development banks now require some form of environmental impact assessment, and are required by international law also to assess the environmental consequences of potentially damaging projects into which they consider putting financial resources.

In the past two decades, the limitations of the first generation of project-related environmental impact assessments have become apparent, and this has translated into a second generation of instruments revising earlier approaches and establishing strategic environmental assessments of programmes and plans. The elaboration of requirements for risk assessment in a number of international environmental treaties takes the law in a different direction; one that emphasises probabilistic notions of risk and science-based procedures for their assessment.

In respect of projects, the critical issues remain: the scope of the impacts to be assessed; the type of projects to be covered; the availability of information to the public and their participation in the process; and the requirement that the statement be taken into account *before* authorisation is granted. The ICJ's statement in the *Pulp Mills* case regarding the necessity of prior environmental impact assessment for projects with a risk of transboundary harm is therefore welcome; however, it will have little practical effect unless courts and tribunals are also prepared to impose stringent consequences upon states that fail to meet this obligation. What is now needed, as a matter of urgency, are generally acceptable international guidelines that specify the content of any assessment that is to be carried out in advance of a project that might cause significant transboundary effects.

¹⁴² *Ibid.*, para. 149 (see Recommendations for the Guidance of the Contractors for the Assessment of the Possible Environmental Impacts Arising from Exploration for Polymetallic Nodules in the Area, ISBA/7/LTC/1/Rev.1, 13 February 2002).

¹⁴³ See e.g. *Maffezini v. Spain*, ICSID Award of 9 November 2000, para. 67, 16 *ICSID Rev-FILJ* 248 (2001).

The unwillingness of states to subject themselves to what they consider to be unnecessary and intrusive environmental assessments also remains a problem, as illustrated by the differences between the United Kingdom and Ireland over the need to carry out an assessment on a nuclear reprocessing plant which led to the adoption of a Recommendation on the matter by PARCOM in June 1993,¹⁴⁴ and a similar dispute in 2001 concerning the quality of the assessment of the MOX plant. Emerging instruments concerning strategic environmental impact assessment may help to address these problems by requiring states to consider potential environmental impacts much earlier in the process of planning for large infrastructure and other development facilities. Nonetheless, far-reaching legal commitments must be matched by strong national implementation if strategic environmental assessment and associated project-level environmental impact assessment are to realise their stated goals of sustainable development and prevention of transboundary environmental harm.

¹⁴⁴ See Chapter 9, p. 375, above.

15

Environmental information

INTRODUCTION

Improving the availability of information on the state of the environment and on activities that have adverse or damaging effects are well-established objectives of international environmental law.¹ Information, including scientific expertise, is widely recognised as a prerequisite to effective national and international environmental management, protection and co-operation. The availability of, and access to, information allows preventative and mitigation measures to be taken, ensures the participation of citizens in national decision-making processes, and can influence individual, consumer and corporate behaviour. Information also allows the international community to determine whether states are complying with their legal obligations. These themes were picked up by the International Court of Justice in the *Pulp Mills* case, as noted below.

Legal obligations developed with early treaty provisions requiring parties to provide information to the depository, or to other parties, on measures to implement commitments. Since then, environmental information has gradually emerged as a central issue of international environmental law. Principle 2 of the 1972 Stockholm Declaration called for the ‘free flow of up-to-date scientific information and transfer of experience’. The 1982 World Charter for Nature broadened the scope and extent of obligations relating to information, calling for the dissemination of knowledge of research, the monitoring of natural processes and ecosystems, and the participation of all persons in the formulation of decisions of direct concern to the environment.² During the 1980s, a number of treaties emerged addressing public education, information exchange and consultation. The Seveso accident in 1982 and the Chernobyl accident in 1986 focused attention on the need to improve the provision of information in emergency situations and, towards the end of the 1980s, eco-labelling and corporate environmental auditing and accounting had become issues addressed by law at the international level.

¹ On early practice, including at the national level, see OECD (Environment Committee), ‘Application of Information and Consultation Practices for Preventing Transfrontier Pollution’, in OECD, *Transfrontier Pollution and the Role of States* (1981); M. Baram, ‘Risk Communication Law and Implementation Issues in the US and EC’, 6 *Boston University International Law Journal* 21 (1988); M. Padgett, ‘Environmental Health and Safety – International Standardisation of Right-to-Know Legislation in Response to Refusal of United States Multinationals to Publish Toxic Emissions Data for Their United Kingdom Facilities’, 22 *Georgia Journal of International and Comparative Law* 701 (1992). See also J. Ebbesson and P. Okowa (eds.), *Environmental Law and Justice in Context* (2009).

² A/RES/37/7 paras. 15, 18, 19 and 23.

By the time of UNCED in 1992, numerous treaties and other international instruments included substantive obligations relating to information: particularly noteworthy are the 1986 IAEA Notification Convention, the 1989 Basel Convention and the 1992 Industrial Accidents Convention. Notably, no fewer than four of the Rio Declaration's twenty-seven Principles concern the provision of, and access to, environmental information. The Rio Declaration calls for: exchanges of scientific and technological knowledge; individual access to environmental information; public awareness and participation; notification of emergencies; and prior and timely notification of certain potentially hazardous activities.³ Chapter 40 of Agenda 21, entitled 'Information for Decision-Making', recognised that the need for information arises at all levels, from senior decision-makers at international level to the grass roots and individual levels, and to that end called for the development of two programme areas: to bridge the 'data gap' and to improve information availability.⁴ Scientific information was the subject of a separate chapter in Agenda 21, which emphasised the 'role of the sciences . . . to provide information to better enable formulation and selection of environment and development policies in the decision-making process'.⁵ Based on the requirements outlined in Agenda 21, the UNEP Legal Experts Group has an ongoing programme area concerned with promoting public awareness, education, information and public participation, including the development of national rules, laws and standards.⁶

The period since the first edition of this book has seen numerous significant developments that consolidate and, in some respects, develop existing techniques. The 1998 Aarhus Convention establishes a Europe-wide regime for access to environmental information, public participation, and access to justice in environmental cases. A 2003 Protocol to the Aarhus Convention requires the establishment of national pollutant release and transfer registers to improve public access to information about pollution from industrial sites and other sources.⁷ Arbitral tribunals, including those in the trade field, have demonstrated an increasing acceptance of the importance of transparency and the public availability of information, with a trend to allow proceedings concerning international environmental matters to be open to the public.⁸ The 1998 Chemicals Convention is largely concerned with issues related to the access to, and exchange of, information; and other agreements, such as the 1997 Kyoto Protocol, the 2000 Biosafety Protocol, the 2001 POPs Convention and the 2010 Nagoya Protocol, include prominent commitments to ensuring appropriate flows of information. These treaties also assign an important role to scientific information and expertise in mechanisms established for their implementation.

International agreements and practice have developed a variety of techniques for ensuring that states, other members of the international community and, increasingly, the general public are provided with information on the risks associated with, and the environmental consequences of,

³ Principles 9, 10, 18 and 19. ⁴ Agenda 21, para. 40.1. ⁵ Agenda 21, para. 35.2.

⁶ See Programme for the Development and Periodic Review of Environmental Law for the First Decade of the Twenty-First Century (2008), Part G (public participation and access to information), UNEP/Env.Law/MTV4/IG/2/2 (22 October 2008) (Montevideo Programme IV).

⁷ 2003 Pollutant Release and Transfer Registers Protocol, in force 8 October 2009.

⁸ As occurred in the UNCLOS Annex VII arbitral tribunal proceedings in the *Southern Bluefin Tuna* cases (1999) (see Chapter 9, pp. 420–1, above) and the OSPAR *MOX* case (2003) (see p. 651, below). In the WTO dispute settlement system, a number of cases involving health/quarantine issues have also featured publicly accessible hearings: see L. Ehring, 'Public Access to Dispute Settlement Hearings in the World Trade Organization', 11(4) *Journal of International Economic Law* 1021 (2008).

certain activities. A detailed consideration of relevant international instruments identifies at least ten separate but related techniques concerning the provision and dissemination of information. Environmental impact assessment, addressed in the previous chapter, is one such important technique for acquiring environmental information. Other techniques relate to:

- (1) information exchange;
- (2) reporting and the provision of information;
- (3) consultation;
- (4) notification of emergency situations;
- (5) monitoring and surveillance (including the operation of expert advisory bodies);
- (6) public right of access to environmental information and participation in environmental decision-making;
- (7) public education and awareness;
- (8) eco-labelling; and
- (9) eco-auditing and accounting.

The examples cited in the following sections are intended to be illustrative rather than exhaustive, given the large number of instruments and examples of state practice relating to informational matters. The overlap between the obligations relating to information exchange, consultation, reporting and notification is often evident, and it is important to bear in mind that these different areas are interrelated, as reflected in many recent international environmental agreements. In addition to the multilateral instruments that are cited, there are many others that are not mentioned as well as literally hundreds, if not thousands, of bilateral instruments that also contribute significantly to the law in this area. In this regard, the International Law Commission's 2001 draft Articles on the Prevention of Transboundary Harm that adopt, as a central element, requirements relating to information, may be seen as 'codifying' general practice, in particular as reflected in treaty requirements.⁹

INFORMATION EXCHANGE

The general obligation to exchange information is found, in one form or another, in virtually every international environmental agreement. 'Information exchange' can be characterised as a general obligation of one state to provide general information on one or more matters on an *ad hoc* basis to another state, especially in relation to scientific and technical information. 'Information exchange' may be distinguished from specific obligations to provide regular or periodic information on specified matters to a specified body (reporting) or to provide detailed information on the occurrence of a particular event or set of events, such as an accident or emergency or proposed activity (notification). 'Information exchange' of a general nature was endorsed by Principle 20 of the Stockholm Declaration and by Principle 9 of the Rio Declaration, which supported exchanges of scientific and technical knowledge as a means of strengthening

⁹ ILC report, A/56/10 (2001), Draft Articles on Prevention of Transboundary Harm from Hazardous Activities. See particularly: Arts. 8–10, dealing with notification and consultation where risk assessment indicates a risk of causing significant transboundary harm; Art. 10, on states' obligations to seek solutions based on an equitable balance of interests; and Arts. 11–13, that provide for procedures in the event that there is no notification, require the exchange of timely information while the activity is being carried out, and call for information to be provided to the public likely to be affected by that activity, and to ascertain their views.

'endogenous capacity-building for sustainable development by improving scientific understanding'. Other relevant texts include: Principle 7 of the 1978 UNEP draft Principles of Conduct, which called for the exchange of information based upon the principle of co-operation and the spirit of good-neighbourliness; Article 5 of the 1986 Legal Principles of the WCED Legal Experts Group, which supported the exchange of information between states upon request, and in a timely manner, concerning transboundary natural resources; Article 12 of the ILC's draft Articles on Prevention of Transboundary Harm; and the WSSD Plan of Implementation.¹⁰

Under environmental treaties, the obligation to exchange information can be a requirement between states, between states and international organisations, and between international organisations and non-state actors. By way of an early example, the 1949 Inter-American Tropical Tuna Commission was granted the power to request information from 'official agencies of the contracting parties, and any international, public, or private institution or organisation, or any private individual'.¹¹ Many other international organisations are required to facilitate and encourage the exchange of information, a function which dates back to some of the earliest international environmental agreements. The 1933 London Fauna and Flora Convention required information exchange on the adoption of certain implementation measures, including import and export.¹² The 1940 Western Hemisphere Convention requires parties to 'make available to all the American Republics equally through publication or otherwise the scientific knowledge resulting from . . . co-operative effort'.¹³

Information exchange can be required in respect of general and undefined matters or in relation to specific matters. Examples of the former include the obligation to exchange information on: general scientific, research and technical matters; helping 'align or co-ordinate' national policies;¹⁴ research results and plans for science programmes;¹⁵ environmental effects;¹⁶ appropriate technologies;¹⁷ relevant national records;¹⁸ national legislation;¹⁹ implementation;²⁰ relevant national authorities and bodies; and even the availability of professors and teachers.²¹ Examples of more specific requirements include information exchange on: aspects of pest and plant diseases;²² catches and migratory movements of fish;²³ fishery resources,²⁴ including tuna fisheries;²⁵ pollution from land-based sources;²⁶ transboundary

¹⁰ Supporting information exchange or scientific co-operation on, *inter alia*, clean technologies (para. 15(c)), freshwater and marine resource management (paras. 27, 32(a) and 34(a)), climate change (para. 36(d)) and biotechnology and biosafety (para. 42(q)).

¹¹ 1949 Inter-American Tropical Tuna Convention, Art. I(16). See now the 2003 Antigua Convention, in force 27 August 2010, replacing the 1949 Convention, Art. VIII(2).

¹² Arts. 8(6), 9 and 12(1). For the current provisions now found in the 2003 Revised African Nature Convention, see Arts. XXVI(5)(e) and XXIX.

¹³ Art. VI. ¹⁴ 1982 Benelux Conservation Convention, Art. 2(2).

¹⁵ 1959 Antarctic Treaty, Art. III(1)(a) and (c); 1973 Polar Bears Agreement, Art. VII.

¹⁶ 2003 Revised African Nature Convention, Art. XXII(2)(b).

¹⁷ 1988 NO_x Protocol, Art. 3(1); under Agenda 21, UNEP was directed to facilitate 'information exchange on environmentally sound technologies, including legal aspects': para. 38.22(j).

¹⁸ 1952 North Pacific Fisheries Convention, Art. VIII.

¹⁹ 2003 Revised African Nature Convention, Art. XXIX(2)(a).

²⁰ 1958 Danube Convention, Art. 12(3); 1983 Cartagena Oil Spills Protocol, Art. 4; 2009 Black Sea LBSA Protocol, Art. 11(1)(e).

²¹ 1959 Plant Protection Agreement, Art. IV(3). ²² 1951 European Plant Protection Convention, Art. V(a)(5).

²³ 1958 Danube Convention, Art. 8. ²⁴ 2009 South Pacific Fishery Resources Convention, Art. 23.

²⁵ 1966 Atlantic Tuna Convention, Art. IV(2)(d).

²⁶ 1983 Quito LBS Protocol, Art. IX(d); 2009 Black Sea LBSA Protocol, Arts. 4(2)(e), 11(2), 13 and 19(1)(e); 2010 Nairobi LBSA Protocol, Arts. 10(1), 12(2), 14(1)(a), 16 and 17(f)(iii).

air pollution;²⁷ the conservation of species of wild flora and fauna;²⁸ archaeological excavations and discoveries;²⁹ cultural heritage;³⁰ environmental modification techniques for peaceful purposes;³¹ the protection of nuclear material;³² certain environmentally harmful activities;³³ forest management, research and development;³⁴ international trade in tropical timber;³⁵ the marine environment;³⁶ the protection and management of regional seas;³⁷ integrated coastal zone management;³⁸ the recycling of ships;³⁹ and the conservation and sustainable use of biological diversity.⁴⁰

Several conventions establish more detailed rules on the type of information to be exchanged. The 1982 UNCLOS requires the exchange of scientific information and other data relevant to the conservation of fish stocks, on marine scientific research, and on marine pollution.⁴¹ Article 8 of the 1979 LRTAP Convention requires the exchange of 'available information', through an executive body and bilaterally on emissions data at periods of time to be agreed upon of: certain air pollutants; major changes in national policies and general industrial development; control technologies for reducing air pollution; the projected cost of the emissions control; meteorological, and physico-chemical data relating to processes and effects; and national, sub-regional and regional policies. Article 4 of the 1985 Vienna Convention requires the exchange of 'scientific, technical, socio-economic, commercial and legal information', as further elaborated in Annex II to that Convention, as well as information on alternative technologies. The 1987 Montreal Protocol calls for information exchange on best technologies, possible alternatives to controlled substances and products, and costs and benefits of relevant control strategies.⁴²

A widespread concern about the limited effectiveness of the traditional language on information exchange resulted in the adoption, in some conventions, of more focused language. The 1992 Climate Change Convention, for example, calls on parties to promote and co-operate in 'the full, open and prompt exchange of relevant scientific, technological, technical, socio-economic and legal information related to the climate system and climate change, and to the economic and social consequences of various response strategies'.⁴³ A number of conventions have established more formal institutional arrangements and procedures for information exchange. Examples include the establishment of a documentation service,⁴⁴ an information

²⁷ 2006 Central Asia Framework Convention, Art. 8(3)(b).

²⁸ 1979 Berne Convention, Art. 3(3); 2007 Gorilla Conservation Agreement, Art. III(2)(o).

²⁹ 1969 European Archaeological Heritage Convention, Arts. 7 and 8.

³⁰ 2005 European Cultural Heritage Framework Convention, Arts. 15(b) and 16(b).

³¹ 1977 ENMOD Convention, Art. III(2).

³² 1980 Convention on the Physical Protection of Nuclear Material, Art. 5; Art. 6 provides for the protection of confidentiality of material so exchanged. See also 2003 Russian MNEP Framework Agreement, Art. 4(1).

³³ 1974 Nordic Environmental Protection Convention, Art. 5.

³⁴ 1992 Statement of Forest Principles, Principle 12(c); see also 2005 Central African Forest Ecosystems Treaty, Art. 1.

³⁵ 2006 International Tropical Timber Agreement, Arts. 1(h) and (o) and 28(5).

³⁶ 2003 Caspian Sea Framework Convention, Art. 5(c).

³⁷ 2010 Nairobi Convention, Art. 15(1) and 27(2).

³⁸ 2008 Integrated Coastal Zone Management Protocol, Art. 27.

³⁹ 2009 Ship Recycling Convention, Art. 7.

⁴⁰ 1992 Biodiversity Convention, Art. 17(1). Art. 17(2) provides that information exchange shall include 'specialised knowledge [and] indigenous and traditional knowledge' and 'shall also, where feasible, include repatriation of information'.

⁴¹ Arts. 61, 143, 200 and 244. ⁴² Art. 9(1).

⁴³ Art. 4(1)(h). ⁴⁴ 1951 European Plant Protection Convention, Art. VII.

service,⁴⁵ a permanent committee of information,⁴⁶ and clearing-houses to facilitate the exchange of scientific, technical, legal and other information on particular topics.⁴⁷ International organisations may also play a role in ensuring information exchange. They may be required to prepare an annual report,⁴⁸ or to keep parties 'abreast of . . . theoretical and practical work',⁴⁹ or to convene international information exchange conferences.⁵⁰ Notwithstanding a greater willingness of states and the private sector to seek to improve flows of information, it is unclear how effective these general obligations to exchange information have been.⁵¹

The apparently limited effectiveness of many earlier obligations was often due to the reluctance of states to share information which might have commercial value, and the obligation, usually raised by developed countries, to ensure respect for intellectual property rights. Under the Biodiversity Convention, this issue was addressed explicitly for the first time, although the language finally agreed raised more questions and uncertainties than it resolved.⁵² In 2010, the parties to the Biodiversity Convention concluded a new Protocol designed to facilitate access to genetic resources and associated traditional knowledge for the purposes of research and biotechnological applications, while also strengthening arrangements for sharing of the benefits of such activities with the country of origin.⁵³ Increasingly, agreements have also included express provisions on confidential information. The 2000 Biosafety Protocol, for example, requires information to be submitted to the clearing-house mechanism established under the Convention '[w]ithout prejudice to the protection of confidential information'.⁵⁴ Similarly, under the 1998 Chemicals Convention, the exchange of information is on condition that parties 'shall protect any confidential information as mutually agreed'.⁵⁵ While protections for confidential information may facilitate greater information exchange in the future, confidentiality restrictions, if broadly construed, can also limit the scope of required information disclosure to the detriment of other states and the general public.

REPORTING AND PROVISION OF INFORMATION⁵⁶

The obligation to report or to notify certain information on a regular or periodic basis, outside the context of an emergency situation or the occurrence of a particular event or activity, is a regular feature of international environmental agreements. At least four types of reporting or information provision requirements are used in international environmental agreements. First,

⁴⁵ 1963 South-West Asia Locust Agreement, Art. II(1). ⁴⁶ 1954 African Phyto-Sanitary Convention, Art. 9.

⁴⁷ 2000 Biosafety Protocol, Art. 20 (Biosafety Clearing-House); 2010 Nagoya Protocol on Access to Genetic Resources, Art. 14 (Access and Benefit-Sharing Clearing-House).

⁴⁸ 1954 African Phyto-Sanitary Convention, Art. 3(b); 1990 EBRD Agreement, Art. 35.

⁴⁹ 1959 Latin American Forest Research Agreement, Art. III(1)(c) and (d).

⁵⁰ 1959 Plant Protection Agreement, Art. VIII.

⁵¹ See A. Gupta, 'Transparency to What End? Governing by Disclosure Through the Biosafety Clearing House', 28(1) *Environment and Planning C: Government and Policy* 128 (2010).

⁵² Chapter 10, pp. 457–60, above.

⁵³ 2010 Nagoya Protocol on Access to Genetic Resources, 29 October 2010, not in force. See Chapter 16, pp. 684–5, below.

⁵⁴ Art. 20(3). The Cartagena Protocol also establishes modalities for dealing with confidential information under the notification provisions of the Protocol: Art. 21.

⁵⁵ Art. 14(1) and (2). The category of confidential information is limited, however, to further the purposes of the Convention: Art. 14(3) and (4). See also 2001 POPs Convention, Art. 9(5).

⁵⁶ On the relationship between reporting and compliance, see Chapter 5, pp. 143–4, above.

the provision of a periodic report provided by an international organisation or subsidiary treaty body to the parties to a treaty; second, a requirement that parties provide a periodic report to the institutional organs or to other parties to that treaty; third, a party (or state) may be required to provide information to another party (or state) on the occurrence of a certain event or activity; and, fourth, a treaty may allow for a report to be presented by a non-governmental actor to a party to a treaty, which may be subject to onward transmission by the latter.

Reports by organisations

Some environmental treaties require one or more of the institutional organs to provide regular reports to its parties. This technique is used to inform all the parties of relevant measures being taken under the Convention, or to provide information on the activities of the organisation itself to ensure accountability. An early example was the 1949 Inter-American Tropical Tuna Convention, which required the Inter-American Tropical Tuna Commission to ‘submit annually to the government of each high contracting party a report on its investigations and findings, with appropriate recommendations’.⁵⁷ Other conventions provide that reports should be submitted every two years,⁵⁸ or for the transmission of ‘periodic reports’ or publications,⁵⁹ or at such time as the institutional organ ‘may consider necessary’.⁶⁰ The 1990 Articles of Agreement establishing the European Bank for Reconstruction and Development require the Bank to provide an annual report on the environmental impact of its activities.⁶¹ Occasionally, the institutional organ might be required to report to another international organisation;⁶² this approach is reflected in the work of the UN Commission on Sustainable Development, which receives reports from relevant organs, organisations, programmes and institutions of the UN system dealing with various issues of environment and development to enable it to monitor the progress of the implementation of Agenda 21 and the WSSD Plan of Implementation by analysing and evaluating reports submitted by other international organisations.⁶³

Reports under treaties or other agreements

The second type of reporting obligation arises where a party to a treaty is required to provide a periodic report to the institutions established under the treaty or to other parties to that agreement. These reporting requirements, which increasingly require detailed and regular information, are used to provide information on the implementation of treaty commitments. The 1933 London Convention was among the first, requiring parties to ‘notify the Government of the United Kingdom ... of the establishment of any national parks or strict natural reserves ... and of the legislation, including the methods of administration and control, adopted in connexion therewith’, as well as measures adopted in regard to the grant of certain

⁵⁷ Art. I(2). The Convention has now been replaced by the 2003 Antigua Convention, which came into force on 27 August 2010.

⁵⁸ 1966 Atlantic Tunas Convention, Art. III(9); 2006 ITTA, Art. 28.

⁵⁹ 1962 African Migratory Locust Convention, Art. 7(2)(a); 1973 CITES, Art. XII(2)(f) and (g).

⁶⁰ 1971 ILO Benzene Convention, Art. 20. ⁶¹ Art. 35(2).

⁶² 1979 Berne Convention, Art. 15 (from the Convention’s Standing Committee to the Committee of Ministers of the Council of Europe).

⁶³ UNGA Res. 47/191 (1992).

licences.⁶⁴ Similar reporting requirements exist for authorisations of licences for the killing and taking of living resources;⁶⁵ the construction of certain installations or projects and works⁶⁶ or proposed expeditions;⁶⁷ statistical information concerning catches;⁶⁸ or the establishment of quotas.⁶⁹

Often, parties must provide progress reports on implementation measures and their effectiveness, and other relevant national legislation,⁷⁰ including the adoption of import restrictions.⁷¹ Parties may also be required to report infractions of conventions by persons within their jurisdiction⁷² and the penalties they impose,⁷³ as well as information on persons liable to contribute to a pollution fund established in accordance with the terms of a convention.⁷⁴ Increasingly, parties are being called upon to provide inventories or statistics of their natural and cultural resources,⁷⁵ or of the production of certain chemicals or products,⁷⁶ and to report on their emissions and discharges and the consequences thereof.⁷⁷

In fulfilment of the functions of the UN Commission on Sustainable Development, governments are required to provide information on activities they undertake to implement Agenda 21, the problems they face, and other environment and development issues they find relevant.⁷⁸ Parties to a treaty can also be required to report on particular situations or events, including: the existence of certain hazardous facilities;⁷⁹ the transit or theft of hazardous substances;⁸⁰ the actions they take in relation to certain pollution incidents;⁸¹ substances

⁶⁴ Arts. 5(1) and 8(6). The government of the United Kingdom was required to communicate information so received to other governments: Arts. 5(3) and 8(6).

⁶⁵ 1946 International Whaling Convention, Art. VIII(1); 1972 Antarctic Seals Convention, Art. 4.

⁶⁶ 1958 Convention on the Continental Shelf, Art. 5(5); 1980 Convention Creating the Niger Basin Authority, Art. 4(4).

⁶⁷ 1972 Antarctic Seals Convention, Annex, para. 6(d).

⁶⁸ 1946 International Whaling Convention, Art. VII.

⁶⁹ 1969 Southeast Atlantic Convention, Art. VIII(3)(a) and (b).

⁷⁰ 1956 Plant Protection Agreement, Art. II(1)(b); 1989 Basel Convention, Art. 3(1); 1992 Biodiversity Convention, Art. 26; 1992 Climate Change Convention, Art. 12; 1992 OSPAR Convention, Art. 22.

⁷¹ 1951 International Plant Protection Convention (New Revised Text), Art. VII(2)(b) and (c); 1989 Basel Convention, Arts. 4 and 13.

⁷² 1946 International Whaling Convention, Art. IX(4); 1973 MARPOL, Art. 4(3).

⁷³ 1954 Oil Pollution Convention, Art. VI(3).

⁷⁴ 1971 Oil Fund Convention, Art. 15(2), as amended by the 1992 Protocol.

⁷⁵ 1972 World Heritage Convention, Art. 11(1) (property forming part of the cultural and natural heritage); 1979 Bonn Convention, Art. VI(2) (migratory species of wild animals); 2006 ITTA, Art. 27(3) (tropical timber and sustainable forest management); 1992 Biodiversity Convention, Art. 7(a) and (b); 1992 Climate Change Convention, Art. 4(1)(a).

⁷⁶ 2001 POPs Convention, Art. 15.

⁷⁷ 1976 Rhine Chemical Pollution Convention, Art. 2(1) and (2) and Annex III (of certain substances into the Rhine); 1976 Rhine Chloride Pollution Convention, Art. 3(5) (increase in chloride-ion concentrations); 1985 SO₂ Protocol, Art. 4 (sulphur dioxide emissions); 1988 NO_x Protocol, Art. 8(1)(a) (emissions of nitrogen oxides); 1987 Montreal Protocol, as amended in 1990, Art. 7 (production, imports and exports of certain ozone-depleting substances); 1992 Climate Change Convention, Art. 12(1); 1998 POPs Protocol to the 1979 LRTAP Convention, Art. 9(1)(b) (emissions of persistent organic pollutants); 1998 Heavy Metals Protocol, Art. 7(1)(b) (emissions of heavy metals); 1999 Acidification, Eutrophication, Ground Ozone Protocol, Art. 7(1)(b).

⁷⁸ UNGA Res. 47/191 (1992), para. 3(b). After 2002, the Commission no longer required annual, comprehensive reporting by states. Instead, states must now provide national reports that reflect upon progress made regarding the themes under consideration by the Commission in each two-year cycle.

⁷⁹ 1963 Brussels Supplementary Convention, Art. 13(a)–(e) (nuclear power plants); 1997 Supplementary Compensation Convention, Art. VIII (list of nuclear installations).

⁸⁰ 1980 Convention on the Physical Protection of Nuclear Material, Art. 4(5); 2005 Amendment to the Convention, para. 7.

⁸¹ 1969 Bonn Agreement, Art. 8.

dumped into the marine environment;⁸² the existence of evidence suggesting that unlawful dumping may be taking place;⁸³ incidents or accidents involving oil or other harmful substances;⁸⁴ the discharge of land-based pollutants;⁸⁵ and accidents involving hazardous waste.⁸⁶ Other examples of specific reporting requirements arise upon the occurrence, outbreak and spread of pests and diseases,⁸⁷ on inadequate oil disposal facilities at ports,⁸⁸ and on conservation measures concerning fish stocks.⁸⁹

The 1992 Climate Change Convention and its 1997 Kyoto Protocol illustrate the extent to which reporting requirements have become increasingly detailed and onerous. Reporting, which is described as ‘the communication of information related to implementation’,⁹⁰ is a central technique for ensuring implementation of the 1992 Climate Change Convention. All parties must publish and make available to the Conference of the Parties ‘national inventories of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol’, and communicate to the Conference of the Parties ‘information related to implementation’.⁹¹ These reports must include a general description of steps taken or envisaged to implement the Convention and ‘any other information the party considers relevant to the achievement of the objective of the Convention and suitable for inclusion in its communication including, if feasible, material relevant for calculations of global emission trends’.⁹² The EU and parties which are members of the OECD are additionally required to include in their communications a detailed description of the policies and measures that they have adopted to implement their specific commitments under the Convention and a specific estimate of the effects that the policies and measures they have taken will have on anthropogenic emissions by its sources and removals by its sinks of greenhouses gases.⁹³ All developed country parties must provide information on the provision by them of ‘new and additional financial resources’, other assistance and the transfer of and access to environmentally sound technologies and know-how.⁹⁴ The Kyoto Protocol adds the additional burden on Annex I countries of reporting the progress made towards reaching greenhouse gas reduction commitments.⁹⁵ Expert review teams established pursuant to Article 8 of the Protocol undertake regular reviews of the inventories and national communications submitted by Annex I parties.⁹⁶

Differentiated timeframes were adopted for providing national communications under the Convention. Developed country parties were required to provide their initial communication within six months of the Convention’s entry into force; all other parties were required to provide their initial communication within three years of entry into force, except for least-developed countries that may make their initial communication available at their discretion.⁹⁷

⁸² 1972 Oslo Convention, Art. 11, replaced by the 1992 OSPAR Convention; 1972 London Convention, Art. VI(4), and 1996 Protocol, Art. 9(4).

⁸³ 1972 Oslo Convention, Art. 15(2), replaced by the 1992 OSPAR Convention; 1972 London Convention, Art. VII(3).

⁸⁴ 1973 MARPOL, Art. 8, and Protocol I; 1981 Abidjan Emergency Protocol, Art. 7 and Annex.

⁸⁵ 1974 Baltic Convention, Art. 6(4). ⁸⁶ 1989 Basel Convention, Art. 13(1).

⁸⁷ 1951 International Plant Protection Convention (New Revised Text), Art. VIII(1)(a).

⁸⁸ 1954 Oil Pollution Convention, Art. VIII(3). ⁸⁹ 1952 North Pacific Fisheries Convention, Art. III(1)(c)(iii).

⁹⁰ 1992 Climate Change Convention, Art. 12. ⁹¹ Arts. 4(1)(a) and (j).

⁹² Art. 12(1)(b) and (c). See also 1997 Kyoto Protocol, Art. 7, and Decision 13/CMP.1 on Modalities for Accounting of Assigned Amounts under Article 7, Paragraph 4 of the Protocol.

⁹³ Art. 12(1) and (2). ⁹⁴ Arts. 12(3) and 4(3), (4) and (5). ⁹⁵ Arts. 3 and 7(1) and (4).

⁹⁶ See Decision 22/CMP.1 which contains Guidelines for Review under Article 8 of the Protocol. ⁹⁷ Art. 12(5).

Developed country parties were required to submit their fifth communications by the beginning of 2010. Other innovations of the 1992 Climate Change Convention include the possibility for two or more parties to make a ‘joint communication’ provided that such a communication includes information on: each individual party’s fulfilment of its obligations;⁹⁸ rules on confidentiality;⁹⁹ the provision to developing countries of financial resources ‘to meet the agreed full costs incurred . . . in complying with’ their reporting requirements;¹⁰⁰ and the establishment of a subsidiary body for implementation to consider information provided by parties in accordance with Article 12.¹⁰¹ The Convention and its Protocol thus reflect a more comprehensive effort to address reporting. Whatever arrangements emerge for the post-2012 period following expiry of the first commitment period under the Kyoto Protocol,¹⁰² it is likely that this reporting infrastructure will survive in some form given its important role in ensuring the reliability of emissions data, which underpins operation of the global carbon market.

Reports of events other than emergencies

The third situation requiring the provision of information or a report (closely connected to the obligation to consult) arises on the occurrence of an event other than an emergency situation. Examples include the construction of an installation or advance notice of activities that may entail significant environmental risk. In such circumstances, the state in which the activity is taking place may be required to provide information either directly to states that may be affected or to an appropriate intergovernmental organisation. The need for the provision of such information has been widely recognised by the international community since the mid-1970s. In 1972, UN General Assembly Resolution 2995 recognised that co-operation towards implementation of the 1972 Stockholm Declaration

will be effectively achieved if official and public knowledge is provided of the technical data relating to the work to be carried out by states within their national jurisdiction, with a view to avoiding significant harm that may occur in the environment of the adjacent area.

The 1974 OECD Recommendation on Principles Concerning Transfrontier Pollution similarly provided that:

[p]rior to the initiation in a country of works or undertakings which might create a significant risk of pollution, this country should provide early information to other countries which are or may be affected.¹⁰³

⁹⁸ Art. 12(8). ⁹⁹ Art. 12(9). ¹⁰⁰ Art. 4(3).

¹⁰¹ Art. 10(2). ¹⁰² See Chapter 7, pp. 293 *et seq.*, above.

¹⁰³ OECD C(74)224, 21 November 1974, Annex, para. 6. See also OECD Council Recommendation, Implementation of a Regime of Equal Right of Access and Non-Discrimination in Relation to Transfrontier Pollution, OECD C(77)28, 23 May 1977, Annex, para. 9(a); OECD Council Decision, Exchange of Information Concerning Accidents Capable of Causing Transfrontier Damage, C(88)84/FINAL, paras. 5, 6 and 7; OECD Council Recommendation, Chemical Accident Prevention, Preparedness and Response, C(2003)221.

Similar provisions exist in the 1978 UNEP draft Principles of Conduct,¹⁰⁴ the 1986 WCED Legal Experts Group Report¹⁰⁵ and Principle 19 of the Rio Declaration.¹⁰⁶ Several treaties require the provision of information on the construction of certain installations, including the siting of hazardous installations or the conduct of hazardous activities near border areas.¹⁰⁷ The 1980 Agreement Between Spain and Portugal on Co-operation in Matters Affecting the Safety of Nuclear Installations in the Vicinity of the Frontier provides in Article 2 that:

[t]he competent authorities of the constructor country shall notify the neighbouring country of applications for licences for the siting, construction or operation of nuclear installations in the vicinity of the frontier which are submitted to them.¹⁰⁸

Article 3 requires comments by the neighbouring country to be taken into account before the licence is issued.

The number and diversity of relevant treaty requirements regarding reporting in such situations raises the question of whether provision of prior information regarding certain hazardous activities is required by customary international law. The International Law Association's 1982 Montreal Rules¹⁰⁹ and the Institut de Droit International's 1987 Resolution on Transboundary Air Pollution¹¹⁰ suggest that customary law does and should require states planning activities which might entail a significant risk of transfrontier pollution to give early notice to a state likely to be affected and to enter into good faith consultations at the request of such a state. Principle 19 of the Rio Declaration appears to restate that obligation in unequivocal terms, and this is also confirmed by the 2001 ILC draft Articles on Prevention of Transboundary Harm.¹¹¹

In the *Pulp Mills* case, the ICJ was presented with an opportunity to consider these questions arising out of Uruguay's alleged failure to follow consultation procedures, laid down in the 1975 Statute of the River Uruguay, before authorising the construction of pulp mill facilities on the banks of the river. The ICJ upheld Argentina's complaint that Uruguay had failed to comply with the procedural obligations incumbent upon it under the Statute by failing to transmit to the Commission for the River Uruguay (CARU) information concerning its plan to construct the pulp mills. The Court emphasised that it was not sufficient that CARU had received information from other sources as 'the information on the plans for the mills which reached CARU via the companies concerned or from other non-governmental sources cannot substitute for the obligation to inform laid down in Article 7, first paragraph, of the 1975 Statute, which is borne by the party planning to construct the works referred to in that provision'.¹¹² The ICJ described

¹⁰⁴ Principle 6. ¹⁰⁵ Art. 16(1). ¹⁰⁶ See below.

¹⁰⁷ 1958 Convention on the Continental Shelf, Art. 5(5) (installations for the exploration and exploitation of the natural resources of the continental shelf); 1991 Espoo Convention, Art. 3; 1992 Industrial Accidents Convention, Art. 4; 1992 Watercourses Convention, Art. 14; 1997 Watercourse Convention, Art. 12.

¹⁰⁸ 31 March 1980, in force 13 July 1981, UN registration No. 20356. See also Belgium–France, Convention on Radiological Protection Relating to the Installations at the Ardennes Nuclear Power Station, 23 September 1966, 988 UNTS 288; Austria–Czechoslovakia, Agreement on Questions of Common Interest in Relation to Nuclear Facilities, 18 November 1982, in force 1 June 1984, reprinted in *Bundesgesetzblatt* No. 208/1984.

¹⁰⁹ Arts. 6 and 7. The Rapporteur, Professor Dietrich Rauschning, observed that 'recent state practice shows that information is not usually withheld': ILA, Report of the 59th Conference (1982), 545.

¹¹⁰ Art. 8(1). ¹¹¹ See p. 627, above. ¹¹² Para. 110.

the obligation to inform CARU as one allowing for ‘the initiation of co-operation between the Parties which is necessary in order to fulfil the obligation of prevention’, itself a customary law obligation.¹¹³

The Court also discussed the related obligation of notification, which arose under the 1975 Statute in circumstances where CARU decided that a planned operation might cause significant damage to the other party or where a decision on that question could not be reached.¹¹⁴ The Court opined:

the obligation to notify is intended to create the conditions for successful co-operation between the parties, enabling them to assess the plan's impact on the river on the basis of the fullest possible information and, if necessary to negotiate the adjustments needed to avoid the potential damage that it might cause.¹¹⁵

As Uruguay had failed to notify Argentina of the environmental impact assessments for the pulp mills through CARU, and indeed, only transmitted those assessments to Argentina following issue of initial environmental authorisations for the mills under its domestic law, the Court concluded Uruguay had failed to comply with its notification obligations under the 1975 Statute.¹¹⁶ Consequently, the Court held that, ‘as long as the procedural mechanism for co-operation between the parties to prevent significant damage to one of them is taking its course, the State initiating the planned activity is obliged not to authorize such work and, *a fortiori*, not to carry it out’.¹¹⁷ Notwithstanding this robust finding, and the Court’s recognition that the information and notification obligations under the 1975 Statute would be of ‘no point’ if the party initiating the planned activity were to authorise or implement it without waiting for the co-operation mechanism to be brought to a conclusion,¹¹⁸ the ICJ was not prepared to pursue this reasoning to its logical conclusion that Uruguay was thereby obligated not to construct the pulp mills.¹¹⁹ This result is disappointing as it undermines the integrity of procedural obligations of information provision in international environmental treaties by indicating to states that non-compliance will not prevent them carrying out activities with potential adverse impacts on shared resources.

Information to and from non-state organisations

A fourth type of reporting requirement, which may be considered to be in an emerging stage of development, relates to obligations allowing, or requiring, non-governmental actors to report certain information to states, possibly for onward transmission to other parties or to the agreement’s institutional organ, or to provide informational reports to organisations. The UN Commission on Sustainable Development is mandated to ‘receive and analyse relevant input from competent non-governmental organisations, including the scientific and private sector, in the context of the overall implementation of Agenda 21’.¹²⁰ Although this falls short of actually

¹¹³ Para. 102. On the customary law status of the obligation of prevention, see Chapter 6, pp. 200–3, above.

¹¹⁴ 1975 Statute, Art. 7(2). ¹¹⁵ Para. 113. See also para. 115. ¹¹⁶ Paras. 121–2.

¹¹⁷ Para. 144. ¹¹⁸ Para. 147. ¹¹⁹ Para. 157.

¹²⁰ UNGA Res. 47/191 (1992), para. 3(f). For a similar requirement, see 2006 ITTA, Art. 27(1).

entitling non-governmental actors to provide reports, it clearly envisages a role for them in providing inputs, which will, in all likelihood, resemble reports.¹²¹ The 2003 Antigua Convention (which replaces the 1949 Inter-American Tropical Tuna Convention) provides another, more recent, example: the Commission is required to promote transparency in the implementation of the Convention, *inter alia*, through, 'as appropriate, facilitating consultations with, and the effective participation of, non-governmental organizations, representatives of the fishing industry, particularly the fishing fleet, and other interested bodies and individuals'.¹²²

The general public may also be a source of information inputs as recognised by the 1998 Aarhus Convention. This Convention provides for the submission of reports from the public to decision-making bodies (at the national or EU level) when considering decisions on specific activities, or when considering executive regulations or other 'generally applicable legally binding normative instruments'.¹²³ A 2005 amendment to the Aarhus Convention dealing with decisions concerning the environmental release of genetically modified organisms (GMOs) also contains requirements for parties to enable the public to submit 'any comments, information, analyses or opinions' considered relevant to a proposed GMO release.¹²⁴

CONSULTATION

The international community has recognised the importance of information on activities and other circumstances that could affect the interests of states in relation to shared natural resources. In the *Pulp Mills* case, the ICJ considered that procedural obligations of information, notification and negotiation were particularly 'vital when a shared resource is at issue, as in the case of the River Uruguay, which can only be protected through close and continuous co-operation between the riparian States'.¹²⁵ Typically, such co-operation is provided for in international agreements by two related commitments: a requirement to provide information to potentially affected states on particular activities, and a requirement to engage in consultation. The latter presupposes the provision of certain information. Principle 19 of the Rio Declaration reflects what many states have recognised as required practice in terms that reflect an obligation of customary international law:

states shall provide prior and timely notification and relevant information to potentially affected states on activities that may have a significant adverse transboundary environmental effect and shall consult with those states at an early stage and in good faith.

The obligation of states to consult with each other in the context of the conduct of certain activities has also been recognised by international courts and tribunals,¹²⁶ and is reflected in many international environmental instruments,¹²⁷ as well as in Article 9 of the ILC's draft

¹²¹ On the informal provision of information by NGOs, see Chapter 3, pp. 86–7, above.

¹²² Art. XVI(1)(b).

¹²³ Arts. 6(7) and 8(c); cf. Art. 7 (information on plans, programmes or policies related to the environment).

¹²⁴ Decision II/1, 20 June 2005, not yet in force, ECE/MP.PP/2005/2/Add.2, Annex I bis, para. 6. ¹²⁵ Para. 81.

¹²⁶ *Lac Lanoux* arbitration, Chapter 8, pp. 307–8, above; *Fisheries Jurisdiction* cases, Chapter 9, pp. 402–3, above.

¹²⁷ See also 1978 UNEP draft Principles, Principle 7; 1986 WCED Legal Principles, Art. 17.

Articles on Prevention of Transboundary Harm. In 2001, the ITLOS prescribed provisional measures ordering Ireland and the United Kingdom to co-operate and, for that purpose, to 'enter into consultations forthwith' to exchange further information on the possible consequences for the Irish Sea arising out of the commissioning of the MOX plant, to monitor the risks or the effects of the operation of the MOX plant for the Irish Sea, and to devise measures to prevent pollution of the marine environment which might result from the operation of the MOX plant.¹²⁸ The order was premised on 'prudence and caution' and the duty to co-operate under Part XII of UNCLOS.¹²⁹

Environmental treaties have required consultation to take place between a number of different actors, including between two or more states; between a state and an international organisation; between a state and a non-governmental actor;¹³⁰ between two or more international organisations,¹³¹ and between an international organisation and a non-governmental actor.¹³² Many institutional arrangements established by environmental treaties, such as conferences or meetings of parties, serve as fora for consultations between parties.¹³³ Specialised institutional arrangements for environmental treaties have included a special Consultative Committee¹³⁴ and a Consultative Committee of Experts.¹³⁵

The obligation to consult arises in many circumstances. As a general matter, consultation has been required on the implementation of an agreement,¹³⁶ or on 'all problems of common interest' raised by the application of a particular convention.¹³⁷ Consultation can also be required as part of the process for the peaceful settlement of disputes,¹³⁸ including by removing doubts concerning the fulfilment by a party of its treaty obligations.¹³⁹

A second type of situation calling for consultation arises when the activities of one state are likely to affect the environment or the rights and interests of another state. Thus, a state may be obliged to enter into consultations when, for example, pollution caused by the activities of one party to an agreement is likely to affect adversely the interests of another party to that agreement;¹⁴⁰ or when there is a question of the 'permissibility of environmentally harmful activities which entail or may entail considerable nuisance' in another party;¹⁴¹ or where a party is 'actually affected by or exposed to' a significant risk of pollution.¹⁴² This was the type of situation at issue in the *Pulp Mills* case, discussed above. The ICJ observed that it was through co-operation that the states concerned could 'jointly manage the risks of damage to the environment that might be created by the plans initiated by one or other of them, so as to prevent the damage in question'.¹⁴³

¹²⁸ Order of 3 December 2001, para. 89(1); Chapter 6, p. 205, above. ¹²⁹ Paras. 82 and 84.

¹³⁰ In the *Case of the Saramaka People v. Suriname* (28 November 2007), the Inter-American Court of Human Rights found that the duty to consult affected tribal peoples was an element of the right to property in Art. 21 of the American Convention, paras. 129 and 133–4.

¹³¹ 1983 ITTA, Art. 14(1); see also 2006 ITTA, Art. 15.

¹³² 1982 UNCLOS, Arts. 165(2)(c) and 169(1); 1983 ITTA, Art. 14(1); see also 2006 ITTA, Art. 15.

¹³³ 1978 Northwest Atlantic Fisheries Convention, Art. VI(1)(a).

¹³⁴ 1985 South Pacific Nuclear Free Zone Treaty, Art. 10 and Annex 3.

¹³⁵ 1977 ENMOD Convention, Art. V(2). ¹³⁶ 1985 ASEAN Agreement, Art. 18(2)(e).

¹³⁷ 1963 Brussels Supplementary Convention, Art. 16(a); 1977 ENMOD Convention, Art. V(1) and (2).

¹³⁸ 1959 Antarctic Treaty, Art. VIII(2); 1988 CRAMRA, Art. 57(1); 1997 Watercourses Convention, Art. 17.

¹³⁹ 1971 Nuclear Weapons Treaty, Art. III(2).

¹⁴⁰ 1983 Quito LBS Protocol, Art. XII; 1980 Athens LBS Protocol, Art. 12(1).

¹⁴¹ 1974 Nordic Environmental Protection Convention, Art. 11; see also 1991 Espoo Convention, Art. 5; 1992 Industrial Accidents Convention, Art. 4.

¹⁴² 1979 LRTAP Convention, Art. 5. ¹⁴³ Para. 77.

A third category of situations requiring consultation arises over the use of shared natural resources. Thus, consultation can be required generally in respect of shared resource issues,¹⁴⁴ as well as in the following specific situations: to avoid infringement of the rights and interests of states where natural resource deposits (such as wetlands) lie across two or more jurisdictions;¹⁴⁵ where there are plans 'to initiate, or make a change in, activities which can reasonably be expected to have significant effects beyond the limits of national jurisdiction';¹⁴⁶ where a party 'intends to establish a protected area contiguous to the frontier or to the limits of the zone of national jurisdiction of another party';¹⁴⁷ where certain commercial activities may harm wildlife;¹⁴⁸ and for the dissemination of information on environmental impact assessments.¹⁴⁹

A fourth category of situations requiring consultation arises in times of emergency. Consultations may be required: to ensure that appropriate action is taken in emergency situations;¹⁵⁰ prior to the issue of a special permit to permit the marine dumping of hazardous wastes and other matters in emergencies;¹⁵¹ and to minimise the radiological consequences of a nuclear accident.¹⁵² Consultations are also required between a party and the most representative organisations of employers and workers to implement national policies on protection of the working environment and in applying the provisions of relevant conventions.¹⁵³

The obligation to consult in such situations is now widely recognised by customary international law, and the failure to engage in consultation may violate the principles of good faith and international co-operation under international law. This view is supported by the *Lac Lanoux* arbitration, was further elaborated upon by the ICJ in the *Fisheries Jurisdiction* cases,¹⁵⁴ and was reflected in the order of ITLOS in the MOX case and the judgment of the ICJ in *Pulp Mills*.

Prior informed consent

The obligation to consult is closely linked to the principle of 'prior informed consent' (PIC).¹⁵⁵ This principle has achieved widespread support in relation to transboundary movements of hazardous wastes and hazardous substances, and has been adopted in a range of instruments, including, *inter alia*, the 1985 FAO Pesticides Guidelines, the 1989 UNEP London Guidelines, the 1989 Basel Convention, the 1991 Bamako Convention, the 1996 Mediterranean Hazardous Wastes Protocol and the 2010 Nagoya Protocol to the Biodiversity Convention.¹⁵⁶ It is also to be found in non-binding instruments adopted by the OECD and the IAEA, as well as in Agenda 21.¹⁵⁷

¹⁴⁴ 2003 Revised African Nature Convention, Art. VII(3) (concerning 'underground water resources').

¹⁴⁵ 1971 Ramsar Convention, Art. 5; 1982 UNCLOS, Art. 142(2) (where consultation includes 'a system of prior informed consent').

¹⁴⁶ 1985 ASEAN Agreement, Arts. 19(2)(d) and (e) and 20(3)(b) and (c).

¹⁴⁷ 1982 Geneva SPA Protocol, Art. 6(1). ¹⁴⁸ 1972 Antarctic Seals Convention, Art. 6.

¹⁴⁹ 1985 Nairobi Convention, Art. 13(3). ¹⁵⁰ 1981 Abidjan Emergency Protocol, Art. 10(1)(b).

¹⁵¹ 1996 London Protocol, Art. 8(2); 1986 Noumea Dumping Protocol, Art. 10(1).

¹⁵² 1986 IAEA Notification Convention, Art. 6; 1986 IAEA Assistance Convention, Arts. 2 and 11.

¹⁵³ 1960 ILO Radiation Convention, Art. 1; 1981 ILO Occupational Safety Convention, Art. 4(1).

¹⁵⁴ Chapter 5, pp. 159–60. ¹⁵⁵ For the definition, see Chapter 11, p. 527, above.

¹⁵⁶ See Chapter 12, above, for a discussion of transboundary movements of waste. The Nagoya Protocol is discussed in Chapter 10, pp. 464–6, above, and Chapter 16, pp. 684–5, below.

¹⁵⁷ Chapter 11, pp. 527 *et seq.*, above.

A second-generation formulation of the PIC procedures, developing the voluntary schemes of the FAO Pesticides Guidelines and the UNEP London Guidelines, is reflected in the 1998 Chemicals Convention, discussed in Chapter 11. The 1998 Convention establishes a bifurcated PIC procedure. For chemicals listed under Annex III to the Convention, import countries must submit their approval, approval subject to limitations, or rejection of future imports, to the Secretariat.¹⁵⁸ For banned or severely restricted chemicals not listed under the Convention, export countries are required to ensure that proper notification is given to the import country before export of the chemicals.¹⁵⁹

The 2000 Biosafety Protocol does not refer to a PIC procedure, as such, but rather an advance informed agreement (AIA) procedure prior to the 'first intentional transboundary movement of living modified organisms for intentional introduction into the environment of the Party of import'.¹⁶⁰ The party of export is required to notify or ensure notification of an intent to export certain living modified organisms, which the party of import must acknowledge.¹⁶¹ The import may only proceed if the party of import has given written consent or, after not less than ninety days, where no such written consent is given.¹⁶² The Protocol also provides for a 'simplified procedure' where an importing party may specify in advance cases in which intentional movements may take place simultaneously with notification and imports to it which are to be exempted from the advance informed agreement procedure.¹⁶³

The 2010 Nagoya Protocol to the Biodiversity Convention, dealing with access to genetic resources and sharing of the resulting benefits, incorporates the language of 'prior informed consent'.¹⁶⁴ This consent must be obtained by applicants seeking access to genetic resources within the territory of a party.¹⁶⁵ Parties are also to ensure that, in the case of genetic resources held by indigenous or local communities, or where access is sought to traditional knowledge concerning such resources, they have in place measures that aim to ensure the prior informed consent or approval and involvement of such communities in the process of negotiating mutually agreed terms of access and benefit sharing.¹⁶⁶

NOTIFICATION OF EMERGENCY SITUATIONS

The early availability of information on the escape of hazardous substances following an accident or event likely to have a significant effect on the environment of another state or in areas beyond national jurisdiction is necessary to allow other states and members of the international community to take the necessary actions to minimise damage. Principle 18 of the Rio Declaration recognised this need, and declared that:

states shall immediately notify other states of any natural disasters or other emergencies that are likely to produce sudden harmful effects on the environment of those states. Every effort shall be made by the international community to help states so afflicted.¹⁶⁷

¹⁵⁸ Art. 10 (providing for final or interim responses). ¹⁵⁹ Art. 12.

¹⁶⁰ Art. 7; Chapter 10, pp. 467–8, above. ¹⁶¹ Arts. 8 and 9 and Annex I.

¹⁶² Art. 11(2). The party of import must communicate its written consent to the Biosafety Clearing-House: Art. 10(3).

¹⁶³ Art. 13. ¹⁶⁴ Chapter 16, pp. 684–5, below. ¹⁶⁵ Art. 6(1). ¹⁶⁶ Arts. 6(2) and 7.

¹⁶⁷ See also Art. 17 of the ILC Draft Articles on Prevention of Transboundary Harm (2001).

As a result of developments following the Chernobyl accident (see below) and other emergency incidents, Principle 18 reflects broadly held views and crystallises developments in treaties, non-binding instruments and the practice of states. The ILA's 1982 Montreal Rules¹⁶⁸ and the Institut de Droit International's 1987 Resolution¹⁶⁹ referred to the existence of such a rule, although evidence of state practice is hardly overwhelming. In the *Nicaragua* case, the ICJ affirmed that a substantive legal rule can be derived from principles of humanitarian law:¹⁷⁰

if a state lays mines in any waters whatever in which the vessels of another state have rights of access or passage, and fails to give any warning or notification whatsoever, in disregard of the security of peaceful shipping, it commits a breach of the principles of humanitarian law.¹⁷¹

Although the facts leading up to this *dictum* differ from those relating to industrial or other accidents affecting the environment, particularly on the question of the intent of the acting state, underlying considerations of humanity could apply also to the danger to the security of citizens in foreign countries arising from a transboundary release of hazardous substances.

Numerous early treaties required the provision of information, following the outbreak of 'especially dangerous' pests and diseases,¹⁷² or where there was 'evidence of serious danger to the environment and particularly to the water table',¹⁷³ or in respect of oil pollution emergencies.¹⁷⁴ More general requirements are set out in the 1982 UNCLOS, which requires a state immediately to notify other states it deems likely to be affected, and the competent international organisations, where the 'marine environment is in imminent danger of being damaged or has been damaged by pollution'.¹⁷⁵ Specific obligations have been adopted for accidents occurring during the transboundary movement of hazardous or other wastes;¹⁷⁶ under the 1992 Industrial Accidents Convention on transboundary accidents;¹⁷⁷ and in treaties governing general environmental matters.¹⁷⁸

The 1992 Biodiversity Convention provides that each party shall, as far as possible and as appropriate,

in the case of imminent or grave danger or damage, originating under its jurisdiction or control, to biological diversity within the area under jurisdiction of other states or areas beyond the limits of national jurisdiction, notify immediately the potentially affected states of such danger or damage, as well as initiate action to prevent or minimise such danger or damage.¹⁷⁹

¹⁶⁸ Art. 7. ¹⁶⁹ Art. 9(1)(a).

¹⁷⁰ *Case Concerning Military and Paramilitary Activities In and Against Nicaragua (Nicaragua v. United States)* (Merits), (1986) ICJ Reports 1.

¹⁷¹ *Ibid.*, 112. The principles of humanity were expressed by the ICJ in the earlier *Corfu Channel* case, Chapter 5, p. 173, above.

¹⁷² 1959 Plant Protection Agreement, Art. II. ¹⁷³ 1976 Rhine Chloride Convention, Art. 4(1).

¹⁷⁴ See 1969 Bonn Agreement, Art. 5(1); see also the UNEP Regional Seas Conventions, Chapter 9, pp. 352–60, above.

¹⁷⁵ Art. 198. ¹⁷⁶ 1989 Basel Convention, Art. 13(1).

¹⁷⁷ See Chapter 11, pp. 519–21, above. ¹⁷⁸ 1985 ASEAN Agreement, Art. 20(3)(d). ¹⁷⁹ Art. 14(1)(d).

Similarly, the 2000 Biosafety Protocol requires that parties shall:

take appropriate measures to notify affected or potentially affected States, the Biosafety Clearing-House and, where appropriate, relevant international organizations, when it knows of an occurrence under its jurisdiction resulting in a release that leads, or may lead, to an unintentional transboundary movement of a living modified organism that is likely to have significant adverse effects on the conservation and sustainable use of biological diversity, taking also into account risks to human health in such States.¹⁸⁰

Non-binding guidelines and recommendations also require the provision of such information. In 1974, the OECD recommended that '[c]ountries should promptly warn other potentially affected countries of any situation which may cause any sudden increase in the level of pollution in areas outside the country of origin of pollution'.¹⁸¹ In 1988, the OECD Council adopted a Decision on the exchange of information in relation to accidents capable of causing transfrontier damage.¹⁸² Principle 9 of the 1978 UNEP draft Principles of Conduct makes similar provision.¹⁸³

Nuclear accidents

Other treaties establish the duty to warn potentially affected states in case of nuclear and other emergencies,¹⁸⁴ and several states have bilateral agreements requiring emergency information to be provided in the event of a nuclear accident. Thus, the 1983 Exchange of Notes Between the United Kingdom and France Concerning Exchanges of Information in the Event of Emergencies Occurring in One of the Two States Which Could Have Radiological Consequences for the Other State provides:

Each state party shall inform the other without delay of any emergency which occurs in its state as a result of civil activities which may have radiological consequences liable to affect the other state.¹⁸⁵

The information is to be communicated through reciprocal warning centres capable of receiving and transmitting information twenty-four hours a day.

¹⁸⁰ Art. 17(1). ¹⁸¹ OECD Recommendation C(74)224, 21 November 1974, para. 9.

¹⁸² See OECD Council Decision, Exchange of Information Concerning Accidents Capable of Causing Transfrontier Damage, Preamble and Appendices I-III, 8 July 1988, 28 ILM 247 (1989).

¹⁸³ See also 1986 WCED Legal Principles, Art. 19.

¹⁸⁴ 1972 Agreement Between the United States and Canada Concerning the Great Lakes' Water Quality, 508 UNTS 26; 1983 Agreement Between the Federal Republic of Germany and the German Democratic Republic on Principles Covering Damage at the Border, *Bulletin Presse und Informationsamt der Bundesregierung*, No. 115 (September 1983).

¹⁸⁵ For other such agreements, see P. Sands, *Chernobyl: Law and Communication* (1988), 199.

The question of whether a state must warn all other states that are, or might be, affected by a nuclear accident causing transboundary radioactive harm was described as 'the main legal issue involved in the Chernobyl nuclear disaster'.¹⁸⁶ In 1985, the IAEA drew up Guidelines on Reportable Events, Integrated Planning and Information Exchange in a Transboundary Release of Radioactive Materials (IAEA Information Guidelines).¹⁸⁷ These recommended that, in the event of a potential or actual release of radioactive material, which might cross or has crossed an international boundary and which could be of radiological safety significance, there should be a timely exchange of adequate information between the competent national authorities of the state in which the plant is situated and the authorities in neighbouring states.¹⁸⁸ The information should relate to the site, the facility, the emergency response plan, and in the event of an off-site emergency, should include the nature and time of the accident, the characteristics of the release and meteorological and hydrological conditions.¹⁸⁹

Following the Chernobyl accident, many states maintained that the obligation to provide emergency information was a rule of international law. Much of the criticism of the former Soviet Union's failure to provide information immediately after the accident was couched in legal terms.¹⁹⁰ The IAEA Director General noted the failure of the Soviet system to inform its own citizens and neighbouring countries of a release that would affect them, the late implementation of the emergency measures and the apparent failure to warn immediately.¹⁹¹ During the negotiation of the 1986 Notification Convention, support for the view that there was a legal obligation to provide information under customary law was expressed on several occasions,¹⁹² and many writers reached the same conclusion.¹⁹³ Humanitarian and human rights principles also justify the provision of information to people who might be affected by a nuclear or other accident.¹⁹⁴

¹⁸⁶ Provisional Report of the Rapporteur, Twentieth Commission of the IDI, 'Air Pollution Across National Frontiers', 62 *Annuaire de l'Institut de Droit International* 178 (1987-I).

¹⁸⁷ IAEA Doc. INFCIRC/321. ¹⁸⁸ Paras. 3.1 and 4.1.1. ¹⁸⁹ Paras. 4.1.2 and 4.3.2.

¹⁹⁰ See e.g. the US Secretary of State: 'When an incident has cross-border implications, there is an obligation under international law to inform others and do it promptly', in Final Report of the Rapporteur (do Nascimento e Silva), Twentieth Commission of the IDI, 'Air Pollution Across National Frontiers', 62 *Annuaire de l'Institut de Droit International* 259 (1987-I). See also the Statement of the Group of Seven: 'Each country . . . is responsible for prompt provision of detailed and complete information on nuclear emergencies and accidents, in particular those with potential transboundary consequences. Each of our countries accepts that responsibility.' Group of Seven, Statement on the Implications of the Chernobyl Nuclear Accident, 5 May 1986, 25 ILM 1005 (1986).

¹⁹¹ Speech by the Director General of the IAEA to the International Press Institute, Vienna, 13 May 1986. Transcript provided by the IAEA.

¹⁹² See Statement of the US representative at the Final Plenary Meeting of Governmental Experts on 15 August 1986, IAEA Doc. GC (SPL.I) 2, Annex V, 4; the Chinese representative, *ibid.*, 5; and the Japanese representative, *ibid.*, 21. The Chairman of the Meeting of Governmental Experts at the Final Plenary Session on 15 August 1986 stated, in his summing up, that 'the [Notification and Assistance] conventions are not intended to derogate from any international obligations on early notification and assistance that may already exist under international law': IAEA Doc. GC (SPL.I), 2, Annex VI, 2.

¹⁹³ Professor Dietrich Rauschnig, as quoted in Final Report, Twentieth Commission of the IDI, note 190 above, 259; see also W. Rudolf, *ibid.*, 280.

¹⁹⁴ European Court of Human Rights cases: *Tatar v. Romania*, App. No. 67021/01, 27 January 2009; *Budayeva v. Russia*, App. Nos. 15339/02, 21166/02, 20058/02, 11673/02 and 15343/02, Judgment of 20 March 2008; *Öçkan and Others v. Turkey*, App. No. 46771/99, Judgment of 28 March 2006; and *Lemke v. Turkey*, App. No. 17381/02, Judgment of 5 June 2007. On human rights and the environment, see further Chapter 18, below.

1986 Notification Convention

The failure of the former Soviet Union to provide immediate information led to the 1986 Notification Convention, which was opened for signature within six months of the Chernobyl accident. It incorporates many of the recommendations set out in the IAEA Information Guidelines, and applies in the event of any ‘accident involving facilities or activities of a state party or of persons or legal entities under its jurisdiction or control’.¹⁹⁵ In the event of such an accident, states parties must notify, directly or through the IAEA, those states which are or may be physically affected with details of the accident, its nature, the time of its occurrence and its exact location.¹⁹⁶ They must also promptly provide the states and the IAEA with relevant available information so as to minimise the radiological consequences in those states. This includes the cause and foreseeable development of the accident, the general characteristics of the radioactive release (including its nature, form, quantity, composition and effective weight), current and future meteorological and hydrological conditions, planned or taken protective measures, and the predicted behaviour over time of the release.¹⁹⁷ Such information is to be supplemented at ‘appropriate intervals’ by the provision of relevant information including the foreseeable or actual termination of the emergency situation.¹⁹⁸ States should also respond ‘promptly’ to a request for further information or consultations sought by an affected state.¹⁹⁹ For example, Japan has made notifications under the Convention in relation to the radiation leak at the Fukushima nuclear power station.²⁰⁰

The Convention was the first multilateral agreement to provide detailed rules on the provision of information in emergency situations, involving a role for the national authorities of states parties²⁰¹ and the IAEA, as well as a binding dispute settlement mechanism. The Convention is not, however, exhaustive or immune from criticism. First, the Convention does not appear to apply to accidents caused by nuclear weapons and their testing.²⁰² Second, certain of the recommendations contained in the IAEA Information Guidelines were not included. In particular, the recommendation in Chapter III that ‘intervention levels for the

¹⁹⁵ Vienna, 26 September 1986, in force 27 October 1986, 25 ILM 1370 (1986), Art. 1(1). The Convention only applies to certain ‘facilities and activities’: Art. 1(2). In October 1987, an accident occurred in Brazil when abandoned radiotherapy equipment was broken open by a scrap metal dealer. This led to widespread radioactive contamination and the death of a number of people: see *Financial Times*, 8 October 1987. It is unclear whether the Convention applies to such ‘activities’: Art. 1(2)(e) (the loss of the Russian submarine, the *Kursk*, in August 2000, would appear to be covered by the Convention, which applies to ‘any nuclear reactor wherever located’: Art. 1(2)(a)).

¹⁹⁶ Art. 2. ¹⁹⁷ Art. 5(1). ¹⁹⁸ Art. 5(2). ¹⁹⁹ Art. 6.

²⁰⁰ See ‘Japan Defends Radioactive Water Disposal, Vows to Fully Inform World’, *Kyodo News*, Tokyo, 5 April 2011, at <http://english.kyodonews.jp/news/2011/04/83353.html>. The IAEA was contacted instead of individual neighbouring states as Japan ‘[did] not think that the case affects other countries across the border at this stage’: Japanese Ministry of Foreign Affairs, ‘Press Conference by Minister for Foreign Affairs Takeaki Matsumoto’, 5 April 2011, available at www.mofa.go.jp/announce/fm_press/2011/4/0405_01.html. A question has been raised as to whether Japan made sufficient notification under the Convention in relation to the release of contaminated water into the Pacific on 4 April 2011. See e.g. Press Conferences by Chief Cabinet Secretary Yukio Edano on 4, 5 and 6 April 2011, available at www.kantei.go.jp/foreign/incident/index.html; Japanese Ministry of Foreign Affairs, ‘The Release of Low-Level Contaminated Water into the Ocean from the Fukushima Daiichi Nuclear Power Plant’, 9 April 2011, available at www.mofa.go.jp/j_info/visit/incidents/llc_water.html; see also S. Kass, ‘International Law Lessons from the Fukushima Nuclear Disaster’, 245(82) *New York Law Journal* 3 (2011).

²⁰¹ Art. 7.

²⁰² The five nuclear weapons states have declared that they will voluntarily apply the Convention to all nuclear accidents, irrespective of origin: see Statements of Voluntary Application, reprinted in P. Sands (ed.), *Chernobyl: Law and Communication* (1988), 244–5. On 6 October 1986, shortly after the Notification Convention was opened for signature, the Soviet Union provided information about an accident onboard one of its nuclear-powered submarines: see *Independent*, 7 October 1987, 1.

introduction of protective measures such as sheltering and evacuation be set in advance by competent national authorities²⁰³ was not included in the Convention. In addition, the whole of Chapter V, on 'Integrated Planning', was excluded. Third, the reference in Article 1(1) to an accident that 'could be of radiological safety significance for another state' leaves it to the discretion of the state in whose territory or under whose jurisdiction or control the accident has occurred to determine what is or is not of radiological safety significance and what are the chances that another state will be affected. Given the dangers of radioactivity, it would have been preferable that all radioactive releases be notified to the IAEA. Failing that, there should be an agreed level that triggers the obligation to provide information. Fourth, several states entered reservations restricting the application of the Convention. Most relate to the non-applicability of the dispute settlement provision, but some relate to the substantive provisions: the Chinese government stated that the Convention does apply to cases caused by 'gross negligence'.²⁰⁴ Finally, the Convention does not require states giving or receiving information to make it available to members of the public. The IAEA Information Guidelines noted that:

Dissemination of information to the public is an important responsibility of the appropriate authorities in each state. Particular arrangements ensuring the necessary co-ordination across international borders should be established.²⁰⁵

The importance of public access to information is recognised in other treaties, including at least one adopted prior to the 1986 Notification Convention, namely, the 1974 Nordic Convention.²⁰⁶ A final point concerning the provision of information in emergency situations relates to the responsibility of the mass media in the reporting of matters such as the Chernobyl accident. The reporting in the Western press was criticised by the former Soviet Union as being untruthful and creating mistrust, and the Soviet Union subsequently proposed that the spreading of untrue information could entail liability for states.²⁰⁷ The IAEA Secretariat noted the possibility of including in a new instrument 'an obligation to refrain from actions which might exacerbate the consequences of a nuclear accident'.²⁰⁸

MONITORING AND OTHER INFORMATION GATHERING

International environmental agreements often require information relevant to specific or general environmental obligations to be collected. The term most frequently used to describe that requirement is 'monitoring', although other terms that have been used include 'systematic

²⁰³ IAEA Doc. INFCIRC/321, para. 3.5.

²⁰⁴ Declaration of 26 September 1986 of the Government of the People's Republic of China to the 1986 IAEA Notification Convention.

²⁰⁵ IAEA Doc. INFCIRC/321, para. 4.5.1. ²⁰⁶ Art. 7.

²⁰⁷ Soviet Union, Proposed Programme for Establishing an International Regime for the Safe Development of Nuclear Power, 25 September 1986, IAEA Doc. GC (SPL.1)/8.

²⁰⁸ IAEA Doc. GOV/INF/509, paras. 18–19. See the 1953 Convention on the International Right of Correction, 435 UNTS 191; this Convention provides states directly affected by a report which they consider false or distorted, and which is disseminated by an information agency, with the possibility of securing commensurate publicity for its correction.

observation', 'surveillance', 'inspection' and 'verification',²⁰⁹ depending upon the precise activity that is envisaged. Monitoring can be carried out for a variety of purposes, of which the most usual include conducting research or identifying patterns and trends that reflect the state of the environment. Monitoring to ensure compliance with the objectives of an international treaty remains controversial because of the suggestion that a third party may become involved in the compliance process. Developing countries, particularly China, have also objected to attempts to impose international monitoring and transparency requirements as an infringement of their sovereignty.²¹⁰ It is principally for such reasons that, with limited exceptions, inspection or verification by foreign states or international organisations remains relatively undeveloped in international environmental agreements.

Monitoring has been defined as the 'repeated measurement' of three separate, but related, factors:

- (a) the quality of the . . . environment and each of its compartments . . .
- (b) activities or natural and anthropogenic inputs which may affect the quality of the . . . environment; [and]
- (c) the effects of such activities.²¹¹

Under international arrangements, monitoring and other forms of information gathering are carried out by states individually or jointly, or by international organisations. Monitoring by international organisations for the purposes of research and the identification of trends and patterns is now a reasonably well-developed practice, with several international arrangements currently in operation. UNEP runs Earthwatch, a programme developed by the Stockholm Conference to provide a continuous assessment of the global environment. The mission statement for Earthwatch, agreed in 1994, states that its role is 'to coordinate, harmonize and integrate observing, assessment and reporting activities across the UN system in order to provide environmental and appropriate socio-economic information for national and international decision-making on sustainable development and for early warning of emerging problems requiring international action. This should include timely information on the pressures on, status of and trends in key global resources, variables and processes in both natural and human systems and on the response to problems in these areas.'²¹² The principal component of Earthwatch is the Global Environment Monitoring System (GEMS), which is responsible for monitoring. UNEP also runs the International Environmental Information System (INFO-TERRA), a global network of national information centres for the exchange of environmental

²⁰⁹ Verification procedures, including inspection, relate more to the issue of compliance than general information gathering. They are specifically permitted for the purposes of compliance in relation to nuclear weapons treaties: e.g. the 1971 Nuclear Weapons Treaty. 'Verification' must not interfere with the activities of other parties and must be conducted 'with due regard for rights recognised under international law, including the freedoms of the high seas and the rights of coastal States': Art. III(6).

²¹⁰ This issue was raised by the Chinese delegation during the negotiations for the Copenhagen Accord at the fifteenth Conference of the Parties to the Climate Change Convention and is reflected in the text of the Copenhagen Accord, which notes that 'Non-Annex I parties will be subject to their domestic measurement, reporting and verification . . . with provisions for international consultations and analysis under clearly defined guidelines that will ensure that national sovereignty is respected': para. 5. See also E. Burlison, 'Climate Change Consensus: Emerging International Law', 34 *William and Mary Environmental Law and Policy Review* 543, 563 (2010).

²¹¹ 1992 OSPAR Convention, Annex IV, Art. 1.

²¹² <http://earthwatch.unep.ch>; see L. K. Caldwell, *International Environmental Policy* (1990, 2nd edn), 75–6.

information. The World Weather Watch system of the WMO, which compiles global data on basic meteorological parameters related to weather, has three main components: the Global Observing System; the Global Telecommunications System; and the Global Data Processing and Forecasting System.²¹³

Treaty arrangements

Treaty arrangements require parties to carry out a range of monitoring and related activities. Treaty obligations are particularly developed for the Antarctic region, the marine environment, and freshwater resources. The 1959 Antarctic Treaty allows inspections by consultative parties of all areas of Antarctica, and rights of aerial observation.²¹⁴ The 1972 London Convention and its 1996 Protocol require each party to designate an appropriate authority to monitor the condition of the seas for the purposes of the Convention and Protocol.²¹⁵ Other treaties require the monitoring of concentrations of controlled substances²¹⁶ and levels of marine pollution,²¹⁷ and similar provision exists under UNEP Regional Seas Conventions.²¹⁸ Under the 1982 UNCLOS, states should 'observe, measure, evaluate and analyse' the risks or effects of pollution of the marine environment, and 'keep under surveillance the effects of any activities which they permit or in which they engage in order to determine whether these activities are likely to pollute the marine environment'.²¹⁹ The 1992 OSPAR Convention requires the parties to undertake and publish joint assessments of the quality status of the marine environment, including an evaluation of the effectiveness of the measures taken and planned and an identification of priorities for action.²²⁰ Under the 1992 Watercourses Convention, riparian parties must implement joint programmes for monitoring the conditions of transboundary waters, as well as the assessment of the conditions and the effectiveness of implementing measures.²²¹

In relation to air quality, the 1979 LRTAP Convention established a 'co-operative programme for the monitoring and evaluation of the long-range transmission of air pollutants in Europe' (known as EMEP);²²² the 1985 Vienna Convention requires parties to undertake 'systematic observation' of the state of the ozone layer and other relevant parameters;²²³ and the 1992 Climate Change Convention commits all parties to develop and periodically update national inventories of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol and promote and co-operate in systematic observation.²²⁴ Participants in the

²¹³ WMO, *World Weather Watch: Twenty-Second Status Report on Implementation* (2005).

²¹⁴ Art. VII. See also the provisions on observation and inspection established by the 1980 CCAMLR, Art. XXIV; 1988 CRAMRA, Arts. 11 and 12; and 1991 Antarctic Environment Protocol, Art. 14.

²¹⁵ 1972 London Convention, Art. VI(1)(d); 1996 Protocol to the London Convention, Art. 9(3).

²¹⁶ 1976 Rhine Chemical Pollution Convention, Art. 10(1).

²¹⁷ 1974 Paris LBS Convention, Art. 11.

²¹⁸ 1976 Barcelona Convention, Art. 10; 1978 Kuwait Convention, Art. X; 2002 Antigua Convention, Arts. 9, 11(1) and 12(2); 2010 Nairobi Convention, Art. 15.

²¹⁹ Art. 204(1) and (2). ²²⁰ Art. 6 and Annex IV. ²²¹ Art. 11.

²²² Art. 9 and 1984 EMEP Protocol. ²²³ Arts. 2(2)(a) and 3(2) and Annex I.

²²⁴ Arts. 4(1)(a) and (g) and 5. This obligation is augmented by Art. 5 of the 1997 Kyoto Protocol that requires Annex I parties to establish national systems for the estimation of greenhouse gas emissions by sources and removals by sinks. It also states that, where agreed methodologies (namely, the revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories, see Decision 2/CP.3) are not used to estimate emissions and removals, appropriate 'adjustments' should be applied.

1997 Kyoto Protocol's Clean Development Mechanism are required to monitor levels of greenhouse gas emissions related to clean development projects in order to calculate the proper emission reductions credits to be issued to the party.²²⁵

Monitoring or its equivalent is also required for biological diversity. Examples include the 1946 International Whaling Convention, which provides for inspection of whaling ships and the measuring of whales,²²⁶ and the 1992 Biodiversity Convention, which requires all parties to identify and monitor the components of biological diversity and the processes and categories of activities which are likely to have significant adverse impacts on the conservation and sustainable use of biodiversity.²²⁷ Other environmental treaties provide for monitoring or inspection of record books in relation to the carriage of oil,²²⁸ certification for the carriage by sea of hazardous substances,²²⁹ imported species and goods;²³⁰ the health of workers;²³¹ the air quality of the working environment;²³² the possible discharge by a ship of any harmful substances;²³³ and fisheries conservation levels.²³⁴ In certain circumstances, UNCLOS allows the physical inspection of foreign vessels,²³⁵ and the 1974 Nordic Environment Convention is probably unique in allowing for the supervisory authorities of one state to carry out on-site inspections to determine damage caused by their environmentally harmful activities in another state.²³⁶ Under the 1995 Fish Stocks Agreement, states must ensure that fishing vessels flying their flag provide the information necessary to fulfil their obligations under the Agreement, and shall 'collect and exchange scientific, technical and statistical data with respect to fisheries for straddling fish stocks and highly migratory fish stocks', as well as ensuring that data are collected in sufficient detail to facilitate effective stock assessment and are provided in a timely manner to fulfil the requirements of sub-regional or regional fisheries management organisations or arrangements.²³⁷

Few international organisations are granted independent monitoring or other information gathering powers by treaty. Some organisations may conduct factual investigations,²³⁸ while other treaties merely permit the relevant international organisation to be entrusted with surveillance functions²³⁹ or to prepare a document summarising the result of national monitoring efforts.²⁴⁰ Regulatory committees established under the 1988 CRAMRA (not in force) would be required to monitor the compliance of operators with Management Schemes.²⁴¹

A rare exception is the 1997 Kyoto Protocol, which pursuant to implementing rules adopted by the Protocol's Meeting of the Parties, established two separate independent monitoring bodies each with powers of oversight of the parties to the Protocol. The first body is an expert review team which conducts reviews of each party's calculations of its assigned amount of

²²⁵ Decision 3/CMP.1. ²²⁶ Schedule, Section V. ²²⁷ Art. 7(b) and (c).

²²⁸ 1954 Oil Pollution Convention, Art. IX(5). ²²⁹ MARPOL 73/78, Art. 5(2).

²³⁰ 1956 Plant Protection Agreement for the South East Asia and Pacific Region, Arts. III and V; 1970 Benelux Birds Convention, Art. 10.

²³¹ 1960 ILO Ionising Radiations Convention, Art. 11; 1981 ILO Occupational Safety Convention, Art. 9.

²³² 1986 ILO Asbestos Convention, Art. 20.

²³³ MARPOL 73/78, Art. 6(2). ²³⁴ 1978 Northwest Atlantic Fisheries Convention, Art. XI(4).

²³⁵ Art. 226(1). On inspection, see also the 1995 Fish Stocks Agreement, Arts. 21 and 22. ²³⁶ Art. 10.

²³⁷ Art. 14 and Annex 1 (standard requirements for collection and sharing of data).

²³⁸ See e.g. the Inter-American Tropical Tuna Commission, which is required to investigate the abundance, biology, biometry and ecology of certain tunas: 1949 Inter-American Tropical Tuna Convention, Art. II(1). See now 2003 Antigua Convention, Art. VII(1)(a).

²³⁹ See e.g. 1962 African Migratory Locust Convention, Art. 4(4).

²⁴⁰ 1976 Rhine Chemical Pollution Convention, Art. 10(3). ²⁴¹ Art. 52.

greenhouse gas emissions and the party's various emissions credits, and also undertakes in-country reviews and desk reviews of each party's national registry.²⁴² Areas of non-compliance identified in expert review team reports may lead to activation of the Protocol's non-compliance mechanism. The second body, the Enforcement Branch of the Compliance Committee, forms part of the non-compliance mechanism and is responsible for determining whether each Annex I country is in compliance with its quantified emissions limitation or reduction commitment, as well as with certain methodological and eligibility requirements set up under the Protocol.²⁴³

While monitoring by international organisations or other expert bodies for the purposes of treaty compliance remains uncommon, an increasing number of treaties establish an ongoing role for scientific or technical advisory bodies in monitoring more general implementation issues, including the adequacy of existing regulations in light of current scientific knowledge.²⁴⁴ Early examples were the Animals and Plants Committees established under the 1973 CITES, which provide scientific and technical guidance to the Conference of the Parties, undertake periodic reviews of species to ensure they are appropriately categorised in CITES Appendices, and advise when listed species are subject to unsustainable trade and recommend remedial action.²⁴⁵ Other examples include the Assessment Panels established under the 1987 Montreal Protocol,²⁴⁶ and the respective scientific subsidiary bodies set up under the 1992 Convention on Biological Diversity and the 1992 Climate Change Convention.²⁴⁷

ACCESS TO ENVIRONMENTAL INFORMATION AND PUBLIC PARTICIPATION

The duty to provide – and the right to obtain – access to information on the environment, whether to the public at large or to specific categories of persons (such as workers), is a relatively recent, but now firmly entrenched, development in international law.²⁴⁸ The right is closely connected to participation rights in environmental impact assessment procedures and decision-making processes and with the development of procedural rights in human rights law,²⁴⁹ and

²⁴² Decision 22/CMP.1. ²⁴³ Decision 24/CP.7 Annex, Part V.4.

²⁴⁴ See generally S. Andresen and J. B. Skjaereth, 'Science and Technology', in D. Bodansky, J. Brunnée and E. Hey (eds.), *The Oxford Handbook of International Environmental Law* (2007), Chapter 9.

²⁴⁵ Conf. 11.1 (Rev. CoP14), Annex 2.

²⁴⁶ Technology and Economic Assessment Panel (TEAP), Scientific Assessment Panel (SAP) and Environmental Effects Assessment Panel (EEAP).

²⁴⁷ Subsidiary Body for Scientific, Technical and Technological Advice (SBSTTA); Subsidiary Body for Scientific and Technological Advice (SBSTA).

²⁴⁸ D. Partan, 'The "Duty to Inform" in International Environmental Law', 6 *Boston University International Law Journal* 43 (1988); M. Pallemerts (ed.), *The Right to Environmental Information* (1991); H. Smets, 'The Right of Information on the Risks Created by Hazardous Installations at the National and International Levels', in F. Francioni and T. Scovazzi (eds.), *International Responsibility for Environmental Harm* (1991); M. Pallemerts (ed.), *The Aarhus Convention at Ten: Interactions and Tensions Between Conventional International Law and EU Environmental Law* (2011).

²⁴⁹ On access to information and participation rights in human rights law, see *Guerra v. Italy* (1998) 26 EHRR 357; *Tâtar v. Romania*, App. No. 67021/01, 27 January 2009 (European Court of Human Rights); *Brândușe v. Romania* App. No. 6586/03, 7 April 2009 (European Court of Human Rights); *Miguel Ignacio Fredes Gonzales and Andrea Tuczek Fries v. Chile* (Admissibility Decision), Report No. 14/09 19 March 2009 (IACtHR). See further Chapter 18 below; and S. Weber, 'Environmental Information and the European Convention on Human Rights', 12 *Human Rights Law Journal* 177 (1991).

goes further than obligations to ensure public awareness, education or publicity (discussed in the following section). Access to environmental information and public participation were recognised as important components of sustainable development in Principle 10 of the Rio Declaration, which provides that:

Environmental issues are best handled with the participation of all concerned citizens, at the relevant level. At the national level, each individual shall have appropriate access to information concerning the environment that is held by public authorities, including information on hazardous materials and activities in their communities, and the opportunity to participate in decision-making processes.²⁵⁰

The Rio Declaration is silent as to what information will be considered ‘appropriate’, although some guidance may be found in Agenda 21, which provides that ‘individuals, groups and organisations should have access to information relevant to environment and development held by national authorities, including information on products and activities that have or are likely to have a significant impact on the environment, and information on environmental protection measures’.²⁵¹

Some early treaties sought to ensure that information on hazardous substances was made available to workers. The 1985 ILO Occupational Health Services Convention does not create a right of access in so many words, but provides that ‘all workers shall be informed of health hazards involved in their work’.²⁵² The 1986 Asbestos Convention goes further by providing, without apparent qualification, that workers, their representatives and inspection services ‘shall have access’ to records of the monitoring of the working environment and of the exposure of workers to asbestos.²⁵³ The 1992 OSPAR Convention, and the Council of Europe’s 1993 Civil Liability Convention were the first instruments to elaborate in detail the modalities for giving effect to the right of persons to access to information on the environment. The right is also recognised, in relation to activities which may affect the public, in Article 12 of the ILC’s draft Articles on Prevention of Transboundary Harm. More recently, the right was extended – both geographically and substantively – by the 1998 Aarhus Convention, as well as its subsequent amendment and 2003 Protocol on Pollutant Release and Transfer Registers. International organisations, such as the World Bank, have also responded to calls for greater transparency and openness, promulgating policies such as the Bank’s Policy on Access to Information.²⁵⁴

In each instrument, the existence and exercise of a right to access information is subject to certain limitations, reflecting a reluctance on the part of states to allow unlimited access to environmental information. This is evident in the two treaties adopted shortly after the Chernobyl accident: the 1986 IAEA Notification Convention, which failed to provide citizens

²⁵⁰ See also WSSD Plan of Implementation, para. 24(b); and OECD Council Decision/Recommendation, Provision of Information to Public and Public Participation in Decision-Making Processes Related to Prevention of, and Response to, Accidents Involving Hazardous Substances, 8 July 1988, OECD C(88)85, 28 ILM 277 (1989); 1998 Recommendation on Environmental Information, C(98)67; and 2010 Recommendation on Information and Communication Technologies and the Environment, C(2010)61.

²⁵¹ Agenda 21, para. 23.2. ²⁵² Art. 13. ²⁵³ Art. 20.

²⁵⁴ World Bank, Access to Information Policy, 1 July 2010, www.wds.worldbank.org/external/default/WDSContentServer/IB/2010/06/03/000112742_20100603084843/Rendered/PDF/548730Access011y0Statement01Final1.pdf.

with any right of access to environmental information, and the 1986 IAEA Assistance Convention, which provided that an assisting party must make every effort to co-ordinate with the requesting state before releasing information to the public on the assistance provided in connection with a nuclear accident.²⁵⁵ Other treaties, such as the 1992 Industrial Accidents Convention, create a positive obligation on parties to provide information to the public rather than creating a citizen's right of access to information.²⁵⁶ The 1992 Climate Change Convention does not create a public right of access to information, although it requires information communicated by the parties to be made 'publicly available' at the time it is submitted to the Conference of the Parties once it has been made available to bodies involved in communication and review of information.²⁵⁷ The dissemination of this information is subject to limitations on grounds of confidentiality in accordance with criteria established by the Conference of the Parties.²⁵⁸ Confidentiality provisions are also a feature of more recent instruments, such as the 2003 Protocol to the Aarhus Convention on Pollutant Release and Transfer Registers.²⁵⁹

1992 OSPAR Convention

The 1992 OSPAR Convention was the first international treaty to provide specific rules on the right of access to environmental information. Its inspiration in this regard was the 1990 EC Directive on Freedom of Access to Environmental Information, since replaced by a 2003 Directive on the same topic.²⁶⁰ Article 9 of the 1992 Convention requires the competent authorities of the parties to make available to any legal or natural person

any available information in written, visual, aural or data-base form on the state of the maritime area, on activities or measures adversely affecting or likely to affect it and on activities or measures introduced in accordance with the Convention.²⁶¹

The information must be provided in response to any reasonable request, without the person seeking the information having to prove an interest, without unreasonable charges, and as soon as possible and at the latest within two months.²⁶² However, certain limitations apply: requests for information may be refused 'in accordance with their national legal systems and applicable international regulations' where the information affects, *inter alia*, the confidentiality of proceedings of public authorities, international relations and national defence, public security,

²⁵⁵ Art. 6(2).

²⁵⁶ Art. 9 and Annex VIII; see also 1991 Espoo Convention, Art. 3(8). See also 2003 Antigua Convention, Art. XVI(1)(a).

²⁵⁷ Art. 12(9) and (10). See also Code of Practice for the Treatment of Confidential Information in the Technical Review of Greenhouse Gas Inventories from Parties Included in Annex I to the Convention, FCCC/CP/2003/6/Add.1.

²⁵⁸ Art. 12(9).

²⁵⁹ Art. 12 (allowing parties to authorise their competent authorities to keep information held on a pollutant register confidential for various reasons including in cases where disclosure would adversely affect national security or intellectual property rights).

²⁶⁰ Directive 2003/4/EC, in force 14 February 2003. For discussion of the 1990 EC Directive and its contribution to subsequent international law in this area, see the second edition of this text, at pp. 807–13.

²⁶¹ Art. 9(2). ²⁶² Art. 9(1).

matters which are *sub judice* or under enquiry, commercial and industrial confidentiality (including intellectual property), and the confidentiality of personal data or files.²⁶³

In June 2001, Ireland instituted arbitration proceedings (under Article 32 of the OSPAR Convention) against the United Kingdom seeking access to information which had been redacted from two independent reports related to the authorisation of the MOX nuclear plant at Sellafield. The two reports had been commissioned by the UK government to assess the ‘economic justification’ of the plant, as required by EURATOM law, but the government only put into the public domain versions that omitted large amounts of information relating to the operation and costs of the plant. Ireland requested access to the information under Article 9 of the OSPAR Convention. The United Kingdom refused to provide the information, on the grounds that it did not constitute information within the meaning of Article 9(1), or, alternatively, that, if it was such information, the United Kingdom was entitled to rely on the ‘commercial confidentiality’ exception to refuse disclosure. Further, in the course of its pleadings, the United Kingdom argued that Ireland was not entitled to rely on Article 9 of the Convention, which only required parties to put in place domestic arrangements to ensure access to information but did not entitle another party to bring an international claim premised on a right of access to information.

The arbitral tribunal gave its award in July 2002.²⁶⁴ The tribunal unanimously rejected the UK’s arguments that the tribunal lacked jurisdiction and that Ireland’s claims were inadmissible, and by a two-to-one majority (Mustill and Griffiths) rejected the UK’s submission that the implementation of Article 9(1) was assigned exclusively to the competent authorities in the UK and not to a tribunal established under UNCLOS. But by a two-to-one majority (Reisman and Mustill) the tribunal found that Ireland’s claim did not fall within Article 9(2), on the ground that Ireland had not demonstrated that the categories of redacted information ‘insofar as they may be taken to be activities or measures with respect to the commissioning and operation of a MOX Plant at Sellafield, are “information . . . on the state of the maritime area” or, even if they were, are likely adversely to affect the maritime area’.²⁶⁵ The dissenting opinion of Griffiths objected to the majority’s approach on the grounds that it failed to address ‘the admitted environmental harm to the marine environment of the Irish Sea, as well as the fact that Article 9(2) only speaks of the likelihood of adverse effects’; the burden of proof lay with the UK, in accordance with the precautionary principle; the majority conclusion appeared to be unfounded since no evidence was presented in support of its finding; and the available material militated in favour of the conclusion that the probability of adverse effect might be demonstrated.²⁶⁶ The majority’s textual and ‘acontextual’ approach suggests that environmental considerations – including international legal developments which have occurred since the 1980s – had not permeated the reasoning processes of established international lawyers, which were formed in a pre-environmental period.

1993 Lugano Civil Liability Convention

Chapter III of the 1993 Civil Liability Convention, entitled ‘Access to Information’, includes provisions entitling persons to have access to environmental information held by public

²⁶³ Art. 9(3). The reasons for a refusal must be given: Art. 9(4).

²⁶⁴ Dispute Concerning Access to Information under Article 9 of the OSPAR Convention, Permanent Court of Arbitration, 2 July 2003 (Michael Reisman, Gavan Griffith QC and Lord Mustill).

²⁶⁵ Award, para. 179. ²⁶⁶ Dissenting Opinion, para. 92.

authorities without having to prove an interest, subject to certain exceptions including those pertaining to confidentiality and public security.²⁶⁷ The Convention additionally entitles persons to have access to environmental information held by ‘bodies with public responsibilities for the environment and under the control of a public authority’ on the same terms and conditions as information held by public authorities, and access to specific information held by operators.²⁶⁸ This latter entitlement introduces a novel approach that goes beyond the 1992 OSPAR Convention. It would entitle a person who has suffered damage to request a court to order an operator to provide her with specific information necessary to establish the existence of a claim for compensation under the Convention, including the elements of information available to the operator and relating to the equipment and machinery used, the kind and concentration of the dangerous substances or waste, and the nature of genetically modified organisms or micro-organisms.²⁶⁹ Operators may request a court to order another operator to provide specific information which may be necessary to establish the extent of the first operator’s obligation or of her own right to compensation from the other operator, and may also rely on defences including the restrictions set out in Article 14(2), or where such information would incriminate the operator, or place a disproportionate burden on her, taking into account all the interests involved.²⁷⁰

1998 Aarhus Convention

The 1998 Aarhus Convention is built on three pillars: access to information; public participation in environmental decision-making; and access to justice in environmental matters. On environmental information, the Convention introduces several innovations which clarify – or develop, depending upon one’s perspective – the approaches reflected in Article 9 of the 1992 OSPAR Convention, which it generally follows. The 1998 Aarhus Convention obliges parties to ensure that public authorities make available to the public ‘environmental information’ (subject to certain exceptions) without any interest having to be stated, generally in the form requested, and without an unreasonable charge being made.²⁷¹ The definition of environmental information is broader than earlier instruments, making express reference, for example, to factors of biodiversity such as genetically modified organisms (GMOs), and a broad range of measures (such as environmental agreements, policies, plans and programmes and cost–benefit and other economic analyses and assumptions used in environmental decision-making).²⁷² The time available for responding to requests is reduced to one month, and the exceptions are to be interpreted in a restrictive way and have been tightened (for example, the commercial confidentiality exception may only be applied where ‘legitimate economic interests’ need to be protected, and a presumption is established in favour of disclosing information on emissions which is relevant for the protection of the environment).²⁷³ A refusal to disclose information is subject to the Convention provisions on access to review.²⁷⁴ The Convention also imposes a positive obligation on a public authority that does not hold the information to inform the applicant where it might be applied for, and makes provision for the separation of information that would be exempted from disclosure so that the remainder may be disclosed.²⁷⁵

²⁶⁷ Arts. 13 and 14. The Convention is not in force.

²⁷⁰ Art. 16(2), (5) and (6).

²⁷⁴ Arts. 4(7) and 9; see Chapter 5, p. 140, above.

²⁶⁸ Arts. 15 and 16.

²⁷² Art. 2(3).

²⁷⁵ Art. 4(5) and (6).

²⁶⁹ Art. 16(1) and (3).

²⁷³ Art. 4(2), (3)(c) and (4).

Article 5 of the Convention imposes a range of positive (and innovative) obligations on parties, beginning with the requirement that public authorities ‘possess and update’ environmental information relevant to their functions, and to establish mandatory systems to ensure an adequate flow of information to public authorities about activities that may significantly affect the environment.²⁷⁶ In the event of any imminent threat to human health or the environment (from any source), public authorities are also required immediately to disseminate all information that could enable the public to take measures to prevent or mitigate the harm arising from the threat.²⁷⁷ Parties are also required to ensure that public authorities make environmental information available to the public in transparent and accessible ways, to ensure that such information progressively becomes available in electronic databases, to publish (at least every four years) a national report on the state of the environment, and to take measures to disseminate national and international legislation and measures, including treaties.²⁷⁸ The private sector is also targeted, although via the state:

[Parties] shall encourage operators whose activities have a significant impact on the environment to inform the public regularly of the environmental impact of their activities and products, where appropriate within the framework of voluntary eco-labelling or eco-auditing schemes or by other means.²⁷⁹

Finally, each party must take steps to establish progressively a ‘coherent, nationwide system of pollution inventories or registers on a structured, computerized and publicly accessible database’.²⁸⁰ In 2003, the parties concluded a Protocol to the Convention fleshing out the detail of this obligation and the nature of the pollutant registers required (discussed below).

The broad right of access to information established by the Aarhus Convention is coupled with requirements for facilitating public participation in environmental decision-making and access to justice in environmental cases. Article 6 requires parties to inform the public concerned – early in the decision-making process – of proposed activities listed in Annex I to the Convention and other activities that may have a significant effect on the environment, and to ensure early public participation in decision-making.²⁸¹ Apart from access to information, the right to participate includes: the right to submit comments, information, analyses or opinions considered relevant; the requirement that account is taken of the outcome of the public participation; and the requirement to inform the public of the decision.²⁸² These rights apply equally in respect of the reconsideration or updating of operating conditions.²⁸³ Article 7 obliges parties to enable the public to participate in the preparation of plans and programmes relating to the environment within a ‘transparent and fair framework’. Article 8 requires parties to ‘strive to promote’ public participation during the preparation of executive regulations and other generally applicable, legally binding rules that may have a significant effect on the environment.

²⁷⁶ Art. 5(1)(a) and (b). ²⁷⁷ Art. 5(1)(c). ²⁷⁸ Art. 5(2)–(4). ²⁷⁹ Art. 5(6); see also Art. 5(7), below.
²⁸⁰ Art. 5(9). ²⁸¹ Art. 6(1)–(4). ²⁸² Art. 6(5)–(9). ²⁸³ Art. 6(10).

Article 9 governs access to justice. In respect of violations of the right to environmental information, parties must provide access to remedies before a court or other independent and impartial body established by law.²⁸⁴ In respect of decisions, acts or omissions subject to Article 6, parties must ensure that a member of the public having a sufficient interest or maintaining impairment of a right has access to a review procedure or a court of law or other independent and impartial body established by law to challenge its substantive and procedural legality.²⁸⁵ The Convention provides that ‘sufficient interest’ and ‘impairment of a right’ are to be determined in accordance with national law and are to be consistent with the objective of giving the public concerned wide access to justice, and that non-governmental organisations meeting certain requirements will be deemed to have a sufficient interest.²⁸⁶ In respect of decisions, acts or omissions subject to other relevant provisions of the Convention (namely, Articles 7 and 8), the matter is governed by national law.²⁸⁷ Further, in accordance with criteria (if any) laid down in national law, members of the public are to have access to administrative or judicial procedures to challenge acts or omissions by private persons and public authorities that contravene national law relating to the environment.²⁸⁸ All of the procedures are to provide adequate and effective remedies, including injunctive relief (as appropriate), and must be fair, equitable, timely and not prohibitively expensive.²⁸⁹

In 2005, the second Meeting of the Parties to the Convention adopted an amendment designed to develop its application to decisions on permitting the deliberate environmental release of GMOs. This amendment (which has not yet entered into force) goes further than other treaties in establishing a right and modalities for public participation prior to the making of such decisions. The amendment would insert into the Convention a new Article 6*bis* requiring parties to provide ‘for early and effective information and public participation prior to making decisions on whether to permit the deliberate release into the environment and placing on the market of genetically modified organisms’. Annex *Ibis* details the measures parties must lay down in their respective regulatory frameworks to enable ‘effective information and public participation’, including provision of a reasonable timeframe for public comment and submissions on proposed decisions, making available relevant documentation including any environmental risk assessment, ensuring transparency of decision-making processes and providing reasons for decisions, and provision of access to procedural information to the public.²⁹⁰ While these techniques reflect best practice in regards to enabling public participation, parties are only subject to a soft obligation to ‘endeavour to ensure’ that decisions on the environmental release of GMOs take ‘due account’ of public views.²⁹¹ Moreover, parties are permitted to include exceptions to public participation in their regulatory frameworks,²⁹²

²⁸⁴ Art. 9(1). Where a party provides for review by a court, it must also ensure that a person has access to ‘an expeditious procedure established by law that is free of charge or inexpensive for reconsideration by a public authority or an independent and impartial body other than a court’: *ibid.*

²⁸⁵ Art. 9(2).

²⁸⁶ *Ibid.* (the rule is without prejudice to any ‘preliminary review procedure’ which may exist under national law). Art. 2(5) defines the requirements to be met by NGOs: to promote environmental protection and meet any requirements under national law.

²⁸⁷ *Ibid.* ²⁸⁸ Art. 9(3).

²⁸⁹ Art. 9(4). Parties must also consider the establishment of appropriate assistance mechanisms to remove or reduce financial and other barriers to access to justice: Art. 9(5).

²⁹⁰ Decision II/1, 25–27 May 2005, Almaty, not in force, Annex *Ibis*, paras. 1, 3, 5 and 6. ²⁹¹ Annex *Ibis*, para. 7.

²⁹² Annex *Ibis*, para. 2. These exceptions are limited to situations where a GMO release under comparable bio-geographical conditions has already been approved within the party’s regulatory framework or sufficient

and to apply confidentiality requirements,²⁹³ that may limit the practical significance of the participation right.

2003 Protocol on Pollutant Release and Transfer Registers

Another attempt to develop the participatory rights established by the Aarhus Convention is reflected in its 2003 Protocol on Pollutant Release and Transfer Registers, which came into force on 8 October 2009. The Protocol has been heralded as establishing ‘a new international benchmark in securing public access to information on threats posed to our environment by toxic emissions’.²⁹⁴ It requires parties to establish and maintain public accessible national pollutant release and transfer registers as a means of enhancing public access to information, which in turn could facilitate public participation in environmental decision-making and contribute to the prevention and reduction of environmental pollution.²⁹⁵ The idea of a pollutant register builds on the tradition of ‘community right to know’ legislation prominent in some OECD countries, which seeks to improve corporate accountability and environmental performance by making data on pollutant releases publicly available.²⁹⁶ In 1996, the OECD Council adopted a Recommendation on Implementing Pollutant Release and Transfer Registers, which called on member countries to establish such schemes.²⁹⁷ In 2002, as part of the goal of promoting sound management of chemicals throughout their life-cycle, the WSSD Plan of Implementation encouraged the ‘development of coherent and integrated information on chemicals, such as through national pollutant release and transfer registers’.²⁹⁸

The concepts of ‘pollutant’, ‘release’ and ‘off-site transfer’ are broadly defined in the Protocol: ‘pollutant’ encompasses any ‘substance or group of substances that may be harmful to the environment or to human health on account of its properties and of its introduction into the environment’; a ‘release’ refers to ‘any introduction of pollutants into the environment as a result of any human activity, whether deliberate or accidental, routine or non-routine’, and includes spills, emissions, discharges, injections, disposal or dumping, or releases through sewer systems without final wastewater treatment; and ‘off-site transfer’ means the movement beyond the boundaries of a facility of either pollutants or waste destined for disposal or recovery, and of pollutants in wastewater destined for wastewater treatment.²⁹⁹

experience has previously been gained with release of the GMO in question in comparable ecosystems. For GMOs proposed for marketing approval, exceptions may be applied if the GMO was already approved within the party’s regulatory framework or if it is intended for research or culture collections.

²⁹³ Annex *Ibis*, para. 3. However, para. 4 provides that parties cannot designate as confidential certain generic details about the GMO, the methods and plans for monitoring the GMO and emergency response, or the environmental risk assessment.

²⁹⁴ Address by Ján Kubiš, UNECE Executive Secretary to the first Meeting of the Parties, 23 April 2010, ECE/ENV/10/P15.

²⁹⁵ Art. 1.

²⁹⁶ N. Gunningham and A. Cornwall, ‘Legislating the Right to Know’, 11(4) *Environmental and Planning Law Journal* 274 (1994).

²⁹⁷ OECD Recommendation on Implementing Pollutant Release and Transfer Registers (PRTRs), of 20 February 1996, C/(96)41/Final, as amended by C(2003)87 on 28 May 2003.

²⁹⁸ WSSD Plan of Implementation, para. 23(f). ²⁹⁹ Art. 2(6)–(8).

Article 4 specifies certain core requirements for national pollutant release and transfer registers established by parties.³⁰⁰ Each national register must contain information that (a) is facility-specific with respect to reporting on pollution point sources; (b) accommodates reporting on diffuse sources of pollution; (c) is pollutant-specific or waste-specific, as appropriate; (d) is multimedia in nature, distinguishing among releases to air, land and water; (e) includes information on off-site transfers of pollutants or waste; (f) is based on mandatory reporting on a periodic basis; (g) includes standardised and timely data; (h) is coherent and designed to be user-friendly and public accessible (such as an electronic database) and (i) is a structured, computerised database or several linked databases maintained by a designated competent authority of the party.³⁰¹ In the implementation of the Protocol, parties are also under a general obligation to 'be guided by the precautionary approach as set forth in Principle 15 of the 1992 Rio Declaration on Environment and Development'.³⁰²

As an initial matter, the scope of registers is limited to particular pollutants or wastes released or transferred by specified activities. These activities are listed in Annex I to the Protocol, and include energy sector activities such as oil refineries and thermal power stations, metal processing facilities, mining, chemical installations, waste and wastewater treatment facilities, pulp and wood processing facilities, intensive livestock production and aquaculture, slaughterhouses, tanneries and other industrial activities. Companies in these sectors are required to report annually, and on a facility-specific basis, on emissions to the environment and transfers to other facilities. Covered pollutants are specified in Annex II, as well as the relevant thresholds for releases that trigger a reporting requirement. These substances include a range of heavy metals, persistent organic pollutants (POPs), pesticides and hazardous chemicals, acid rain pollutants, ozone-depleting substances and greenhouse gases. In some cases, different reporting thresholds are specified depending on whether a release is made to air, water or to land, or involves an off-site transfer. An attempt is also made to capture diffuse source pollutant releases (for example, from agriculture or transport), a traditionally elusive area of pollution regulation.³⁰³ Accordingly, each party must present on its register, in adequate spatial disaggregation, the information on releases of pollutants from diffuse sources for which the party determines that data are being collected by the relevant authorities and that can be practicably included.³⁰⁴ The Meeting of the Parties under the Protocol is to review the reporting requirements in light of the experience gained with implementation over time and consider whether revisions are required to the activities specified in Annex I or the pollutants and thresholds specified in Annex II, as well as whether any other aspects should be included such as more specific requirements for diffuse sources or the development of criteria for adding new pollutants.³⁰⁵

Each party is to enable public access to the information contained in its pollutant release and transfer register, primarily by ensuring that its register provides for direct electronic access

³⁰⁰ The requirements specified by the Protocol are minimum requirements. Parties are free to include additional pollutants and facilities, and the parties to the Protocol are required to work towards convergence between their respective registers: reference from Protocol: Art. 3(2) and (6).

³⁰¹ Art. 4. ³⁰² Art. 3(4).

³⁰³ N. Gunningham and D. Sinclair, 'Policy Instrument Choice and Diffuse Source Pollution', 17(1) *Journal of Environmental Law* 51 (2005).

³⁰⁴ Art. 7(7). Parties must include information on the type of methodology used to derive the information.

³⁰⁵ Art. 6(2).

through internet or other telecommunications facilities.³⁰⁶ Members of the public, including environmental organisations or groups,³⁰⁷ do not need to state an interest in the information in order to obtain access.³⁰⁸ Any person who considers that an information request has been ignored, wrongfully refused or inadequately answered must be given access to a review procedure before a court or another independent and impartial body.³⁰⁹ Each party is also to ensure appropriate opportunities for public participation in the development and modification of its national register, within the framework of its national law, by allowing the submission of relevant comments, information, analyses or opinions. Due account must be taken of such public input.³¹⁰

These broader information and participation rights sit alongside now conventional provisions allowing for the non-disclosure of information on confidentiality grounds. Pursuant to Article 12 of the Protocol, each party may authorise its designated competent authority to keep information held on the register confidential on a number of grounds including considerations of national defence or public security, commercial and industrial confidentiality and intellectual property rights.³¹¹ The breadth of this potential exemption is limited somewhat by the instruction that 'grounds for confidentiality shall be interpreted in a restrictive way, taking into account the public interest served by disclosure and whether the information relates to releases into the environment'.³¹²

Implementation of the Protocol is subject to review by a Meeting of the Parties, which held its first session in April 2010. At this session, the Meeting of the Parties adopted a number of important decisions, including provisions for the establishment and operation of a compliance mechanism under the Protocol.³¹³ Currently, the majority of the Protocol's parties are European countries with well-developed economies; however, the Protocol is open to accession by states from outside the United Nations Economic Commission for Europe (UNECE) region and to states which are not party to the Aarhus Convention, giving it potentially global scope. If the Protocol is to extend its reach to other, less developed parts of the world (where the health and environmental risks posed by pollutant releases are often more acute), close observance of the Protocol's provisions regarding capacity-building and international co-operation will be vital.³¹⁴

PUBLIC EDUCATION AND AWARENESS

A number of international environmental agreements include positive obligations requiring states to improve public education and awareness on environmental matters and give due publicity to matters of environmental importance. Principle 10 of the Rio Declaration synthesises commitments adopted in a number of international treaties. It recognises the importance of public education and provides that 'states shall facilitate and encourage public awareness and participation by making information widely available'. Chapter 36 ('Promoting Education,

³⁰⁶ Art. 11(1). Where direct electronic means are not available, a party shall ensure that its competent authority upon request provides the information by another effective means at the latest within one month after submission of the request: Art. 11(2).

³⁰⁷ Art. 2(3). The 'public' only encompasses such groups and organisations 'in accordance with national legislation or practice'.

³⁰⁸ Art. 11(1). ³⁰⁹ Art. 14. ³¹⁰ Art. 13. ³¹¹ Art. 12(1)(a), (c) and (d). ³¹² Art. 12(1).

³¹³ Decision 1/2. ³¹⁴ Arts. 15 and 16.

Public Awareness and Training') of Agenda 21 elaborates upon Principle 10, and establishes three programme areas: reorienting education towards sustainable development; increasing public awareness; and promoting training.³¹⁵ Article 5 of the 1998 Aarhus Convention, together with its 2003 Protocol – described above – goes far in this regard.

Several treaties include provisions on public awareness, education and publicity. One of the earliest was the 1987 Montreal Protocol, which calls on parties to co-operate in 'promoting public awareness of the environmental effects of the emissions of controlled substances and other substances that deplete the ozone layer'.³¹⁶ Similar provisions are repeated in subsequent global instruments.³¹⁷ Education and training are also addressed with increasing frequency,³¹⁸ particularly in relation to instruments addressing the protection of workers,³¹⁹ and in human rights treaties. For instance, the 1989 Convention on the Rights of the Child specifies that education should include 'development of respect for the natural environment'.³²⁰ The 2000 Biosafety Protocol requires parties to promote public awareness, education and participation 'concerning the safe transfer, handling and use of living modified organisms in relation to the conservation and sustainable use of biological diversity'.³²¹ Finally, certain treaties specifically require that publicity should be given to specially protected areas,³²² or to maritime navigation dangers,³²³ or to particular requirements for the prevention, reduction and control of pollution of the marine environment.³²⁴

ECO-LABELLING

The labelling of environmental aspects of goods and services (eco-labelling) emerged as an international issue in the trade context, following Mexico's complaint that the US 1990 Dolphin Protection Consumer Information Act (allowing 'Dolphin Safe' labels to be placed on tuna products provided that dolphins had not been killed) was incompatible with the General Agreement on Tariffs and Trade (GATT). Although the GATT Panel upheld the legislation, it did so in terms that suggested that other eco-labelling rules might be incompatible with relevant WTO rules under the GATT and Technical Barriers to Trade (TBT) Agreement.³²⁵ Although there have been no subsequent WTO rulings regarding eco-labelling, debate continues in the WTO Committee on Trade and the Environment on the propriety of eco-labelling schemes under GATT/WTO rules, with particular focus on the compatibility with the WTO rules of mandatory labelling requirements for genetically modified

³¹⁵ See also the WSSD Plan of Implementation, including paras. 15(d), 19(m) (energy sources and technologies for sustainable development) and 41(b) (eco-tourism).

³¹⁶ Art. 9(2).

³¹⁷ 1989 Basel Convention, Art. 10(4); 1992 Climate Change Convention, Art. 4(1)(i); 1992 Biodiversity Convention, Art. 13; 1998 POPs Protocol to the 1979 LRTAP Convention, Art. 6; 1999 Protocol on Water and Health to the 1992 Watercourses Convention, Art. 9(1); 1999 Acidification, Eutrophication and Ground-Level Ozone (Gothenburg) Protocol, Art. 5(1) and (2); 2000 Cartagena Protocol, Art. 23; 2001 POPs Convention, Art. 10(1)(c) and (f); and 2003 Protocol on Pollutant Release and Transfer Registers, Art. 15.

³¹⁸ 1985 ASEAN Agreement, Art. 16(1) and (3); 1992 Biodiversity Convention, Arts. 12 and 13; 1992 Climate Change Convention, Art. 4(1)(i); Ramsar Convention Res. VII.9 (1999); and 2001 POPs Convention, Art. 10(1)(e) and (g).

³¹⁹ 1986 ILO Asbestos Convention, Art. 22; 1988 Construction Convention, Art. 33.

³²⁰ Art. 29(1)(e). ³²¹ Art. 23(1)(a).

³²² 1982 Geneva SPA Protocol, Art. 8(1) (applies also to buffer areas). ³²³ 1982 UNCLOS, Art. 24(2).

³²⁴ 1982 UNCLOS, Art. 211(3). ³²⁵ Chapter 19 below.

organisms.³²⁶ For its parties, the matter will now be governed, in respect of living modified organisms, by the 2000 Biosafety Protocol, which requires living modified organisms intended for direct use as food, feed or for processing to be identified to show that they 'may contain' living modified organisms and are not intended for intentional introduction into the environment.³²⁷ More generally, the 1998 Aarhus Convention requires parties to develop mechanisms to ensure that product information is available to allow consumers to make informed environmental choices.³²⁸

ECO-AUDITING AND ACCOUNTING

Environmental considerations are increasingly addressed in regulatory and voluntary schemes designed to identify the environmental effects of the activities of companies or industrial sites.³²⁹ These measures call for a transformation of conventional accounting practices and statements in order to take into account the environmental costs of production and other activities, which have in the past been treated for the most part as 'zero-priced' resources. The primary purpose of environmental accounting is to ensure that environmental costs are accurately reflected in the individual accounts and balance sheets of companies, or the national accounts of states. An important secondary purpose is to ensure that information on the use of environmental resources is disclosed; information provided in accounts may relate to environmental policies and programmes, environmental improvements, or the financial impacts of environmental measures, as well as responsibilities for environmental clean-up or related measures. Environmental auditing, or 'eco-auditing', describes a technique for allowing a company or a state to assess the impact of its activities on the environment, which includes procedures beyond the scope of a traditional financial audit that can be performed by an internal consultant or by an independent third person.

The most important developments relating to environmental accounting and auditing have occurred at the national level.³³⁰ At the international level, the most significant work on

³²⁶ See P. Menell, 'The Uneasy Case for Ecolabelling', 4 *Review of European Community and International Environmental Law* 304 (1995); E. Staffin, 'Trade Barrier or Trade Boon? A Critical Evaluation of Environmental Labelling and Its Role in "Greening" of World Trade', 21 *Columbia Journal of Environmental Law* 205 (1996); A. Appleton, *Environmental Labelling Programmes: International Trade Law Implications* (1997); E. Bartenhagen, 'The Intersection of Trade and the Environment: An Examination of the Impact of the TBT Agreement on Ecolabelling Programs', 17 *Virginia Environmental Law Journal* 1 (1997); S. Subedi, 'Balancing International Trade with Environmental Protection: International Legal Aspects of Eco-labels', 2 *Brooklyn Journal of International Law* 373 (1999); A. Appleton, 'GMOs: The Labelling of GMO Products Pursuant to International Trade Rules', 8 *New York University Environmental Law Journal* 566 (2000); D. Morgan and G. Goh, 'Genetically Modified Food Labelling and the WTO Agreements', 13(3) *Review of European Community and International Environmental Law* 306 (2004). On the WTO rules, see Chapter 19, pp. 809–11, below.

³²⁷ Art. 18(2)(a). Detailed requirements for implementation of this paragraph are yet to be finalised by the COP/MOP: BS-V/8, Handling, Transport, Packaging and Identification of Living Modified Organisms: Paragraph 2(a) of Article 18, UNEP/CBD/BS/COP-MOP/5/17; see also Art. 18(2)(b) and (c) on identification of LMOs contained and intended for intentional introduction into the environment.

³²⁸ Art. 5(7).

³²⁹ H. Gleckman, 'Proposed Requirements for Transnational Corporations to Disclose Information on Product and Process Hazards', 6 *Boston University International Law Journal* 89 (1988); L. Spedding, 'Environmental Auditing and International Standards', 3 *Review of European Community and International Environmental Law* 14 (1994).

³³⁰ For a short survey of national practices, see Report of the Secretary General: Information Disclosure Relating to Environmental Measures, UN Doc. E/C.10/AC.3/1990/5, 16 January 1990, especially 7–14; see also Report of the Secretary General: International Survey of Corporate Reporting Practices, UN Doc. E/C.10/AC.3/1992/3, 13 January

environmental accounting has been carried out under the auspices of the former UN Centre on Transnational Corporations (UNCTC) and, subsequently, the United Nations Conference on Trade and Development (UNCTAD). Additionally, the International Standards Organization (ISO) has developed its ISO 14000 series of standards for environmental management, which play an influential role in environmental management systems adopted by companies operating in developed countries.³³¹

Environmental accounting

Although discussions regarding environmental accounting have taken place in the international community for over two decades, no international legal obligations have been adopted by states or international organisations in relation to environmental accounting, and none appears imminent. The best guide to possible future developments at the international level is reflected in the work of the Intergovernmental Working Group of Experts on International Standards of Accounting and Reporting (ISAR), established under the auspices of the former UNCTC, and now functioning under UNCTAD. The work of the former UNCTC in this area was submitted as a report to the UNCED Preparatory Committee,³³² and was partly reflected in Principle 16 of the Rio Declaration, which calls on national authorities to 'endeavour to promote the internalisation of environmental costs', and in Agenda 21.³³³ The 1991 UNCTC report recognised that the main challenge for environmental accounting was to develop an acceptable valuation method for quantifying the costs of non-sustainable economic activity, and identified some of the flaws in traditional accounting rules and practices in relation to environmental resources:

It does not account for the full costs of production, including the costs of consuming essential natural resources such as air, water and fertile land . . . In addition, accounting rules penalise, rather than encourage, the environmentally responsible corporation. The more a corporation spends on prevention and clean-up, the less per share it earns in the short run. Accounting lacks a vehicle for recording 'green assets' and monitoring their use, for distinguishing between the costs of renewable versus non-renewable resources and for providing accounting incentives to improve environmental protection.³³⁴

The UNCTC recognised the need to ensure that accounts reflect environmental costs so that stakeholders have information to enable them to make the best uses of resources, taking account of 'the rights and obligations of shareholders, customers, and local communities affected by environmental degradation, as well as the implicit rights of other species and

1992; INTOSAI Working Group on Environmental Auditing, *Environmental Accounting: Current Status and Options for SAIs* (2010), Appendix 2: Examples of National Environmental Accounting Efforts.

³³¹ ISO standards represent a consensus agreement of manufacturers, vendors and users, consumer groups, testing laboratories, governments, engineering professions and research organisations. ISO 14001:2004 has been implemented by some 200,000 organizations in 155 countries.

³³² UN Doc. A/CONF.15 1/PC/89, 22 August 1991; also Report of the Secretary General: Accounting for Environmental Protection Measures, UN Doc. E/C.10/AC.3/1991/5, 11 February 1991.

³³³ See also WSSD Plan of Implementation, para. 18. ³³⁴ *Ibid.*, 4.

other habitats'.³³⁵ It also identified the need to improve traditional financial statements, principally to address the concerns of securities regulators, insurance companies, banks and shareholders about unreported contingent liabilities which might have an adverse effect on the net worth of a corporation. This raises a major problem of access to, and dissemination of, information, described by the UNCTC report as 'unprecedented disclosure problems in how, and when, to account for the potential contingent liabilities'.³³⁶ The report identified three obstacles to the taking or reporting of environmental protection measures by companies. First, the lack of incentive to record liabilities which results from the rule in many countries that expenses are only deductible for tax purposes when paid; second, the impact of environmental costs on short-term earnings; and, third, the difficulty of separating environmental costs from other costs.³³⁷ The report noted that accounting for environmental expenses is feasible, and raises reporting issues which are 'tractable and essentially of a definitional and classificatory nature'.³³⁸ Environmental liabilities raised more problems, in large part because of the difficulty in determining a 'reasonable estimate' of future obligations in the face of environmental liabilities which are dependent upon 'inherent uncertainties in future legislation, technological change and extent or nature of environmental clean-up required'.³³⁹

Since 1990, ISAR has sought to address these and other accounting issues by proposing methods for integrating environmental costs and liabilities into traditional accounting methods, including incorporating environmental information into financial disclosures and annual reports.³⁴⁰ In 1998, it published a guidance document to provide assistance to enterprises, regulators and standard-setting bodies regarding best practice in accounting for environmental transactions and events in the financial statements and associated notes.³⁴¹ The guidance document urges financial statements to recognise environmental costs,³⁴² and to measure environmental liabilities,³⁴³ and recommends methods for recognising, measuring and disclosing environmental costs.³⁴⁴ Following on from this work, in 2004 ISAR published a Manual for Users and Preparers of Eco-Efficiency Indicators.³⁴⁵ Eco-efficiency indicators are designed to allow enterprises to measure their environmental performance relative to financial performance in a systematic and consistent fashion over

³³⁵ *Ibid.*, 5. ³³⁶ *Ibid.*, 6. ³³⁷ *Ibid.*, 6–7. ³³⁸ *Ibid.*

³³⁹ *Ibid.*; on potential future developments in the law of liability for environmental damage, see Chapter 7, above.

³⁴⁰ An important initiative in respect of the latter is Global Reporting Initiative's *Sustainability Reporting Guidelines* (2006, 3rd edn), www.globalreporting.org/ReportingFramework/G3Guidelines.

³⁴¹ ISAR, *Accounting and Financial Reporting for Environmental Costs and Liabilities* (1998), para. 2.

³⁴² Defined as 'the costs of steps taken, or required to be taken, to manage the environmental impacts of an enterprise's activity in an environmentally responsible manner, as well as other costs driven by the environmental objectives and requirements of the enterprise': para. 9.

³⁴³ Defined as 'obligations relating to environmental costs that are incurred by an enterprise and that meet the criteria for recognition as a liability. When the amount or timing of the expenditure that will be incurred to settle the liability is uncertain, "environmental liabilities" are referred to as "provisions for environmental liabilities"': *ibid.*

³⁴⁴ *Ibid.*, Part V, paras. 11–20; Part VI, paras. 21–9; Part VIII, paras. 34–42; Part IX, paras. 43–61.

³⁴⁵ Additionally, UN foundation partnership organisations, such as the Global Reporting Initiative and the Global Compact, have also called for revisions to financial disclosure to take into account all aspects of sustainable development. These 'triple bottom line' reports would take into account the economic, environmental and social costs of an enterprise's activities.

periods of time. Environmental performance is assessed with respect to five generic environmental issues: water use, energy use, global warming contribution, ozone-depleting substances and waste.

Environmental auditing

International legal developments on environmental auditing – a necessary component of environmental accounting – began with the adoption in April 1993 of an EU Regulation establishing a voluntary scheme, revised in 2001 and 2009.³⁴⁶ The EU's eco-management and audit scheme (EMAS) is intended to improve the environmental performance of the industrial activities of companies. The scheme encourages companies to: implement environmental policies, programmes and management systems in relation to their sites; evaluate their environmental performance; provide information on environmental performance to the public; and encourage employee participation within the management system.³⁴⁷ Multilateral development banks, led by the European Bank for Reconstruction and Development (EBRD), have also conducted environmental audits on certain projects as part of a screening process to determine their potential liability, as well as that of project sponsors, for environmental damage related to loans, and to enhance environmental management of the facility.³⁴⁸

CONCLUSIONS

There now exists an extensive body of international rules aiming to improve the availability of environmental information, broadly recognised as a central technique for the implementation of environmental standards and procedures set by treaties and other international agreements. The original reporting, consultation and notification obligations, which are well established in international law, have been supplemented by a second generation of rules. On the one hand, these aim to improve scientific information available to multilateral treaty regimes for the purpose of reviewing parties' implementation of commitments, reviewing the adequacy of existing measures and identifying new technological means for achieving compliance.³⁴⁹ On the other hand, information techniques in international environmental law are deployed in order to increase the public availability of information by enhancing access, encouraging greater dissemination to consumers at various levels and, in a more limited fashion, imposing a positive obligation on certain states (in the UNECE region) to collect, report on and publish environmental information. Existing arrangements remain incomplete, however, and there are significant gaps within and across regions. The overall

³⁴⁶ Council Regulation (EC) No. 1221/2009 of 22 December 2009, OJ L342, 25 November 2009, 1, in force 11 January 2010.

³⁴⁷ *Ibid.*, Art. 4(a)–(d).

³⁴⁸ 3 *Yearbook of International Environmental Law* 545 (1992). See also S. Ferrey, 'Gate Keeping Global Warming: The International Role of Environmental Assessments and Regulation in Controlling Choices for Future Power Development', 19 *Fordham Environmental Law Review* 101 (2009); S. Buzar, 'Energy, Environment and International Financial Institutions: The EBRD's Activities in the Western Balkans', 90(4) *Geografiska Annaler: Series B, Human Geography* 409 (2008).

³⁴⁹ S. Andresen, T. Skodvin, A. Underdal and J. Wettestad, *Science and Politics in International Environmental Regimes: Between Integrity and Involvement* (2000).

objective remains an increase in the quantity and quality of information available, greater dissemination among all relevant members of the international community, and ensuring that it is used to inform decision-making at all national and international levels. To that end, a number of tasks appear particularly important.

First, international co-operation on the gathering of information on the state of the environment needs to be further enhanced. New arrangements such as those reflected in the clearing-house and information exchange mechanisms set up under the 1997 Kyoto Protocol, the 2000 Biosafety Protocol and the 2010 Nagoya Protocol on Access to Genetic Resources could be developed in other subject matter areas.

Second, compliance with basic reporting requirements under environmental treaties remains inadequate and should be improved, including by establishing arrangements for composite reports fulfilling obligations under two or more conventions; if states are unable or unwilling to fulfil these primary obligations, then it is unlikely that they will comply with the more onerous and important substantive standards established by the same treaties. Clearly, the collection of national information necessary to fulfil international reporting obligations can place heavy burdens on limited and already over-stretched human, institutional and financial resources, especially in developing countries. The availability of financial resources for reporting under agreements such as the Climate Change and Biodiversity Conventions have gone some way towards improving compliance with reporting requirements and addressing associated equity concerns, but this needs to be coupled with education and training, and an enhanced role for international organisations in assisting with reporting.

Third, the general obligation in international law to consult and notify certain potentially harmful activities – reflected in the ILC's 2001 draft Articles on Prevention of Transboundary Harm and addressed in the ICJ's *Pulp Mills* decision – has broad support, but is not always complied with. Incidents such as the Chernobyl accident, the cyanide spillage (Baia Mare) in the Tisa River basin involving Hungary and Romania, and more recently the damage to nuclear power plants in Japan following the earthquake and tsunami of March 2011, reflect the need for constant vigilance where emergency situations occur.

Fourth, the duty of states to provide – and the right of legal and natural persons to receive – environmental information and to enable participation in environmental decision-making is more broadly recognised, but requires further development in practice, not least by making citizens aware of their rights. The 1998 Aarhus Convention is an important development, and could provide a model for other regions. In this regard, its 2003 Protocol on Pollutant Release and Transfer Registers – open to accession by non-UNECE states and countries not party to the Aarhus Convention – represents a sophisticated approach for disseminating information about environmental releases of pollutants and wastes to the general public. EC experience suggests that the demand for environmental information and participation in environmental decision-making increases as citizens become aware of their rights, and that the processing of requests places significant demands on public authorities, which encourages them to find ways to avoid providing information. Accordingly, it will be necessary to ensure that the access to justice provisions of the Aarhus Convention are properly implemented and that other effective means of administrative or judicial redress are available at the national or international level to ensure that states fulfil their obligations.

Finally, the consolidation of mechanisms under treaties for the provision of scientific advice and technical information to treaty parties in a number of multilateral environmental regimes

offers the prospect of better informed decision-making and more effective treaty implementation provided policy-makers take sufficient heed of the information they receive. However, there is also the potential for subsidiary expert bodies, functioning as self-contained 'epistemic communities', to play too large a role in treaty decision-making processes,³⁵⁰ crowding out debates over important policy questions and restricting the scope for public participation.³⁵¹

³⁵⁰ P. Haas, 'Science Policy for Multilateral Environmental Governance', in N. Kanie and P. Haas (eds.), *Emerging Forces in Environmental Governance* (2004), 115.

³⁵¹ J. Peel, *Science and Risk Regulation in International Law* (2010).

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Financial resources, technology transfer and intellectual property

INTRODUCTION

The establishment by the 1990 amendments to the 1987 Montreal Protocol of a financial mechanism to address ozone depletion marked an important turning point in international environmental law. In the subsequent decades, the rules on finance and technology transfer have developed significantly and substantively, together with legislative and judicial consideration of the relationship between intellectual property rights and environmental protection. This has occurred notwithstanding the early concerns of some industrialised countries that the establishment of the Montreal Fund would adversely prejudice future developments. Financial resources, technology transfer and intellectual property were central issues at UNCED and of the two treaties signed at UNCED. As described in this chapter, the 1992 Climate Change and Biodiversity Conventions – as well as subsequent instruments on drought and desertification (1994), climate change (1997), biosafety (2000) and persistent organic pollutants (2001) have further elaborated the principles established under the Montreal Protocol and its amendments. Related developments – particularly in the context of the activities of the multilateral development banks, the WTO Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPs), the European Patent Convention, the 2001 International Treaty on Plant Genetic Resources for Food and Agriculture and the 2010 Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from Their Utilisation (2010 Nagoya Protocol) – have added to the broadening range of legal issues which are touched by, and increasingly integrated with, international environmental concerns.

These three subjects – financial resources, technology transfer and intellectual property – occupy a central place in the legal arrangements of international environmental law, at the regional and global levels, and will determine to a considerable extent whether the substantive protections put in place can be achieved (in that regard, the experience with the Montreal Protocol provides some grounds for optimism, although issues like climate change adaptation demand financial resources and technical assistance of a much greater order of magnitude). The consequence is that international environmental lawyers will necessarily find themselves facing the complex (and often black letter) legal issues that emerge as a result of an increasingly integrated approach to environmental protection and economic development. It remains to be seen, in the process of cross-fertilisation, what the nature of the integrated relationship will be, and the manner in which balance will be achieved.

FINANCIAL RESOURCES AND MECHANISMS

The provision of international financial resources related to the environment has two main aspects. The first concerns the extent to which overseas development assistance granted bilaterally by states (or collectively by a group of states) or by international organisations is subject to compliance with international environmental law. The second relates to the body of international institutional and substantive law that has arisen out of the establishment and development of international mechanisms to provide financial assistance for global environmental objectives. These include the Global Environment Facility (GEF) and the Montreal Protocol Multilateral Fund, as well as earlier mechanisms such as the Wetlands Fund, the World Heritage Fund and the International Fund for Plant Genetic Resources. Complex legal issues have also arisen in the context of the relationship between the GEF and international conventions on biodiversity, climate change, desertification and persistent organic pollutants (POPs). Other efforts to support international conservation include 'debt-for-nature swaps',¹ trust funds and endowments.²

Finance for sustainable development was addressed in Chapter 33 of Agenda 21, 'Financial Resources and Mechanisms', and Part X of the WSSD Plan of Implementation. Chapter 33 deals with the financing of Agenda 21 and the global consensus integrating environmental considerations into an accelerated development process. In the context of the estimated US\$600 billion annual cost over the period 1993–2000 of implementing in developing countries the activities set out in Agenda 21, Chapter 33 identified three objectives for the international community: adopting measures concerning financial resources and mechanisms for the implementation of Agenda 21; providing new and additional financial resources that are adequate and predictable; and seeking full use and improvement of the funding mechanisms to be utilised for the implementation of Agenda 21, including the provisions on environmental protection.³ Part X of the WSSD Plan of Implementation added little in the way of specific commitments, merely emphasising that internationally agreed development goals in Agenda 21, the Plan of Implementation as well as the UN Millennium Development Goals 'will require significant increases in the flow of financial resources ... including through new and additional financial resources'.⁴ The main sources of financial resources for such purposes are bilateral overseas development aid and funds from the multilateral development banks and specialised environmental funds; other sources are likely to include private funding, debt relief, direct foreign investment and what Agenda 21 and the Plan of Implementation term 'innovative' financing mechanisms, including debt swaps, debt cancellation, the use of economic and

¹ See generally T. J. Hryniak, 'Debt for Nature Swaps: Effective But Not Enforceable', 22 *Case Western Reserve Journal of International Law* 141 (1990); D. Barrans, 'Promoting International Environmental Protections Through Foreign Debt Transactions', 24 *Cornell International Law Journal* 65 (1991); F. G. Minujin, 'Debt-for-Nature Swaps: A Financial Mechanism to Reduce Debt and Preserve the Environment', 21 *Environmental Policy and Law* 146 (1991); K. Von Moltke, 'Debt-for-Nature: The Second Generation', 14 *Hastings International and Comparative Law Review* 973 (1991). For a recent example, see United States–Panama Agreement regarding a debt-for-nature swap, Panama City, 10 July 2003, 42 ILM 1505.

² See e.g. the Rainforest Trust Fund, p. 671, below. The world's first environmental trust fund, the Bhutan Trust Fund for Environmental Conservation, was established in 1992 as a collaborative venture between the Royal Government of Bhutan, UNDP and the World Wildlife Fund: see www.bhutantrustfund.bt; and Royal Government of Bhutan, UNDP and WWF, *Prospectus Trust Fund for Environmental Conservation in Bhutan* (WWF, 1991).

³ Agenda 21, paras. 33.11, 33.12 and 33.13; see also WSSD Plan of Implementation, para. 80. ⁴ Para. 81.

fiscal incentives and tradeable permits.⁵ Agenda 21 also supports the reallocation of resources committed to military purposes.⁶

Overseas development assistance⁷

At UNCED – and again at the WSSD – the developed countries reaffirmed their political commitment to reach the accepted UN target of 0.7 per cent of GNP for overseas development assistance (ODA) and, to the extent that they had not yet reached that target, agreed to augment their aid programme to reach that target as soon as possible.⁸ The developed countries have not, however, accepted any international legal obligations or other international commitments to apportion ODA, or any part of it, to environmental programmes and projects. As a matter of domestic policy, a number of developed countries have committed themselves to the objective of allocating a proportion of ODA to environmental activities. The grant of ODA is subject to any obligations that the granting state may have under relevant international environmental law, including treaty obligations. Such obligations might include compliance with certain minimum standards, and the conduct of environmental assessments in respect of projects likely to damage the environment. Several bilateral and regional development assistance treaties include specific environmental obligations, which either require assistance to be directed towards environmental protection programmes or projects, or that development assistance should be subjected to some form of environmental assessment. Thus, environment and development were closely interwoven throughout the 1989 Lomé Convention, which provided that the support to be provided in the ACP–EU co-operation for the ACP states' efforts to achieve comprehensive self-reliant and self-sustained development must be based on development which achieves a 'sustainable balance between its economic objectives, the rational management of the environment and the enhancement of natural and human resources'.⁹ To the extent that overseas development assistance is subject to compliance with the national environmental laws of the assisting state, the possibility arises that such assistance could in effect apply national environmental laws extra-territorially.¹⁰ In practice, the political and economic requirements of the assisted state have limited the scope of making such types of

⁵ Chapter 4, pp. 124 *et seq.*, above. ⁶ Agenda 21, paras. 33.16, 33.17 and 33.18.

⁷ J. Hornberry, 'The Accountability of Development Assistance Agencies: The Case of Environmental Policy', 12 *Ecology Law Quarterly* 675 (1985); P. Muldoon, 'The International Law of Eco-Development: Emerging Norms for Development Assistance Agencies', 22 *Texas International Law Journal* 1 (1987); P. Kohona, 'UNCED – The Transfer of Financial Resources to Developing Countries', 1 *Review of European Community and International Environmental Law* 307 (1992); J. Gupta and N. van der Grijp (eds.), *Mainstreaming Climate Change in Development Cooperation* (2010).

⁸ Agenda 21, para. 33.15; WSSD Plan of Implementation, para. 85(a).

⁹ Art. 4. Since 2000, the Cotonou Agreement provides the new framework for EU–ACP aid co-operation. Art. 1 provides that the objectives of the Convention and the parties' international commitments 'shall be tackled through an integrated approach taking account at the same time of the political, economic, social, cultural and environmental aspects of development'.

¹⁰ On extra-territoriality, see Chapter 6, pp. 192–5, above. See also *R. v. Secretary of State for Foreign Affairs, ex parte World Development Movement Ltd* [1995] 1 All ER 611 (judgment declaring unlawful a decision of the UK Foreign Secretary to provide finance for the construction of the Pergau dam in Malaysia, on the ground that the grant of aid was so economically unsound that it violated section 1 of the Overseas Development Co-operation Act 1980). The Environmental Procedures of the United States Agency for International Development have generated controversy by tying the grant of development assistance by the United States to compliance with its national environmental laws, including in relation to assistance channelled through the multilateral development banks and other funds.

'green conditionality' arguments, and Principle 4 of the Rio Declaration provides a powerful basis for arguing that environmental protection must be an integral part of all development assistance.

The OECD Development Assistance Committee, which is the multilateral forum overseeing the provision of ODA from OECD countries, is the focal point for work seeking to mainstream environmental considerations into development assistance. In 1985, the OECD Council recommended that development assistance projects and programmes, which could significantly affect the environment, should be subjected to an environmental assessment at an early stage.¹¹ The Recommendation identifies the issues which should be considered in an environmental assessment, and requires an in-depth environmental assessment for certain very fragile environments, such as wetlands, mangrove swamps, coral reefs, tropical forests and semi-arid areas.¹² Other projects or programmes in need of environmental assessment include substantial changes in renewable resource use or farming and fishing practices, exploitation of hydraulic resources, infrastructure, industrial activities, extractive industries and waste management and disposal.¹³ More recently, in its Paris Declaration on Aid Effectiveness, the organisation called upon members to 'develop and apply common approaches for "strategic environmental assessment" at the sector and national levels'.¹⁴ Climate change adaptation is also an increasing focus of efforts to integrate environmental considerations into development assistance and co-operation programmes.¹⁵

Multilateral development banks

The World Bank and the six regional development banks have played an important role in the elaboration of rules of international environmental law relating to the provision of financial resources for sustainable development.¹⁶ In 1980, largely as a result of strong criticism targeted

¹¹ Recommendation on Environmental Assessment of Development Assistance Projects and Programmes, C(85)104 (1985). This recommendation is supplemented by OECD DAC Guidelines on Aid and Environment No. 1: Good Practices for Environmental Impact Assessment of Development Projects (1992).

¹² C(85)104 (1985), Appendix, para. 2.

¹³ Appendix, para. 3. Similar requirements have been applied in relation to public schemes aiming to insure or guarantee foreign investments from political and other risks, including regulatory change: see Chapter 20, pp. 885–6, below.

¹⁴ 3 February 2005, DCD/DAC/EFF(2005)1/FINAL, para. 41. On the notion of strategic environmental assessment, see Chapter 14, p. 613, above.

¹⁵ See e.g. OECD Declaration on Integrating Climate Change Adaptation into Development Cooperation, 4 April 2006, C(2006)94.

¹⁶ R. E. Stein and B. Johnson, *Banking on the Biosphere? Environmental Procedures and Practices of Nine Multilateral Development Agencies* (1979); B. Rich, 'The Multilateral Development Banks, Environmental Policy and the United States', 12 *Ecology Law Quarterly* 69 (1985); V. Nanda, 'Human Rights and Environmental Considerations in the Lending Policies of International Development Agencies: An Introduction', 17 *Denver Journal of International Law and Policy* 29 (1988); Z. Plater, 'Damming the Third World: Multilateral Banks, Environmental Dis-economies, and International Reform Pressures on the Lending Process', 17 *Denver Journal of International Law and Policy* 121 (1988); I. Shihata, *The World Bank in a Changing World: Selected Essays* (1991) (especially Chapter 4); I. Shihata, 'The World Bank and the Environment: A Legal Perspective', 16 *Maryland Journal of International Law and Trade* 1 (1992); K. Piddington, 'The Role of the World Bank', in A. Hurrell and B. Kingsbury (eds.), *The International Politics of the Environment* (1992), 212; C. Redgwell, *Intergenerational Trusts and Environmental Protection* (1999); G. Handl, *Multilateral Development Banking: Environmental Principles and Concepts Reflecting General International Law and Public Policy* (2001); T. Gutner, *Banking on the Environment: Multilateral Development Banks and Their Environmental Performance in Central and Eastern Europe* (2002); C. Carr and F. Rosembuj, 'World Bank Experiences in Contracting for Emission Reductions', 15 *Environmental Liability* 114 (2007).

at their environmentally unsound lending activities, the World Bank, five of the regional development banks, the EU, the OAS, UNEP and UNDP adopted a Declaration of Environmental Policies and Procedures Relating to Economic Development.¹⁷ The Declaration reaffirmed their support for the principles and recommendations of the Stockholm Conference and agreed to institute procedures for the 'systematic examination' of all development activities under consideration for financing to ensure that appropriate measures were proposed for compliance with the Stockholm instruments. They also undertook to provide technical assistance to developing countries on environmental matters, and, if appropriate, to support project proposals that protect, rehabilitate or otherwise enhance the human environment.¹⁸ This early commitment to achieving environmental protection is now reflected in more detailed requirements forming part of the internal laws of multilateral development banks and other funding agencies.

The World Bank and the regional banks are established by international treaty. As such, and having been endowed by their constituent instruments with certain capacities and functions on the international plane, they have a degree of international personality from which certain consequences flow, such as the power to make treaties and to undertake legal proceedings, and certain privileges and immunities under international law. As international legal persons, the multilateral development banks may also have rights and obligations under international law. In the *Reparations for Injuries* case, the ICJ ruled that the UN was 'a subject of international law and capable of possessing international rights and duties, and that it has the capacity to maintain its rights by bringing international claims'.¹⁹ From the Advisory Opinion of the Court, it is clear that the multilateral development banks will have a sufficient degree of international personality to subject them to certain duties under international law, including duties which arise under the operation of general and specific rules of international environmental law. Multilateral development banks are under an obligation to comply with general principles of international law relating to the protection of the environment, and any failure to comply with such obligations might entail their international responsibility, as well as liability for damages.²⁰ This possibility is important in the context of the attention which has been given to the development lending activities of multilateral development banks that have contributed to environmental despoliation and which have led to the adoption of measures to limit and prevent the adverse effects of their activities, including requirements for environmental impact assessment and environmental audits. Other, emerging approaches to dealing with the potential liability of the multilateral lender for the adverse environmental consequences of its activities include the use of 'environmental covenants'²¹ and agreements channelling liability to the recipient.

World Bank

The World Bank group comprises the International Bank for Reconstruction and Development (IBRD), the International Development Association (IDA) and the International Finance

¹⁷ 1 February 1980, 19 ILM 524 (1980). ¹⁸ Paras. 3 and 4.

¹⁹ *Reparation for Injuries Suffered in the Service of the United Nations*, Advisory Opinion (1949) ICJ Reports 174.

²⁰ Chapter 17, below. This raises the possibility of multilateral development banks being subjected to the application of 'lender liability' rules for the adverse or illegal environmental consequences of their loans. See also the draft Articles on Responsibility of International Organisations adopted by the ILC on first reading (2009).

²¹ 'Environmental covenants' have been used by the EBRD to obtain assurances that, for the duration of the period in which it is supervising implementation of a loan, the environmental measures specified in the loan agreement are being met; see G. Rose, 3 *Yearbook of International Environmental Law* 545 (1992).

Corporation (IFC).²² The IBRD was established in 1945 to promote the international flow of financial resources for productive purposes and to assist in the reconstruction of states after the Second World War. Its Articles of Agreement do not include any provisions specifically referring to environmental protection objectives or to the sustainable or rational use of natural resources.²³ Its main objective today is to provide financial support, usually in the form of loans, for productive projects or to finance reform programmes that will lead to economic growth in its less developed member countries. By the end of 2010, its outstanding disbursed loans totalled approximately US\$120 billion, with new loan commitments of US\$44.2 billion in 2010.²⁴

The IDA was established in 1959 to promote economic development in the least developed countries by providing finance on more concessionary terms than the conventional loans provided by the IBRD.²⁵ The IDA finances projects and reform programmes in countries that would otherwise not be able to service loans from the IBRD. It also provides grants to countries at risk of debt distress. The IDA's resources come from contributions from developed and developing countries, including original subscriptions and replenishments, amounting to total resources of US\$222 billion since its inception. The IDA is subject to the World Bank's Directive on Environmental Assessment, and, in 1989, the ninth replenishment called for all IDA recipients to complete Environmental Action Plans by June 1993. The IDA has just been subject to its fifteenth replenishment, which finances projects over the three-year period ending 30 June 2014.²⁶

The IFC was established in 1956, and became a specialised agency of the UN in 1957. The IFC is affiliated to the IBRD but has separate legal personality and maintains its capital separately from the IBRD.²⁷ The IFC invests in private or partly governmental enterprises together with private investors, with a commitment to providing finance in the private sector; its Environment and Social Sustainability Department ensures that IFC-financed projects meet the IFC's environmental policies and guidelines. In the 2010 fiscal year, the IFC committed US\$18 billion invested in 528 projects, an 18 per cent increase from the previous year. Of those funds, US\$1.64 billion were invested in clean energy projects and climate-change-related projects grew to 15 per cent of the value of the IFC's Advisory Services portfolio.²⁸

The World Bank group provides financial support for a wide range of projects, some of which have had notorious adverse environmental consequences. Large infrastructure projects,

²² Three other associated organisations are based within the World Bank: the Consultative Group on International Agricultural Research (CGIAR); the International Centre for the Settlement of Investment Disputes (ICSID) (see Chapter 20, p. 886, below); and the Multilateral Investment Guarantee Agency (MIGA) (see Chapter 20, p. 874, below). In 1990, the Global Environment Facility was established by the World Bank, UNEP and UNDP; see pp. 676–8, below.

²³ Washington, 27 December 1945, in force 27 December 1945, 2 UNTS 143 (as amended).

²⁴ Moody's Investor Service, *Credit Analysis: IBRD (World Bank)* (28 February 2011), at http://treasury.worldbank.org/cmd/pdf/Moodys_IBRD_Report_2011.pdf, 6, 8.

²⁵ Washington, 26 January 1960, in force 26 September 1960, 439 UNTS 249.

²⁶ See World Bank, 'World Bank's Fund for the Poorest Receives Almost \$50 Billion in Record Funding', Press Release No. 2011/248/EXT, available at <http://go.worldbank.org/F5A0Q0J8K0>. See also IDA Report from the Executive Directors of the International Development Association to the Board of Governors, *IDA 16: Delivering Development Results* (as modified on 18 March 2011), available at http://siteresources.worldbank.org/IDA/Resources/IDA16_Report-English-Final.pdf.

²⁷ Washington, 25 May 1955, in force 20 July 1956, 264 UNTS 117, www.ifc.org/enviro.

²⁸ IFC Annual Report 2010, available at www.ifc.org/ifcext/annualreport.nsf/content/AR2010.

particularly relating to energy, transport and other infrastructure, such as the construction of the Polonoreste dam in Brazil, have often resulted in significant environmental damage at the national and regional levels.²⁹ Smaller scale projects, including in particular those relating to agriculture, transportation and energy, have also been criticised for failing to take into account long-term environmental costs, and for contributing to environmental degradation and unsustainable development in developing countries. In the late 1980s, the Bank embarked on a programme of restructuring, which included the creation of an Environment Department and the adoption of a number of Operational Directives (now Operational Policies, accompanied by Bank Policies) related to the environment. These included Directives on involuntary resettlement,³⁰ indigenous people,³¹ the involvement of non-governmental organisations in World Bank supported activities,³² and environmental assessment.³³ In 1992, new environmental Operational Directives were issued in relation to National Environmental Action Plans³⁴ and agricultural pest management,³⁵ and subsequently policies have been adopted on natural habitats,³⁶ forests,³⁷ the safety of dams,³⁸ water resources management,³⁹ physical and cultural resources,⁴⁰ projects on international waterways,⁴¹ and rapid response to crises and emergencies.⁴² Also in 1992, the Executive Directors of the World Bank established a Rainforest Trust Fund, for which the Bank acts as trustee, that supports a Pilot Programme to Conserve the Brazilian Rainforest.⁴³ The Bank has since established a large number of other funds and facilities, particularly in the area of so-called 'carbon financing'. Examples include the Community Development Carbon Fund, providing financing for projects in the poorest countries that combine community development attributes with greenhouse gas emission reductions, and the Forest Carbon Partnership Facility, which provides funds towards capacity-building designed to assist developing countries in reducing emissions from deforestation and forest degradation (REDD). In 2001, the Bank's directors adopted a five-year Environment Strategy, which is currently under review with a new strategy expected to be finalised by mid-2011. During 2009 and 2010, the Bank held sixty-six consultation meetings in 126 countries on the proposed new strategy. The principal message from these meetings was the desire of countries to see more Bank support for 'green' development that better balances growth with environmental and social sustainability.⁴⁴

Regional and sub-regional development banks

The regional development banks also provide large-scale financial support in the form of loans to developing countries, which are used on a range of projects. Agenda 21 limited itself to

²⁹ See B. Rich, 'The Multilateral Development Banks, Environmental Policy and the United States', 12 *Ecology Law Quarterly* 681 at 705 (1985); see generally P. Le Prestre, *The World Bank and the Environment Challenge* (1989).

³⁰ Operational Directive 4.30 (1989); now Operational Policy (OP) 4.12 (as amended).

³¹ Operational Directive 4.20 (1989); now OP 4.10.

³² Operational Directive 14.70 (1990); now GP 14.70.

³³ Operational Directive 4.01 (1991); now OP 4.01 (as amended). See Chapter 14, pp. 617–19, above.

³⁴ Operational Directive 4.02 (1992); now OP 4.02 (as amended).

³⁵ Operational Directive 4.03 (1992); now OP 4.09 (as amended).

³⁶ OP 4.04 (as amended). ³⁷ OP 4.36 and BP 4.36 (as amended). ³⁸ OP 4.37.

³⁹ OP 4.07. ⁴⁰ OP 4.11. ⁴¹ OP 7.50 (as amended); Chapter 8, above. ⁴² OP/BP 8.00.

⁴³ World Bank, *World Development Report 1992* (1992), 170.

⁴⁴ World Bank, Environment Strategy 2010 Consultations, Summary of Phase I Consultations Feedback, available at www.worldbank.org.

calling for these banks and funds to play ‘an increased and more effective’ role in providing resources on concessional or other favourable terms to implement the activities set out in Agenda 21.⁴⁵

The African Development Bank was established in 1963 under the auspices of the UN Economic Commission for Africa to ‘contribute to the economic development and social progress of its members – individually and jointly’.⁴⁶ In 1987, an Environment Unit was established, and in 1990 the Board of Directors approved the Bank’s Environment Policy Paper, which established guidelines for the environmental impact assessment of project and non-project loans. The Environmental Policy was revised in 2004, and two new sets of guidelines adopted: on Strategic Impact Assessment and Social Assessment.

The Inter-American Development Bank was established under the auspices of the Economic Conference of the OAS in 1959 to ‘contribute to the acceleration of the process of economic and social development of the regional developing member countries’.⁴⁷ The Bank has an Infrastructure and Environment Sector (formerly an Environment Committee and an Environmental Protection Division established in 1990) to ensure that the Bank’s operations comply with the environmental legislation of recipient countries and its own environmental impact assessment and related requirements.⁴⁸

The Asian Development Bank was established in 1965 under the auspices of the predecessor organisation to the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP).⁴⁹ It has had an Office of the Environment for some time, and in November 2002 adopted an Environmental Policy paper.⁵⁰ This was replaced in 2009 by a new Safeguard Policy Statement governing the environmental and social safeguards on the Bank’s operations.⁵¹ The Safeguard Policy Statement includes requirements for incorporating environmental assessments into project cycles.⁵²

The Caribbean Development Bank was established in 1970 under the auspices of UNDP ‘to contribute to the harmonious economic growth and development of the member countries in the Caribbean and to promote economic co-operation and integration among them, having special attention and urgent regard to the needs of the less developed member countries of the region’.⁵³ The Bank requires its borrowers to undertake an impact assessment of project proposals to ensure that they are environmentally sound and sustainable, and that any

⁴⁵ Para. 33.16(a)(ii); see also WSSD Plan of Implementation, para. 159.

⁴⁶ Khartoum, 4 August 1963, in force 10 September 1964, 510 UNTS 3 (2002, 6th edn) (www.afdb.org).

⁴⁷ Washington, 8 April 1959, in force 30 December 1989, 389 UNTS 69 (www.iadb.org); see IDB, *IDB and the Environment* (1990–2002); and Inter-American Development Bank, *Environment and Safeguards Compliance Policy* (2006).

⁴⁸ The Bank has policies and guidelines relating to environmental sanitation, coal-fired power plants, environment and safeguards compliance, fisheries development, forestry development, natural and unexpected disasters and disaster risk management.

⁴⁹ Manila, 4 December 1965, in force 22 August 1966, 571 UNTS 123 (www.adb.org).

⁵⁰ The ADB’s 2002 Environment Policy contained five main elements: (1) promoting environment and natural resource management interventions to reduce poverty directly; (2) assisting developing member countries to mainstream environmental considerations in economic growth; (3) helping maintain global and regional life-support systems that underpin future development prospects; (4) building partnerships to maximise the impact of ADB lending and non-lending activities; and (5) integrating environmental considerations across all ADB operations.

⁵¹ Available at www.adb.org/Documents/Policies/Safeguards/Safeguard-Policy-Statement-June2009.pdf.

⁵² Safeguard Policy Statement 2009, Appendix 1, D.1.

⁵³ Kingston, 18 October 1969, in force 26 January 1970, 712 UNTS 217 (as amended; latest version 2007) (www.caribank.org).

environmental consequences are taken into account in the project design. It is in the process of finalising a formal Environmental Policy. The vulnerability of the Caribbean region to climate change and other natural disasters led the Bank to designate disaster risk management and environmental sustainability as cross-cutting themes in its 2005–9 Strategic Plan, and supporting environmental sustainability and advancing the climate change agenda have been identified as core themes for the seventh cycle of the Bank's Special Development Fund (2009–12).

The Islamic Development Bank was established in 1973 to foster the economic development and social progress of member countries and Muslim communities in accordance with the principles of *Shari'ah* (Islamic law).⁵⁴ The Bank participates in equity capital and grants loans for projects and enterprises and provides financial assistance to members for economic and social development. It requires the prior environmental assessment of projects before funds will be disbursed.

The European Bank for Reconstruction and Development was established in 1990 to contribute to the economic progress and reconstruction of the countries of Central and Eastern Europe and to apply the principles of multi-party democracy, pluralism and market economics.⁵⁵ The EBRD was the first multilateral development bank to include in its constitution a specific commitment to environmental protection. The EBRD is required to 'promote in the full range of its activities environmentally sound and sustainable development'.⁵⁶ This language implies that all of its activities must comply with environmental standards, although the Articles of Agreement do not specify the source of these standards. Possible sources of environmental standards include those established by general international law, those established by the national law of donor and/or recipient countries, or any applicable regional rules such as those of EC environmental law. In performing its functions, the Bank is expressly mandated to make loans and to provide technical assistance for the reconstruction or development of infrastructure, including environmental programmes.⁵⁷ The Bank is also required to report annually on the environmental impact of its activities.⁵⁸ Since January 1992, the Bank has adopted detailed environmental procedures, including the use of environmental assessments, environmental audits and environmental covenants. The most recent policy document addressing these issues is the 2008 Environment and Social Policy.⁵⁹ The Bank administers six multinational funds for nuclear safety.⁶⁰

In the context of the EU, financial support of a general nature is provided to projects both inside and outside the member states by the European Investment Bank, and to projects in EU member states by the general programme on structural funds. The European Investment Bank is established by the EU Treaty and has as its task to contribute to the 'balanced and steady

⁵⁴ Conference of Finance Ministers of Muslim Countries held in Jeddah in Dhul Q'adah, December 1973 (www.isdb.org).

⁵⁵ 23 ILM 1083 (1990), Art. 1 (www.ebrd.org); P. Sands, 'Present at the Creation: A New Development Bank for Europe in the Age of Environment Awareness', 84 *Proceedings of the American Society of International Law* 77 at 88–91 (1990).

⁵⁶ Art. 2(1)(vii). ⁵⁷ Art. 11(1)(v). ⁵⁸ Art. 35(2).

⁵⁹ See www.ebrd.com/downloads/about/sustainability/2008policy.pdf.

⁶⁰ A Nuclear Safety Account (to improve safety at nuclear plants); three International Decommissioning Support Funds for Bulgaria, Lithuania and the Slovak Republic (to support the decommissioning of high-risk nuclear plants); the Chernobyl Shelter Fund (to contribute to the costs of a Chernobyl Shelter Implementation Plan, at a cost of US\$768 million); and the Nuclear Window of the Northern Dimension Environmental Partnership (to support projects that will mitigate the legacy of the operation of nuclear-powered ships and submarines of the Northern fleet in Russia that are in different stages of decommissioning).

development of the common market' in the interest of the EU.⁶¹ It operates on a non-profit-making basis and provides loans and guarantees to facilitate the financing of three categories of projects: for developing less developed regions; for modernising or converting companies or developing fresh activities where these projects are too large or complex to be financed by individual member states; and projects of common interest to several member states which cannot be financed entirely by those member states. Protection of and improving the environment and promoting sustainable communities is stated to be one of its six strategic lending priorities.⁶² As part of its Projects Directorate, it currently has departments dealing with energy and environmental and regional development, in addition to an Environment, Climate and Social Office. As an institution of the EU, the Bank is subject to compliance with the standards and procedures established under EU environmental law. Environmental impact assessment forms part of the Bank's typical appraisal process for a project.

Environment funds

The establishment of the Multilateral Fund (under the 1990 amendments to the 1987 Montreal Protocol) and the Global Environmental Facility highlights the growing connection between the development and application of environmental rules and standards and the provision of financial resources to ensure their implementation, particularly by developing countries. In fact, the provision of international financial resources dedicated to international environmental protection goals, and the establishment of the necessary mechanisms, dates back at least to 1972 when the World Heritage Convention established the World Heritage Fund. This was followed in the same year by the creation of the voluntary UNEP Environment Fund, and subsequently by funds established under the UNEP Regional Seas Programme.⁶³ In 1990, a Wetlands Fund was established under the 1971 Ramsar Convention, and the 1989 Basel Convention allows the parties to decide on the establishment of 'appropriate funding mechanisms of a voluntary nature' and to consider the establishment of a revolving fund to assist on an interim basis in case of emergency situations to minimise damage from accidents.⁶⁴ Currently the Basel Convention operates two funds: a general trust fund (with pledges for 2010 totalling close to US\$4.4 million) and a technical trust fund to provide technical assistance to developing countries (with pledges for 2010 of US\$938,518). The EU has a financial instrument (LIFE) and a cohesion financial instrument which is to provide financial assistance for environmental projects; both instruments supplement the activities of the EU structural funds, the European Investment Bank and funds dedicated to Central and Eastern Europe under the PHARE programme. Other funds that provide financial resources in the form of compensation for environmental damage include the Kuwait Compensation Fund,⁶⁵ and the International Oil Pollution Fund.⁶⁶

UNEP Environment Fund

The voluntary Environment Fund established by General Assembly Resolution 2997 was established to enable the UNEP Governing Council to fulfil its policy guidance role for the

⁶¹ Arts. 308 and 309 (formerly Arts. 266 and 267) of the EU Treaty.

⁶² EIB, Corporate Operational Plan (2011–13), approved 2010. ⁶³ Chapter 9, pp. 437 *et seq.*, above.

⁶⁴ Art. 14. ⁶⁵ Chapter 17, pp. 720 *et seq.*, below. ⁶⁶ Chapter 17, pp. 748–51, below.

direction and co-ordination of activities.⁶⁷ It finances the whole or partial costs of new environmental initiatives within the UN system, including monitoring and data collection, environmental research, information exchange, research on appropriate technologies, and such other programmes as the Governing Council may decide upon.⁶⁸ In the biennium 2008–9, the Fund received contributions of more than US\$174 million, although contributions in 2010–11 are likely to be reduced given the impact of the global financial crisis.

World Heritage Fund

The Fund for the Protection of the World Cultural and Natural Heritage was established under Article 15 of the World Heritage Convention.⁶⁹ It is a trust fund that grants financial assistance to protect cultural and natural heritage of outstanding universal value, and is administered by the World Heritage Committee. The Fund administers an annual budget of approximately US\$4 million, raised by a combination of voluntary and compulsory contributions. The majority is spent on technical co-operation and training, with the remainder spent on preparatory assistance and regional studies, emergency assistance and advisory services. There is also a specific Rapid Response Facility small grants scheme used to mobilise funds quickly to respond to emergency situations.

Wetland Conservation Fund

The Wetland Conservation Fund (now known as the Small Grants Fund) was established in 1990 by the Conference of the Parties to the 1971 Ramsar Convention to assist developing country parties to implement their obligations under the Convention.⁷⁰ The Fund is operated in a similar way to the World Heritage Fund, and provides assistance to developing countries and those with economies in transition, upon their request, to support conservation and wise use of wetlands in accordance with the Convention's Strategic Plan 2009–15. Funds may also be used to provide emergency management assistance for Ramsar sites under threat and to provide 'preparatory assistance' to allow developing countries which are not parties to request support for the designation of a site for the List, which is a condition for becoming a party. The Fund is administered by the Standing Committee to the Convention and by the Bureau.

Montreal Protocol Multilateral Fund⁷¹

The 1990 amendments to the 1987 Montreal Protocol established a mechanism, including a Multilateral Fund, to provide financial and technical co-operation, including the transfer of technologies, to developing country parties to enable their compliance with the control

⁶⁷ UNGA Res. 2997 (XXVII) (1972). ⁶⁸ Part III, paras. 2 and 3.

⁶⁹ Chapter 10, pp. 510–11, above (<http://whc.unesco.org/en/funding/#1>).

⁷⁰ Conf. Res. C.4.3; on the 1971 Ramsar Convention, see Chapter 10, pp. 492–4, above. In 1997, the Ramsar secretariat and the United States established a separate 'Wetlands for the Future Fund'. The Ramsar secretariat also administers the Swiss Grant Fund for wetland conservation in Africa.

⁷¹ R. Bowser, 'History of the Montreal Protocol's Ozone Fund', 14 *International Environmental Reporter* 6356 (1991); P. Lawrence, 'Technology Transfer Funds and the Law: Recent Amendments to the Montreal Protocol on Substances That Deplete the Ozone Layer', 4 *Journal of Environmental Law* 15 (1992); J. Patlis, 'The Multilateral Fund of the Montreal Protocol: A Prototype for Financial Mechanism in Protecting the Global Environment', 25 *Cornell International Law Journal* 181 (1992); F. Biermann, 'Financing Environmental Policies in the South: Experiences from the Multilateral Ozone Fund', 9 *International Environmental Affairs* 179 (1997).

measures established under the Protocol.⁷² The Fund operates under the authority of the parties who decide on its overall policies.⁷³ The Fund meets on a grant or concessional basis the 'agreed incremental costs' of developing country parties in order to enable their compliance with the control measures of the Montreal Protocol; finances clearing-house functions to assist in identifying co-operation needs, to facilitate technical co-operation, to distribute information and relevant materials, to hold workshops, and to facilitate and monitor other co-operation available; and finances the secretarial services of the Fund.⁷⁴ An Executive Committee, comprising seven developed and seven developing country parties, implements specific operational policies guidelines and administrative arrangements, including the disbursement of resources, with the co-operation and assistance of the World Bank, UNEP, UNDP and UNIDO.⁷⁵ The Fund is financed by countries not operating under Article 5(1) (i.e. by developed countries) in currency or in kind on the basis of the United Nations scale of assessments, and allows bilateral and agreed regional co-operation to be considered as a contribution to the Fund provided that such co-operation, as a minimum, relates to compliance with the Montreal Protocol, provides additional resources and meets incremental costs.⁷⁶ The concurrence of the beneficiary party is required, and decisions taken under the Fund are to be taken by consensus whenever possible, but otherwise by a two-thirds majority of the parties present and voting, including a 'double majority' of developed country parties and of developing country parties.⁷⁷

Global Environment Facility⁷⁸

The Global Environment Facility (GEF) was established in 1990 as a three-year 'experiment' to provide grants for investment projects, technical assistance and research to developing countries to protect the global environment and to transfer environmentally benign technologies.⁷⁹ The establishment of the GEF followed a proposal by France in September 1989 and materials prepared in 1990 by the World Bank in consultation with UNEP and UNDP, on the understanding that no new institutional structures would be created and only minimal changes would be

⁷² 1987 Montreal Protocol, as amended, Art. 10(1)–(3) (www.multilateralfund.org). The parties also adopted an Indicative List of Categories of Incremental Costs: Appendix I to Decision II/8 ('Financial Mechanism') adopted by the Second Meeting of the Parties, UNEP/OzL.Pro.2/3, Annex IV, 29 June 1990. See now Annex VIII, Report of the Fourth Meeting of the Parties (25 November 1992), UNEP/OzL.Pro.4/15.

⁷³ The Fund has been replenished seven times: US\$240 million when India and China became parties (for 1991–3), US\$455 million (1994–6), US\$466 million (1997–9), US\$440 million (2000–2), US\$474 million (2003–5), US\$400.4 million (2006–8) and US\$400 million (2009–11). It has funded about 6,200 projects in 148 developing countries, and is estimated to have resulted in the phase-out by the end of December 2009 of the consumption of some 249,494 tonnes of ozone-depleting products and the production of 196,679 tonnes of ozone-depleting products.

⁷⁴ Art. 10(1), (3) and (4); see Terms of Reference of the Multilateral Fund, Annex IX of the Report of the Fourth Meeting of the Parties (25 November 1992), UNEP/OzL.Pro.4/15, Annex VIII, note 72 above.

⁷⁵ Art. 10(5). See Terms of Reference of the Executive Committee, Decision IX/16, Annex V of the report of the Ninth Meeting of the Parties, and further modified by the Sixteenth Meeting of the Parties in Decision XVI/38. ('Financial Mechanism'), note 72 above.

⁷⁶ Art. 10(6). ⁷⁷ Art. 10(8) and (9).

⁷⁸ J. Helland-Hansen, 'The Global Environment Facility', 3 *International Environmental Affairs* 137 (1991); L. Boisson de Chazournes, 'Le Fonds pour l'Environnement Mondial: Recherche et Conquête de Son Identité', *Annuaire Français de Droit International* 612 (1995); Z. Young, *A New Green Order?: The World Bank and the Politics of the Global Environment Facility* (2002).

⁷⁹ Res. No. 91-5 of the Executive Directors of the World Bank, November 1991. See also World Bank Operational Policy 10.20 on GEF operations (replacing OD 9.01).

made to the three implementing agencies.⁸⁰ The first meeting of participating countries was held in May 1991. The resolution provided for the establishment of the GEF, comprising the Global Environment Trust Fund (GET), co-financing arrangements with the GET, the Ozone Projects Trust Fund and such other trust funds and agreements as the World Bank may from time to time establish or agree to administer under the GET.

In March 1994, representatives of the then seventy-three states participating in the GEF's pilot phase and of other states wanting to participate in the restructured GEF accepted an Instrument for the Establishment of the Restructured GEF.⁸¹ The Instrument entered into force through subsequent adoption by the governing bodies of UNDP, UNEP and the World Bank. The World Bank serves as trustee of the GEF Trust Fund, which receives and administers contributions.⁸² Any member of the UN or its specialised agencies may become a participant in the restructured GEF. The arrangements for the governance of the GEF reflect the complexities of dividing responsibilities between donor and recipient participant states: it comprises an Assembly, a Council and a secretaria;, and a Scientific and Technical Advisory Panel (STAP) provides advice.⁸³ The Assembly consists of representatives of all of the participants, and has responsibility for reviewing the general policies of the GEF and its operation, and for adopting amendments to the Instrument.⁸⁴ The Council has responsibility for operational policies and programmes, and consists of thirty-two members (sixteen from developing countries, fourteen from developed countries and two from countries from Central and Eastern Europe and the former Soviet Union), some of which represent a constituency of states.⁸⁵ The Implementing Agencies are UNDP, UNEP, FAO, UNIDO, the International Fund for Agricultural Development, the regional development banks and the World Bank (which collaborate in accordance with an inter-agency agreement),⁸⁶ and they are accountable to the Council for their GEF-financed activities, which is itself under an obligation to ensure that the GEF operates, *inter alia*, in conformity with the policies, programme priorities and eligibility criteria decided by the Conferences of the Parties of the conventions which it supports.⁸⁷ To that end, the Council has approved co-operative arrangements or agreements with the Conferences of the Parties to the conventions.⁸⁸

According to the Instrument, the GEF is to provide 'new and additional grant and concessional funding to meet the agreed incremental costs of measures to achieve agreed global environmental benefits' in the following areas: climate change; biodiversity; international waters; and ozone layer depletion. Also eligible for funding are the agreed incremental costs of activities concerning land degradation, primarily desertification and deforestation.⁸⁹ The GEF is designated as the financial mechanism under four conventions (the 1992 Climate

⁸⁰ The establishment of the GEF was endorsed by Res. 16/47 of the UNEP Governing Council, 13 May 1991, and Decision 92/16 of the UNDP Governing Council, 26 May 1992. Procedural arrangements for operational co-operation under the GEF were signed by the Executive Heads of the World Bank, UNDP and UNEP: see Res. No. 91-5, Annex C.

⁸¹ Instrument Establishing the GEF, Geneva, 16 March 1994, 33 ILM 1273 (1994) (as amended in 1998, 2002, 2006 and 2010).

⁸² See Annex B (Role and Fiduciary Responsibility of the Trustee of the GEF Trust Fund), providing that the Trustee is accountable to the Council: para. 2.

⁸³ Paras. 7, 11 and 24. ⁸⁴ Paras. 13-14.

⁸⁵ Paras. 15-20 and Annex E (Constituencies of the GEF Council).

⁸⁶ Annex D (Principles of Co-operation Among the Implementing Agencies).

⁸⁷ Paras. 12, 22, 26 and 27, and Annex D. ⁸⁸ Para. 27. ⁸⁹ Paras. 2 and 3.

Change Convention,⁹⁰ the 1992 Biodiversity Convention,⁹¹ the 1994 Desertification Convention⁹² and the 2001 POPs Convention⁹³). Although not formally linked to the 1987 Montreal Protocol, the GEF supports implementation of the Protocol in countries with economies in transition, and also provides funds for projects to protect international watercourses. In addition, the GEF has been designated to manage other funds, such as the Adaptation Fund, the Least Developed Countries Fund and the Special Convention Fund (all under the 1992 Climate Change Convention). The restructured GEF was originally capitalised at US\$2 billion (over three years); over the ensuing twenty years the GEF has allocated some US\$9.2 billion to more than 2,700 projects in 165 countries.⁹⁴

An important issue that has emerged is the legal relationship between the Conferences of the Parties of the various conventions that designate the GEF as their financial mechanism and the GEF Participants' Assembly, and in particular whether the Conferences of the Parties will have the final say on individual funding decisions or more general decisions taken by the GEF. Under the conventions, the ultimate decision-making power rests with the Conferences of the Parties, which are granted the right to decide on the 'policies, programme priorities and eligibility criteria' of the financial mechanism (the Biodiversity Convention also grants power over 'strategies'), and in the event that the financial mechanism is not being operated to the satisfaction of the Conferences of the Parties each will be free to take a decision redesignating the international institution operating the mechanism. In that sense, the GEF and its Participants' Assembly are, ultimately, accountable to the Conferences of the Parties and, in the case of the Biodiversity and POPs Conventions, under the 'authority' of the respective Conferences of the Parties. Whether the GEF and the Participants' Assembly are accountable to the Conferences of the Parties for each individual funding decision is less clear, but the ultimate sanction of 'redesignation' provides an incentive for the GEF to ensure that the wishes of the Conferences of the Parties are followed, or at least of those parties comprising the particular majority of parties which may be required to adopt a decision on the designation or redesignation of the financial mechanism.⁹⁵

⁹⁰ The 1992 Climate Change Convention requires the developed country parties to provide new and additional financial resources to developing country parties, and links the implementation by developing country parties of their commitments to the fulfilment by developed country parties of their financial commitments: Art. 4(3) and (7).

⁹¹ The 1992 Biodiversity Convention requires developed country parties to provide 'new and additional' financial resources to enable developing country parties to meet the agreed full incremental cost of implementing their commitments under the Convention, and links such implementation with the effective implementation by developed country parties of their financial commitments under the Convention: Art. 20(2) and (4). See also 2000 Biosafety Protocol, Art. 28, Chapter 10, pp. 466–8, above.

⁹² The 1994 Desertification Convention called for 'the availability of financial mechanisms' and establishes a Global Mechanism to 'promote actions leading to the mobilization and channelling of substantial financial resources': Art. 21(1) and (4). The GEF was selected to serve as the financial mechanism for the Convention in 2003.

⁹³ The 2001 POPs Convention similarly requires developed country parties to provide new and additional financial resources to enable developing country parties and economies in transition to 'meet the agreed full incremental costs of implementing' measures required by the Convention, as agreed between the recipient party and the financial mechanism: Art. 13(2).

⁹⁴ The primary source of grants made by the GEF is from the GEF Trust Fund. Between 1991 and 2009, the GEF allocated US\$8,591 million to projects in seven focal areas: US\$2,743 million for biodiversity; US\$2,792 million for climate change; US\$1,065 million for international waters; US\$180 million to ozone layer depletion; US\$358 million for persistent organic pollutants; US\$339 million for land degradation; and US\$1,114 million for multifocal projects.

⁹⁵ See 1992 Climate Change Convention, Art. 7(3); 1992 Biodiversity Convention, Art. 23(3); 2001 POPs Convention, Art. 13(8).

TECHNOLOGY TRANSFER AND TECHNICAL ASSISTANCE⁹⁶

One of the major problems facing the international community is the use of obsolete, environmentally damaging techniques by industry in many countries. The wider dissemination and use of state-of-the-art technologies, including 'clean technologies', would go a long way to reducing the damaging effects of certain activities. It is also evident that in dealing with environmental problems such as climate change and pollution associated with certain industrial chemicals and pesticides, it will be necessary to develop and disseminate a range of innovative technologies to replace existing substances and modes of energy production. Consequently, devising means to encourage or require the transfer of environmentally sound technologies, particularly to developing countries, is a central goal of international environmental law. Prior to UNCED, the provisions of international environmental treaties concerning the transfer of technology and know-how, as well as the provision of technical assistance, particularly from developed to developing countries, established only vague and general commitments of limited value and effect. The inadequacy of many treaty provisions on technology transfer was widely recognised, and developments reflected in the provisions of treaties adopted at and since UNCED suggest that technology transfer provisions are acquiring an enhanced legal and practical significance, with renewed efforts to address the issues properly.

A first development was broad recognition of the need to ensure that financial resources are available to meet the costs of transferring environmentally sound technologies and know-how, which contributed to the establishment of international mechanisms to channel resources. A second development – evident in treaties such as the 1992 Biodiversity and Climate Change Conventions – was the linkage made between the implementation by developing country parties of their treaty commitments with the transfer of technology and know-how from developed country parties in fulfilment of their treaty obligations. A third development, which seeks to address the problem that the application of intellectual property rights might raise barriers to the transfer of environmentally sound technologies, is considered in a later section of this chapter.

⁹⁶ See C. P. Jeffries, 'Regulation of the Transfer of Technology: An Evaluation of the UNCTAD Code of Conduct', 18 *Harvard International Law Journal* 309 (1977); S. K. Agrawala, 'Transfer of Technology to LDCs: Implications of the Proposed Code', 23 *Indian Journal of International Law* 246 (1983); M. A. Bent, 'Exporting Hazardous Industries: Should American Standards Apply?', 20 *New York Journal of International Law and Politics* 777 (1988); R. E. Lutz, 'The Export of Danger: A View from the Developed World', 20 *New York Journal of International Law and Politics* 629 (1988); M. Blakeney, *Legal Aspects of Technology Transfer to Developing Countries* (1989) (and the bibliography cited at 190–202); T. A. Cinti 'The Regulator's Dilemma: Should Best Available Technology or Cost Benefit Analysis Be Used to Determine the Applicable Hazardous Waste Treatment, Storage, and Disposal Technology?', 16 *Rutgers Computer and Technology Law Journal* 145 (1990); M. Lachs, 'Thoughts on Science, Technology and World Law', 86 *American Journal of International Law* 673 (1992); G. MacDonald, 'Technology Transfer: The Climate Change Challenge', 1 *Journal of Environment and Development* 1 (1992); L. Gundling, 'Compliance Assistance in International Environmental Law: Capacity Building Through Financial and Technology Transfer', 56 *ZaöRV* 796 (1996); L. Boisson de Chazournes, 'Financial and Technological Transfers', in D. Bodansky, J. Brunnée and E. Hey (eds.), *The Oxford Handbook of International Environmental Law* (2007), Chapter 41; U. Kacker, 'Technology Transfer and Financing: Issues for Long Term Climate Policy in Developing Countries', 3 *Carbon and Climate Law Review* 292 (2009); J. de Sepibus, 'Reforming the Clean Development Mechanism to Accelerate Technology Transfer', 21 *Environmental Law and Management* 189 (2009); C. Gerstetter, D. Marcellino and E. von Sperber, 'Technology Transfer in the International Climate Negotiations – The State of Play and Suggestions for the Way Forward', 4 *Carbon and Climate Law Review* 3 (2010); K. Sullivan, 'Technology Transfer Provisions in Multilateral Environmental Agreements: A Commercial Perspective', 22 *Environmental Law and Management* 288 (2010).

As early as 1972, Principle 12 of the Stockholm Declaration recognised the need to make international technical assistance available to developing countries, and Principle 20 called for ‘environmental technologies to be made available to developing countries on terms which would encourage their wide dissemination without constituting an economic burden’. Twenty years later, Agenda 21 devoted an entire chapter to the subject of technology transfer and related issues, reflecting the commitment, albeit a limited one, of the international community concerning technology transfer and technical assistance.⁹⁷ The main objectives of Agenda 21 in this regard were to help ensure access to scientific and technological information, and to:

promote, facilitate and finance, as appropriate, the access to and the transfer of environmentally sound technologies and corresponding know-how, in particular to developing countries, on favourable terms, including on concessional and preferential terms, as mutually agreed, taking into account the need to protect intellectual property rights as well as the special needs of developing countries for the implementation of Agenda 21.⁹⁸

Further objectives included: promoting environmentally sound indigenous technologies; supporting endogenous capacity-building; and promoting long-term partnerships between holders of technologies and potential users.⁹⁹ Similar provisions are reflected in Principle 9 of the Rio Declaration, which declares that:

states should co-operate to strengthen endogenous capacity-building for sustainable development by improving scientific understanding through exchanges of scientific and technological knowledge, and by enhancing the development, adaptation, diffusion and transfer of technologies, including new and innovative technologies.

Both of these instruments set out ‘safe’ commitments, and it was left for more formal treaty arrangements to translate the objectives into the actual transfer of technology. The frequent references to technology transfer and technical capacity-building in the WSSD Plan of Implementation reflect the ongoing importance of this issue in international environmental law, although the Plan itself did little more than restate the 1992 commitments.¹⁰⁰

Technology transfer is a term that is frequently used, with little consideration given to what it actually means. In general terms, ‘technology transfer’ describes the specific communication of a body of knowledge which is enshrined in a particular transaction, comprising an integrated sequence of commercial or non-commercial transactions, which might include the following:

⁹⁷ Chapter 34 of Agenda 21 (‘Transfer of Environmentally Sound Technology, Co-operation and Capacity-Building’).

⁹⁸ Agenda 21, para. 34.14(a) and (b). ⁹⁹ Para. 34.14(c)–(e).

¹⁰⁰ Paras. 99–100. The Plan also supported efforts to develop rules on access to genetic resources and benefit sharing (para. 44(o)), the culmination of which is the 2010 Nagoya Protocol, discussed at pp. 684–5, below.

the grant or assignment of industrial property rights; the communication of technical know-how in a documentary form; the communication of technical or other know-how in the supply of services; assistance in the commissioning of an industrial plant; the sale or lease of machinery or the provision of services in relation to the sale or lease of machinery; providing services to assist in the recruitment and training of staff and the institutions of managerial and accounting procedures; providing services in relation to the marketing and distribution of the product of the plant.¹⁰¹

In the context of international environmental agreements, technology transfer could include each one of these aspects, as well as larger infrastructure projects and technologies and services specifically related to environmental know-how. The Intergovernmental Panel on Climate Change (IPCC) gave specific consideration to the meaning of the term in its 2000 Special Report on Methodological and Technological Issues on Technology Transfer. In that report, the IPCC defined the term 'technology transfer' as a broad set of processes covering the flows of know-how, experience and equipment for mitigating and adapting to climate change amongst different stakeholders. The term 'transfer' was further defined to 'encompass diffusion of technologies and technology cooperation across and within countries', as well as 'the process of learning to understand, utilize and replicate the technology, including the capacity to choose and adapt to local conditions and integrate it with indigenous technologies'.¹⁰²

Treaty provisions

The difficulties in establishing practical and effective means to ensure the transfer of environmentally sound technology is evident from the unsuccessful efforts of the international community to elaborate an International Code of Conduct on the Transfer of Technology to establish basic rules of general application governing the transfer of technology, under the auspices of the United Nations Conference on Trade and Development (UNCTAD) and the World Intellectual Property Organization (WIPO).¹⁰³ Progress on the subject was equally limited under early international environmental agreements. Early treaties included general language on the exchange of information on appropriate technologies.¹⁰⁴ UNCLOS included a more detailed commitment to technology transfer, in particular to developing countries. Part XIV contains thirteen Articles on the development and transfer of marine technology, and adopts language subsequently relied upon in the UNCED instruments. UNCLOS calls for the development and transfer of science and marine technology on 'fair and reasonable terms and conditions' as

¹⁰¹ M. Blakeney, *Legal Aspects of the Transfer of Technology to Developing Countries* (1989), 3.

¹⁰² IPCC, *Methodological and Technological Issues in Technology Transfer* (2000), 16.

¹⁰³ The draft Code sought to establish rules on, *inter alia*: objectives and principles; national regulations; restrictive business practices; responsibilities and obligations of parties to technology transfer transactions; special treatment for developing countries; international collaboration; and institutional and dispute settlement mechanisms. By 1993, it became clear that agreement on a Code would not be forthcoming: UNGA Res. 48/167 (1993). On the history of the Code, see M. Blakeney, *Legal Aspects of the Transfer of Technology to Developing Countries* (1989), 131–61; and S. Patel, P. Roffe and A. Yusuf, *International Technology Transfer: The Origins and Aftermath of the United Nations Negotiations on a Code of Conduct* (2000).

¹⁰⁴ See 1979 LRTAP Convention, Art. 8(c); see also 1988 NO_x Protocol, Art. 3 (Exchange of Technology); 1991 VOC Protocol, Art. 4 (Exchange of Technology).

a principal objective, taking into account the capabilities of states with regard to, *inter alia*, the conservation and management of marine resources and the protection and preservation of the marine environment, and should seek to accelerate the social and economic development of the developing states.¹⁰⁵ Under UNCLOS, states commit themselves to: foster favourable economic and legal conditions for technology transfer for the benefit of all parties concerned on an equitable basis;¹⁰⁶ promote the acquisition, evaluation and dissemination of marine technological knowledge; facilitate access to information and data; develop appropriate marine technology; and develop the necessary infrastructure to facilitate the transfer of technology.¹⁰⁷ Under Article 269, states are required to endeavour to, *inter alia*:

establish programmes of technical co-operation for the effective transfer of all kinds of marine technology to states which may need and request technical assistance in this field, particularly the developing land-locked and geographically disadvantaged states, as well as other developing states which have not been able either to establish or develop their own technological capacity in marine science and in the exploration and exploitation of marine resources or to develop the infrastructure of such technology

and to promote 'favourable conditions for the conclusion of agreements, contracts and other similar arrangements, under equitable and reasonable conditions'.¹⁰⁸ Further commitments concern fostering international co-operation and establishing national and regional marine scientific and technological centres whose functions include compiling information on the marketing of technology and on contracts and other arrangements concerning patents.¹⁰⁹ The UNEP Regional Seas Conventions include rather more general commitments on scientific and technical co-operation.¹¹⁰ Other conventions providing for the promotion of clean technologies include the 1994 Desertification Convention¹¹¹ and, in relation to technical assistance, the 2001 POPs Convention.¹¹²

The ozone regime

More concrete legal developments in relation to the transfer of technology occurred under the regime established by the 1985 Vienna Convention and the 1987 Montreal Protocol. The earlier

¹⁰⁵ Art. 266(1) and (2). ¹⁰⁶ Art. 266(3). ¹⁰⁷ Art. 268. ¹⁰⁸ Art. 269.

¹⁰⁹ Arts. 270–278, especially Art. 277(h). See also Art. 144 (technology transfer relating to activities in the Area) and Art. 202 (technical assistance to developing countries).

¹¹⁰ 1980 Athens LBS Protocol, Arts. 9 and 10; 1983 Cartagena Convention, Art. 13; 1985 Nairobi Convention, Art. 14; 2010 Nairobi Convention, Art. 15; 1986 Noumea Convention, Arts. 17 and 18; see Chapter 9, pp. 437 *et seq.*, above. More specific requirements are found in the 2002 Antigua Convention: Art. 12 ('Scientific and technological information') which requires parties to undertake activities such as 'Encouraging scientific, technological and educational assistance programmes, and those of any other kind, for the protection and sustainable development of marine and coastal areas, and for the prevention, reduction and control of pollution and other forms of environmental deterioration in such areas' (Art. 12(1)(a)), with such assistance comprising, *inter alia*: the training of scientific and technical staff (Art. 12(1)(a)(ii)); capacity-building of the contracting parties to train teams and adopt those techniques and methods (Art. 12(1)(a)(iii)); the supply of equipment and installations for research, monitoring and educational and other programmes (Art. 12(1)(a)(iv)); as well as the co-ordination of national research programmes (Art. 12(2)).

¹¹¹ Art. 18. ¹¹² Art. 12.

treaty required parties to facilitate and encourage the exchange of scientific, technical, socio-economic, commercial and legal information and to co-operate, consistently with their national laws, in promoting the 'development and transfer of technology and knowledge'.¹¹³ The original 1987 Montreal Protocol provided for co-operation in information exchange and in promoting technical assistance to developing countries to facilitate participation in and implementation of the Protocol.¹¹⁴ It was only with the 1990 amendments that the Montreal Protocol required each party to take steps to ensure that the 'best available, environmentally safe substitutes and related technologies are expeditiously transferred to' developing country parties and that those transfers occur under 'fair and most favourable conditions'.¹¹⁵ The establishment of the Multilateral Fund, providing financial resources to meet the incremental costs of enabling compliance by developing country parties with their obligations, has provided significant funds to meet the cost of supplying substitutes to controlled substances.¹¹⁶ The Montreal Protocol may also be interpreted as prohibiting the transfer of technologies that do not satisfy the standards of being 'environmentally safe', without expressly stating that commitment.

Biodiversity Convention

The 1992 Biodiversity Convention establishes a range of provisions which go some way towards encouraging, albeit not actually requiring, the transfer of technology. The Convention also addresses the relationship between technology transfer and intellectual property rights. The Convention links the effective implementation by developing countries of their commitments with the effective implementation by developed country parties of their commitments related to, *inter alia*, transfer of technology.¹¹⁷ The appropriate standard which technologies should satisfy is also elaborated: parties must provide and/or facilitate access for and transfer to other parties of 'technologies that are relevant to the conservation and sustainable use of biological diversity or make use of genetic resources and do not cause significant damage to the environment'.¹¹⁸ The access and transfer to developing country parties of those technologies should take place under 'fair and most favourable terms, including on concessional and preferential terms where mutually agreed' and on terms which recognise and are consistent with the adequate and effective protection of intellectual property rights.¹¹⁹ Technologies which make use of genetic resources provided by parties, in particular developing country parties, are to be accessed by and transferred to those parties on 'mutually agreed terms', including technology protected by patents and other intellectual property rights, where necessary, through the provisions of the Convention relating to financial resources and the financial mechanism.¹²⁰ Moreover, each party must take appropriate measures with the aim that the private sector facilitates access to, joint development of and transfer of these technologies.¹²¹

¹¹³ 1985 Vienna Convention, Art. 4 and Annex II. ¹¹⁴ 1987 Montreal Protocol, Arts. 9 and 10.

¹¹⁵ 1987 Montreal Protocol as amended in 1990, Art. 10A.

¹¹⁶ Art. 10(1); see now Annex VIII, Indicative List of Categories of Incremental Costs, in Annex VIII, Report of the Fourth Meeting of the Parties (25 November 1992), UNEP/OzL.Pro.4/15.

¹¹⁷ Art. 20(4). The definition of 'technology' simply states that it includes 'biotechnology': Art. 2.

¹¹⁸ Art. 16(1). See also Conference of the Parties Decisions II/5 and III/16.

¹¹⁹ Art. 16(2). ¹²⁰ Art. 16(3). See also Arts. 20 and 21. ¹²¹ Art. 16(4).

The Convention's financial mechanism should meet some of the costs of technology transfer as 'agreed full incremental costs'.¹²²

2010 Nagoya Protocol

At its tenth meeting in 2010, the Conference of the Parties to the Biodiversity Convention adopted the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from Their Utilization (2010 Nagoya Protocol). As discussed in Chapter 10 above, this Protocol elaborates one of the Convention's fundamental objectives, namely, 'fair and equitable sharing of the benefits arising out of the utilization of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by appropriate funding'.¹²³ The Protocol addresses, in an interrelated manner, the topics of intellectual property, transfer of technological know-how and financial benefit sharing. To this end, it builds on the Convention's provisions concerned with access to genetic resources and benefit sharing,¹²⁴ including those relating to technology transfer, information exchange, scientific and technical co-operation, the handling of biotechnology and distribution of its benefits, and the provision of financial resources.¹²⁵ It also addresses the equitable sharing of the benefits arising from the utilisation of knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for conservation and sustainable use of biological diversity.¹²⁶

The Protocol applies to genetic resources covered by the Convention as well as to traditional knowledge associated with such genetic resources.¹²⁷ It establishes obligations for parties with regard to access and benefit sharing. In respect of access to genetic resources, the Protocol establishes a requirement for the prior informed consent of the country of origin or another party that has acquired the genetic resources in accordance with the Convention.¹²⁸ To facilitate access to genetic resources, parties allowing such access on a prior informed consent basis shall take the necessary legislative, administrative or policy measures to, *inter alia*, establish clear rules and procedures for requiring and establishing mutually agreed terms, including terms concerning intellectual property rights.¹²⁹ In relation to genetic resources and associated traditional knowledge that occur in 'transboundary situations' or for which it is not possible to obtain prior informed consent, Article 10 directs the parties to consider the need for and modalities of a global multilateral benefit sharing mechanism, with the benefits used to support the conservation of biodiversity and sustainable use of its components globally. One possible model for such a regime might be that in place for activities in the deep-sea bed under Part XI of UNCLOS.¹³⁰

An innovative feature of the Protocol is the obligations it places on parties to support compliance with domestic legislation or regulatory requirements to ensure that genetic resources utilised within their jurisdiction have been accessed in accordance with prior informed consent and that mutually agreed terms have been established, including in cases where the genetic resources or associated traditional knowledge concerned are held by indigenous or local

¹²² Art. 20(1) and (2). ¹²³ Art. 1. ¹²⁴ Art. 15. ¹²⁵ Arts. 16–20.

¹²⁶ Art. 8(j). See further pp. 695–7, below. ¹²⁷ Art. 3.

¹²⁸ Art. 6. See further Chapter 10, pp. 464–6, above. ¹²⁹ Art. 6(3). ¹³⁰ Chapter 9, p. 445, above.

communities.¹³¹ This obligation extends to ensuring the availability of opportunities to seek recourse within a party's legal system when disputes arise over mutually agreed terms and taking measures regarding access to justice.¹³² In addition, parties must take measures to monitor the utilisation of genetic resources after they leave the country, including by designating effective checkpoints at any stage of the value-chain: research, development, innovation, pre-commercialisation or commercialisation.¹³³ In recognition of the challenges implementation of such obligations may pose for developing countries, the Protocol makes provision for capacity-building,¹³⁴ and access to the Convention's financial mechanism to support such efforts.¹³⁵

It is envisaged that the Protocol will facilitate access to genetic resources for a variety of research and technological applications, from basic scientific research to development of new agricultural crop species, pharmaceuticals and biotechnology. The benefits from such applications – to be shared fairly and equitably with the countries or communities providing access to genetic resources or associated traditional knowledge – may include monetary benefits (for example, access or licence fees, royalties, research funding or joint ownership of intellectual property rights) as well as non-monetary benefits (for example, sharing of research results or research collaboration, capacity-building of various kinds and technology transfer under fair and most favourable terms).¹³⁶ By giving countries and communities of origin a stake in the benefits derived from research and technological development based on genetic resources, it is believed this will create incentives to conserve and sustainably use genetic resources in line with the broader biodiversity conservation aims of the Convention.

Climate Change Convention and Kyoto Protocol

Similar technology transfer provisions to those of the Biodiversity Convention appear in the 1992 Climate Change Convention, which requires all parties to promote and co-operate in 'full, open and prompt' exchange of relevant scientific, technical, socio-economic and legal information related to the climate system and climate change.¹³⁷ The provision of financial resources by developed country parties includes resources for the transfer of technology, and those parties undertake to take 'all practicable steps to promote, facilitate, and finance, as appropriate, the transfer of, or access to, environmentally sound technologies and know-how to other parties, particularly developing country parties, to enable them to implement the provisions of the Convention'.¹³⁸ This commitment is echoed in similar terms in the Kyoto Protocol.¹³⁹ The process of technology transfer under the climate change regime includes support for the enhancement of endogenous capacities and technologies of developing country parties. Developing country parties are also encouraged to propose projects voluntarily, including specific technologies needed to implement projects.¹⁴⁰ In addition, the Clean Development Mechanism established under Article 12 of the 1997 Kyoto Protocol has played an important role in facilitating the transfer of environmental technologies, particularly in the energy sector.¹⁴¹

¹³¹ Arts. 15 and 16. ¹³² Art. 18. ¹³³ Art. 17. ¹³⁴ Art. 22. See also Art. 23 on technology transfer.

¹³⁵ Art. 25. ¹³⁶ Art. 5(4). An Annex to the Protocol sets out a non-exhaustive list of such benefits.

¹³⁷ Art. 4(1)(h). ¹³⁸ Arts. 4(5) and 11(1). ¹³⁹ Art. 10(c). ¹⁴⁰ Art. 4(1).

¹⁴¹ Chapter 7, p. 288, above. G. Cox, 'The Clean Development Mechanism as a Vehicle for Technology Transfer and Sustainable Development – Myth or Reality?', 6(2) *Law, Environment and Development Journal* 179 (2010); P. Nelson, 'An African Dimension to the Clean Development Mechanism: Finding a Path to Sustainable Development in the Energy Sector', 32 *Denver Journal of International Law and Policy* 615 (2003–4).

The Marrakesh Accords, agreed at the seventh Conference of the Parties, elaborated a framework for 'meaningful and effective actions' to enhance the implementation of technology transfer obligations under the Convention. Decision 4/CP.7 called for the establishment of an Expert Group on Technology Transfer (EGTT) to be nominated by the parties. This group was charged with the task of analysing and identifying ways to facilitate and advance technology transfer activities in key areas such as: technology needs assessment; establishment of efficient information systems in support of technology transfer; creation of enabling environments for technology transfer, including the identification and removal of barriers; capacity-building in developing countries to allow for the dissemination, application and development of environmentally sound technologies and know-how; and creation of institutional arrangements.¹⁴² Pursuant to this mandate, the EGTT issued various reports and guidelines, including a *Handbook for Conducting Technology Needs Assessment for Climate Change*, updated in 2010.¹⁴³ At the tenth Conference of the Parties, a process was initiated to review the progress made, and effectiveness, in the implementation of the technology transfer framework. The EGTT was requested to provide recommendations for enhancing implementation, including revision of this framework. The sixteenth Conference of the Parties held in Cancún in December 2010 decided to establish a new Technology Mechanism to further the goals of technology transfer under the Convention. This new mechanism will consist of a Technology Executive Committee, which replaces the EGTT and is responsible for further implementation of the technology transfer framework, and a Climate Technology Centre and Network.¹⁴⁴ The latter is designed to facilitate a network of national, regional, sectoral and international technology networks, organisations and initiatives with functions of advice and information provision, training, technology co-operation and encouraging collaborative research and development of environmentally sound technologies for climate change.

INTELLECTUAL PROPERTY¹⁴⁵

Intellectual property refers to property rights protected by laws that protect the application of thoughts, ideas and information which are of commercial value, including the law relating to

¹⁴² Decision 4/CP.7, Annex. See also the enhancements made by Decision 3/CP.13.

¹⁴³ UNDP, *Handbook for Conducting Technology Needs Assessment for Climate Change* (2010), available at <http://unfccc.int/ttclear/pdf/TNA%20HANDBOOK%20EN%2020101115.pdf><http://unfccc.int/ttclear/pdf/TNA%20HANDBOOK%20EN%2020101115.pdf>.

¹⁴⁴ Draft Decision –/CP.16 Technology development and transfer (paras. 113–27).

¹⁴⁵ S. Lall, 'The Patent System and the Transfer of Technologies to Less Developed Countries', 10 *Journal of World Trade Law* 1 (1976); M. Gollin, 'Using Intellectual Property to Improve Environmental Protection', 4 *Harvard Journal of Law and Technology* 193 (1991); N. Atkinson and B. Sherman, 'Intellectual Property and Environmental Protection', 13 *European Intellectual Property Review* 165 (1991); G. Winter, 'Patent Law Policy in Biotechnology', 4 *Journal of Environmental Law* 167 (1992); R. Margulies, 'Protecting Biodiversity: Recognizing International Intellectual Property Rights in Plant Genetic Resources', 14 *Michigan Journal of International Law* 322 (1993); D. Alexander, 'Some Themes in Intellectual Property and the Environment', 2 *Review of European Community and International Environmental Law* 113 (1993); F. Yamin and D. Posey, 'Indigenous Peoples, Biotechnology and Intellectual Property Rights', 2 *Review of European Community and International Environmental Law* 141 (1993); M. Footer, 'Intellectual Property and Agrobiodiversity: Towards Private Ownership of Genetic Commons', 10 *Yearbook of International Environment Law* 48 (1999); G. Dutfield, *Intellectual Property Rights, Trade and Biodiversity: Seeds and Plant Varieties* (2000); UK Department for International Development, *Integrating Intellectual Property Rights and Development Policy: Report of the Commission on Intellectual Property Rights* (2002); P. Drahos and M. Blakeney, *Intellectual Property, in Biodiversity and Agriculture* (2001); G. Rosendale, 'Regulating the Use of Genetic Resources – Between International Authorities', 16 *European Environment*

patents, copyrights, trademarks, trade secrets and other similar rights.¹⁴⁶ Legal issues arising out of the application of patent and other intellectual property rights have been raised in the development of international environmental law and policy, in three broad areas: first, the extent to which intellectual property rights granted, for example in accordance with the WTO Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPs), may limit the transfer of environmentally sound technology as required by international conventions; second, whether intellectual property rights should be granted to potentially environmentally damaging technologies, for example the grant of patents in respect of living organisms (biotechnology); and, third, the extent to which intellectual property rights can or should protect indigenous environmental knowledge which has been in the public domain for decades or more.

Technology transfer

The first issue concerns the claim by developed states, in the negotiation of international environmental agreements, that they are precluded from imposing technology transfer requirements on persons within their jurisdiction or control because of their obligations under national and international laws for the protection of intellectual property,¹⁴⁷ patents¹⁴⁸ and biotechnology.¹⁴⁹ This issue has been particularly acute in the context of the development of biotechnology and the conservation of biodiversity, and is also emerging as a critical issue in the context of environmentally sound technologies for climate change mitigation and adaptation. It was addressed by Agenda 21, in relation to technology transfer, where the international community declared the need to consider the role of patent protection and intellectual property rights and to examine their impact on the access to and transfer of environmentally sound technology, particularly to developing countries.¹⁵⁰ Significantly, Agenda 21 recognised the bar that intellectual property rights might place on the transfer of

265 (2006); M. Rimmer, 'The Road to Copenhagen: Intellectual Property and Climate Change', 4 *Journal of Intellectual Property Law and Practice* 784 (2009); E. Bonadio, 'Climate Change and Intellectual Property', 1 *European Journal of Risk Regulation* 72 (2010); M. van Hoorebeek and W. Onzivu, 'The Eco-Patent Commons and Environmental Technology Transfer: Implications for Efforts to Tackle Climate Change', 4 *Carbon and Climate Law Review* 13 (2010); C. Lawson, 'Biodiversity Conservation Access and Benefit Sharing Contracts and the Role and Place of Patents', 33(3) *European Intellectual Property Review* 135 (2011); E. Lane, 'Cancún, Climate Change, and Intellectual Property Rights: No News Is Good News for Green Patents', 2 *European Journal of Risk Regulation* 61 (2011).

¹⁴⁶ See W. R. Cornish, D. Llewelyn and T. Alpin, *Intellectual Property: Patents, Copyright, Trade Marks and Allied Rights* (2010, 7th edn). See also M. Blakeney, *Legal Aspects of Technology Transfer to Developing Countries* (1989).

¹⁴⁷ The principal international agreement is the Convention for the Protection of Industrial Property, Paris, 20 March 1883, in force 6 July 1884, 10 Martens (2d) 133 (as revised, see 828 UNTS 305).

¹⁴⁸ The relevant agreements include the Patent Co-operation Treaty (as amended), Washington, 19 June 1970, in force 24 January 1978, 9 ILM 978 (1970); Convention on the Grant of European Patents, Munich, 5 October 1973, in force 7 October 1977, 13 ILM 270 (1973) (1973 European Patent Convention; a revised version of the Convention entered into force on 13 December 2007); Agreement Concerning International Patent Classification, Strasbourg, 24 March 1971, in force 7 October 1975, Cmnd 6238, UKTS 113 (1975) (8th version in force 1 January 2006).

¹⁴⁹ The relevant agreements include the International Convention for the Protection of New Varieties of Plants (UPOV Convention), Brussels, 2 December 1961, in force 10 August 1968, 815 UNTS 89; Treaty on the International Recognition of the Deposit of Micro-organisms for the Purposes of Patent Procedure, Budapest, 28 April 1977, in force 19 August 1980, 17 ILM 285 (1977).

¹⁵⁰ Agenda 21, paras. 34.10 and 34.18. See also the provisions of para. 44 of the WSSD Plan of Implementation on biodiversity.

technologies: in a passage which balances competing interests, Agenda 21 called for measures to be taken (including acquisition through compulsory licensing and the provision of 'equitable and adequate compensation') which are in 'compliance with and under the specific circumstances recognised by the relevant international conventions adhered to by states'.¹⁵¹

The 1992 Biodiversity Convention was the first international environmental treaty to tackle the issue of intellectual property, its provisions reflecting a concern about the possible threat to intellectual property rights posed by technology transfer obligations, as well as the need to ensure the equitable allocation of 'ownership' rights in biological materials. Taken together, the various provisions are inconclusive as to which rights prevail in the event of a conflict. The Biodiversity Convention recognises the need to protect property rights, providing in Article 16(2) that the access to and transfer of technology that is subject to patents and other intellectual property rights is to be provided 'on terms which recognise and are consistent with the adequate and effective protection of intellectual property rights'.¹⁵² However, in Article 16(5), the Convention also recognises that rights in intellectual property may have an influence on the implementation of the Convention, and calls on parties to co-operate on intellectual property rights 'subject to national legislation and international law in order to ensure that such rights are supportive and do not run counter to [the Convention's] objectives'. In this regard, the Conference of the Parties has recognised that intellectual property rights may have implications for the implementation of the Convention and the achievement of its objectives.¹⁵³ At its seventh meeting in 2004, the Conference of the Parties adopted a work programme on technology transfer and technological and scientific co-operation, an aspect of which was the preparation of technical studies to further explore and analyse the role of intellectual property rights in technology transfer in the context of the Convention and identify potential options to increase synergy and overcome barriers to technology transfer and co-operation.¹⁵⁴ Finally, the language of Article 22 of the Convention suggests that intellectual property rights and obligations deriving from an existing international agreement might actually be overridden 'where the exercise of those rights and obligations would cause a serious damage or threat to biological diversity'.¹⁵⁵ The language of this latter provision, if interpreted to provide for the supremacy of the Biodiversity Convention, raises the possibility that it might conflict with international treaties protecting intellectual property rights, which conflict would fall to be resolved by recourse to the ordinary rules of public international law.¹⁵⁶ In the meantime, the Biodiversity Convention introduces a note of uncertainty into the debate about the primacy of intellectual property rights, which caused sufficient concern to the United States to contribute to a delay in signing and an unwillingness to ratify that continues to the present day.¹⁵⁷

¹⁵¹ Agenda 21, para. 34.18(e)(iv).

¹⁵² See also Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of the Benefits Arising Out of Their Utilisation, COP 6, Decision VI/24 (2002), and the 2010 Nagoya Protocol discussed at pp. 684–5, above.

¹⁵³ Decision III/17 (1996).

¹⁵⁴ Decision VII/29, Decision Adopted by the Conference of the Parties to the Convention on Biological Diversity at its Seventh Meeting, Kuala Lumpur, 9–20 and 27 February 2004, UNEP/CBD/COP/DEC/VII/29, Annex, Programme Element 3, para. 3.1.1. See EGIT, 'The Role of Intellectual Property Rights in Technology Transfer in the Context of the Convention on Biological Diversity: A Technical Study', UNEP/CBD/COP/9/INF/7 (2008).

¹⁵⁵ Similar provisions are found in Art. 4(1) of the 2010 Nagoya Protocol, although the latter contains a caveat that the relevant paragraph 'is not intended to create a hierarchy between this Protocol and other international instruments'.

¹⁵⁶ See Chapter 4, pp. 100–2, above.

¹⁵⁷ The Convention currently has 193 parties. Andorra and the Holy See are the only other states not party to the Convention.

The United States may be reassured by a 2001 decision of the European Court of Justice declining to recognise an inherently adverse link between the patentability of certain inventions and compliance with obligations to promote technology transfers, under the 1992 Biodiversity Convention.¹⁵⁸

The 2001 Treaty on Plant Genetic Resources aims to ensure the conservation and sustainable use of plant genetic resources and the fair and equitable sharing of benefits.¹⁵⁹ It includes provisions designed to facilitate the transfer of technologies for the conservation of genetic resources. The heart of the Treaty is a 'Multilateral System' of access and benefit sharing in respect of plant genetic resources for the food and agriculture listed in Annex I to the Convention and which are under the management and control of parties and in the public domain.¹⁶⁰ The parties agree to facilitate access to resources forming part of the Multilateral System, and to that end recipients agree not to claim any intellectual property or other rights that limit access to the resources or their genetic parts or components.¹⁶¹ Access to resources protected by intellectual and other property rights are to be consistent with relevant international agreements and with relevant national laws.¹⁶² The Treaty also provides that benefits accruing from the Multilateral System are to be shared fairly and equitably, including through the exchange of information and access to and transfer of technology.¹⁶³ Additionally, the parties undertake to provide and facilitate access to technologies for the conservation and use of resources under the Multilateral System and, recognising that some technologies can only be transferred through genetic material, to do so in conformity with the requirements of Article 12 'while respecting applicable property rights and access laws'.¹⁶⁴ Technology that is protected by intellectual property rights is to be transferred to developing countries and countries with economies in transition under

fair and most favourable terms, in particular in the case of technologies for use in conservation as well as technologies for the benefit of farmers in developing countries . . . including on concessional and preferential terms where mutually agreed. Such access and transfer shall be provided on terms which recognise and are consistent with the adequate and effective protection of intellectual property rights.¹⁶⁵

Similar provisions are found in the 2010 Nagoya Protocol to the Convention on Biological Diversity with respect to genetic resources and associated traditional knowledge covered by the Convention. Article 23 of the Protocol contains general provisions on technology transfer requiring parties to collaborate and co-operate in technical and scientific research and development programmes, including biotechnological research activities, as a means to achieve the Protocol's objective.¹⁶⁶ Parties undertake to promote and encourage access to technology by,

¹⁵⁸ See note 195 and the accompanying text below. ¹⁵⁹ Chapter 10, p. 508, above.

¹⁶⁰ Arts. 10 and 11(1)–(2). The Multilateral System will also include plant genetic resources held in specified *ex situ* collections: Art. 11(5).

¹⁶¹ Art. 12(1) and (2) and (3)(d). ¹⁶² Art. 12(3)(f). ¹⁶³ Art. 13(1) and (2).

¹⁶⁴ Art. 13(2)(b)(i). ¹⁶⁵ Art. 13(2)(b)(iii).

¹⁶⁶ As set out in Art. 1, the objective of the Protocol is 'the fair and equitable sharing of the benefits arising from the utilization of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by appropriate funding, thereby contributing to the conservation of biological diversity and the sustainable use of its components'.

and the transfer of technology to, developing country parties, especially least developed countries and small island states, and parties with economies in transition. Where possible and appropriate, such collaborative activities are to take place in the developing country parties that are the country of origin providing genetic resources. Benefits arising from the utilisation of genetic resources or associated traditional knowledge, as well as subsequent application and commercialisation, are to be shared in a fair and equitable way with the country of origin, or indigenous and local communities holding rights over such resources or knowledge, on mutually agreed terms.¹⁶⁷ Such benefits may extend to, *inter alia*, joint ownership of relevant intellectual property rights and

[t]ransfer to the provider of the genetic resources of knowledge and technology under fair and most favourable terms, including on concessional and preferential terms where agreed, in particular, knowledge and technology that make use of genetic resources, including biotechnology, or that are relevant to the conservation and sustainable utilization of biological diversity.¹⁶⁸

In addition, the terms of access mutually agreed may include terms in relation to intellectual property rights.¹⁶⁹

Patents and other rights¹⁷⁰

A second – and related – issue raised by intellectual property rights in the context of international environmental law concerns the extent to which environmental considerations may limit or prevent the grant of patent (or other intellectual property rights) to products which may have adverse consequences for the environment. The 1973 European Patent Convention (establishing the European Patent Office (EPO)) provides that European patents will not be granted for inventions the commercial exploitation of which would be contrary to *ordre public* or morality, provided that the exploitation shall not be deemed to be so contrary merely because it is prohibited by law or regulation in some or all of the parties.¹⁷¹ It also prohibits the grant of patents in respect of ‘plant varieties or animal species or essentially biological processes for the production of plants or animals’.¹⁷² The jurisdiction to refuse patent protection for environmentally damaging technologies as contrary to *ordre public* also receives indirect support from the Opinion of Advocate General Jacobs, in a case challenging the validity of the Biotechnology Directive (see below). He said:

¹⁶⁷ Art. 5. ¹⁶⁸ Annex 2(f) and (g). ¹⁶⁹ Art. 6(3)(g).

¹⁷⁰ For an excellent review of the issues, see UK Department for International Development, *Integrating Intellectual Property Rights and Development Policy: Report of the Commission on Intellectual Property Rights* (2002).

¹⁷¹ European Patent Convention, Art. 53(a). This formulation is the outcome of amendments to Art. 53(a) made as part of the 2000 revisions to the European Patent Convention, which came into force in 2007. The revisions were made to bring the Convention into line with Art. 27(2) of the WTO TRIPs Agreement and Art. 6(1) of the EU Biotechnology Directive 98/44/EC on the legal protection of biological inventions.

¹⁷² Art. 53(b). While an exception applies to the patentability of plant varieties, however produced, this does not exclude from patentability transgenic plants if specific plant varieties are not claimed: Enlarged Board Decision G1/98, OJ EPO 3/2000, 111.

Preservation of the environment must be regarded in the present state of Community law as one of the fundamental interests of society. That was recognised by the Court as long ago as 1988 in *Commission v. Denmark* . . . and is now enshrined in Article 2 of the Treaty which includes the promotion of 'a high level of protection and improvement of the quality of the environment' among the Community's tasks. The 'fundamental interests of society' referred to by the Court in *Bouchereau* . . . must to my mind now be understood as extending to the environment. A genuine and sufficiently serious threat to the environment would thus fall squarely within the concept of *ordre public*.¹⁷³

The case law relating to Article 53 of the 1973 European Patent Convention illustrates the circumstances in which there may exist a certain tension between the grant of patents and the protection of the environment. In *Lubrizol Genetics Inc.*, objections were made to the grant of a patent on the ground, among others, that such a grant would lead to a loss of biodiversity. The EPO stated that environmental arguments could be addressed within the *ordre public*/morality exception, and decided that a 'fair test to apply is to consider whether it is probable that the public in general would regard the invention as so abhorrent that the grant of a patent right would be inconceivable', noting that Article 53(a) was 'likely to be invoked only in rare and extreme cases'.¹⁷⁴ On the facts, the EPO rejected the challenge, noting in respect to the loss of biodiversity argument that biotechnology increased genetic diversity by increasing new plant varieties, that traditional breeding techniques could also result in loss of biodiversity, and that biotechnology should not be singled out among various factors causing loss of biodiversity. The EPO also expressed the view that 'patent law is not an appropriate instrument for regulating the development of new technologies and that the legislature should determine whether a certain technology is so dangerous and unacceptable to the public that it should be suppressed'.¹⁷⁵

In *Hormone Relaxin*, the test applied by the EPO in relation to the morality test was whether the grant of a patent for an invention 'would universally be regarded as outrageous', and noting that the existence of the then draft EU Biotechnology Directive indicated that the patenting of human gene sequences was not universally considered to be outrageous.¹⁷⁶ That case was appealed to the EPO Technical Board of Appeal after the passing of the EU Biotechnology Directive 98/44/EC of 6 July 1998, and the earlier decision was upheld in light of the interpretation provided by the Directive of the concept of *ordre public*.¹⁷⁷

In *Plant Genetic Systems*, Greenpeace challenged the grant of a patent in respect of an invention for developing plants and seeds resistant to certain types of herbicide, on the ground that such plants and seeds would be environmentally harmful. The EPO's Technical Board of Appeal confirmed that *ordre public* encompasses environmental protection and that 'inventions, the exploitation of which is not in conformity with the conventionally accepted standards of conduct pertaining to [the culture inherent in European society and civilisation] are to be

¹⁷³ Case C-377/98, *Netherlands v. European Parliament and EU Council* [2001] ECR I-7079.

¹⁷⁴ Case T320/87, OJ EPO 1990, 71.

¹⁷⁵ *Hybrid Plants/Lubrizol*, EPO Appeal Board Decision T 320/87, OJ EPO 1990, 71. ¹⁷⁶ OJ EPO 1995/6, 388.

¹⁷⁷ Case T272/95, 29 October 2002. p. 691.

excluded from patentability as being contrary to morality'.¹⁷⁸ The Board of Appeal ruled that the revocation on environmental grounds of a patent under Article 53(a) of the 1973 Convention required the environmental hazards to be sufficiently substantiated, that the evidence submitted by Greenpeace demonstrated possible risk, but that it would not be possible to deny a patent 'on the basis of possible, yet not conclusively documented hazards'.¹⁷⁹ The Board of Appeal also confirmed earlier case law to the effect that seeds and plants shall not *per se* constitute an exception to patentability on the ground that plant genetic resources should remain the 'common heritage of mankind'.¹⁸⁰

The *Oncomouse/Harvard* case attracted particular attention. The applicants sought the grant of a European patent for the US-patented Harvard oncomouse, the genetic make-up of which had been manipulated by the introduction of a single specified oncogene making it abnormally sensitive to carcinogenic substances and stimuli and, consequently, prone to develop tumours, which necessarily caused suffering. The patent was challenged on the grounds that it was incompatible with Article 53(a) of the 1973 Convention. On appeal, the Examining Division of the European Patent Office considered that the invention was not immoral or contrary to public order. The Examining Division held that each individual invention requires the question of morality to be examined, and that the possible detrimental effects and risks, including those of an environmental nature, had to be weighed and balanced against the merits and advantages.¹⁸¹ Three different interests were involved and required balancing in deciding whether to grant a patent:

there is a basic interest of mankind to remedy widespread and dangerous diseases, on the other hand the environment has to be protected against the uncontrolled dissemination of unwanted genes and, moreover, cruelty to animals has to be avoided. The latter two aspects may well justify regarding an invention as immoral and therefore unacceptable unless the advantages, i.e. the benefit to mankind, outweigh the negative aspects.¹⁸²

The Examining Division decided that the invention was useful to mankind, that it contributed to the reduction of the overall extent of animal suffering, and that animal test models were at present indispensable. As to 'possible risks to the environment', the Examining Division found that:

¹⁷⁸ Case T356/93, OJ EPO 1995/8, 545. On the compatibility with Art. 53(a) of inventions involving genetically modified herbicide-resistant plants, see also Case T745/01, 15 June 2004.

¹⁷⁹ Para. 18.7. The Board also noted that it was for regulatory bodies and not the EPO to evaluate whether risks should lead to a prohibition in the patenting of an invention.

¹⁸⁰ Para. 18; on 'common heritage', see Chapter 6, p. 234, above.

¹⁸¹ Decision of the Examining Division, 3 April 1992 (*Onco-mouse/Harvard*), Application No. 85 304 490.7, OJ EPO 1992, 589 at 591. The decision followed the ruling by the European Patent Convention Technical Board of Appeal in Decision T19/90 (*Re Harvard College (President and Fellows)*) that the danger of unforeseeable and irreversible effects following the release of genetically manipulated organisms into the environment was to be considered in applying Art. 53(a) (*European Patents Handbook* (1991), 103 (release 9): T 19/90-1); overruling the decision of first instance that patent law was not the right tool for regulating, *inter alia*, the problem of drastically disrupting evolution: *Onco-mouse*, Decision of 14 July 1989, OJ EPO 1989, 451 at 458-9.

¹⁸² Decision of the Examining Division, 3 April 1992 (*Onco-mouse/Harvard*), Application No. 85 304 490.7, OJ EPO 1992, 589 at 591-2.

No release is intended into the general environment. Therefore the risk of an uncontrolled release is practically limited to intentional misuse or blatant ignorance on the part of the laboratory personnel carrying out the tests. The mere fact that such uncontrollable acts are conceivable cannot be a major determinant for deciding whether a patent should be granted or not. Exclusion of patentability cannot be justified merely because technology is dangerous.¹⁸³

The grant was followed by renewed challenge, in proceedings that lasted several years and which were only concluded after the coming into force of the EU Biotechnology Directive. The final ruling in the case in 2004 by a technical board of appeal upheld the patent in amended form. The board found the relevant test to be applied required a 'careful weighing up' of the matters to be balanced, including balancing possible environmental risks against the usefulness of the invention to mankind.¹⁸⁴ This test was said to allow clearly 'the scope or extent of, on the one hand, the animal suffering and/or environmental risk and, on the other hand, the usefulness to mankind to be considered'.¹⁸⁵ In relation to environmental risks in the event of release or escape of modified oncomice, the board ruled:

the risk can only be regarded as minimally more than hypothetical when one considers the secure conditions under which laboratory mice are kept and the level of regulation of the use and keeping of animals for experimental purposes in most countries. Further, in the event of release or escape, it must be questionable whether oncomice would cause any damage, let alone any lasting damage, to the environment. The only perceivable threat is that, by mating with mice already in the wild, the oncogene would be spread. Against that, there must be the possibility that, because of their manipulated state, oncomice would not survive as long in the wild as non-manipulated mice.¹⁸⁶

The cases indicate that, although it is possible to raise arguments against the grant of a patent based upon environmental grounds, the prospects of success are limited. The decisions indicate a tendency to focus on the environmental consequences flowing from the intended use, rather than the environmental consequences of misuse, whether accidental or otherwise. They also indicate a relatively high threshold of proof of environmental damage, in terms not dissimilar to the approach taken by the ICJ in the *Gabčíkovo-Nagymaros* and *Pulp Mills* cases. Further, no decision appears, thus far at least, to have invoked the precautionary principle (or approach), at least expressly. The EPO adjudicatory bodies have been careful to avoid establishing general rules of wholesale application, thus requiring each case to be dealt with on its own merits.

The 1973 Convention has been joined by a number of other international instruments since the first edition of this book appeared. It remains to be seen what their full influence might be on the EPO's approach, although their thrust is broadly neutral in seeking to achieve a balance between the protection of the environment, on the one hand, and of intellectual property rights, on the other.

At the global level, the 1994 WTO TRIPs Agreement establishes a regime requiring WTO members to make patents available for any inventions, whether products or processes, in all

¹⁸³ *Ibid.*, 592–3.

¹⁸⁴ Para. 10.5.

¹⁸⁵ Para. 10.6.

¹⁸⁶ Para. 13.2.9.

fields of technology without discrimination, subject to the normal tests of novelty, inventiveness and industrial applicability. It also requires that patents be available and patent rights be enjoyable without discrimination as to the place of invention and regardless of whether products are imported or locally produced.¹⁸⁷ Like the 1973 European Patent Convention, the TRIPs Agreement allows exceptions to the general rule on patentability, of which two are environmentally relevant. The first is that patents should not be granted to inventions that are contrary to *ordre public* or morality (including inventions dangerous to human, animal or plant life or health or seriously prejudicial to the environment).¹⁸⁸ The second exception is that members may exclude plants and animals other than micro-organisms and essentially biological processes for the production of plants or animals other than non-biological and microbiological processes.¹⁸⁹

Neither of these exceptions have yet been the subject of proceedings in an environmental case, but it is likely that the term *ordre public* would be held to mean the same in the TRIPs Agreement as in the 1973 European Patent Convention from which it derives.¹⁹⁰ If so, it will remain open to states bound by TRIPs to deny patent protection to environmentally damaging inventions.

A second important instrument is EU Directive 98/44/EC on the legal protection of biotechnological inventions, which commits member states to protecting biotechnological inventions under national patent law, without prejudice to their obligations under international agreements, in particular the TRIPs Agreement and the 1992 Biodiversity Convention.¹⁹¹ The Directive, which took over a decade to legislate, and which seeks in part to clarify the application of the '*ordre public* and morality' exception in the 1973 European Patent Convention, provides that new inventions which are susceptible of industrial application are patentable 'even if they concern a product consisting of or containing biological material or a process by means of which biological material is produced, processed or used'.¹⁹² However, plant and animal varieties and 'essentially biological processes for the production of plants or animals' are not patentable unless, in respect of inventions that concern plants or animals, the technical feasibility of the invention is 'not confined to a particular plant or animal variety'.¹⁹³ Inventions the commercial exploitation of which would be contrary to *ordre public* or morality remain unpatentable.¹⁹⁴

The Netherlands challenged the legality of the Directive on the basis, among other grounds, that its provisions violated the TRIPs Agreement and the 1992 Biodiversity Convention. The

¹⁸⁷ Art. 27(1).

¹⁸⁸ Art. 27(2). The exception is subject to the condition that the commercial exploitation of the invention must also be prevented, and this prevention must be necessary for the protection of *ordre public* or morality.

¹⁸⁹ Art. 27(3)(b). Any country excluding plant varieties from patent protection must, however, provide an effective *sui generis* system of protection.

¹⁹⁰ As to the meaning of which, see the Opinion of Advocate General Jacobs in Case C-377/98, *Netherlands v. European Parliament and EU Council* [2001] ECR I-7079.

¹⁹¹ OJ L213, 30 July 1998, 13, Art. 1.

¹⁹² Art. 3(1). Further, a 'biological material which is isolated from its natural environment or produced by means of a technical process may be the subject of an invention even if it previously occurred in nature': Art. 3(2).

¹⁹³ Art. 4(1)(a) and (b) and (2). Inventions which concern 'a microbiological or other technical process or a product obtained by means of such a process' are patentable: Art. 4(3).

¹⁹⁴ Art. 6; for the view that *ordre public* encompassed the protection of the environment, see the Opinion of Advocate General Jacobs in Case C-377/98, *Netherlands v. European Parliament and EU Council* [2001] ECR I-7079, paras. 108-9 (a 'genuine and sufficiently serious threat to the environment would thus fall squarely within the concept of *ordre public*').

ECJ ruled that Article 4 of the Directive did not violate Article 27(3)(b) of the TRIPs Agreement, which allows (but does not require) member states not to grant a patent for plants and animals other than micro-organisms.¹⁹⁵ The Court also rejected the Dutch argument that the Directive's purpose – of making biotechnological inventions patentable in all the member states – was counter to the principle of equitable sharing of the benefits arising out of the utilisation of genetic resources, one of the objectives of the 1992 Biodiversity Convention. The Court ruled:

It cannot be assumed, in the absence of evidence, which is lacking in this case, that the mere protection of biotechnological inventions by patent would result, as is argued, in depriving developing countries of the ability to monitor their biological resources and to make use of their traditional knowledge, any more than it would result in promoting single-crop farming or in discouraging national and international efforts to preserve biodiversity.¹⁹⁶

The Court also found that, while the Article 1 objective of the 1992 Convention is the fair and equitable sharing of the benefits arising out of the utilisation of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, the provision specifies that this must be done taking into account all rights over those resources and technologies. The Court identified no provision of the Convention which requires that 'the conditions for the grant of a patent for biotechnological inventions should include the consideration of the interests of the country from which the genetic resource originates or the existence of measures for transferring technology'.¹⁹⁷ The Court's position would appear to be supported by the provisions of the recently concluded 2010 Nagoya Protocol, which does not purport to place limitations on the patentability of biotechnological applications. Article 4 of the Protocol states that its provisions 'shall not affect the rights and obligations of any Party deriving from any existing international agreement, except where the exercise of those rights and obligations would cause serious damage or threat to biological diversity', although this 'is not intended to create a hierarchy between [the] Protocol and other international instruments'.¹⁹⁸ Parties are also under an obligation to implement the Protocol 'in a mutually supportive manner' with other international instruments relevant to the Protocol.¹⁹⁹

Traditional knowledge²⁰⁰

In the 1992 Biodiversity Convention the term 'traditional knowledge' refers to knowledge, innovations and practices of indigenous and local communities embodying traditional

¹⁹⁵ Case C-377/98, *Netherlands v. European Parliament and EU Council* [2001] ECR I-7079, paras. 57–8.

¹⁹⁶ Para. 65.

¹⁹⁷ Para. 66 (see also the Opinion of Advocate General Jacobs, noting that the Convention is 'in the nature of a framework agreement', that its 'suggested measures are rather varied and in most cases couched in general terms' and that 'nowhere does the Convention prohibit or restrict the patentability of biotechnological materials, or even of genetic resources': Opinion, paras. 179 and 183). The ECJ also rejected the argument that the Directive was an obstacle to international co-operation: para. 67.

¹⁹⁸ Art. 4(1). ¹⁹⁹ Art. 4(3).

²⁰⁰ UK Department for International Development, *Integrating Intellectual Property Rights and Development Policy: Report of the Commission on Intellectual Property Rights* (2002), Chapter 4.

lifestyles relevant for the conservation and sustainable use of biological diversity.²⁰¹ Traditional knowledge is usually orally transmitted and collectively owned, taking many forms including stories, songs, cultural rituals, customary laws and agricultural practices. It is broadly recognised that traditional knowledge possessed by indigenous and local communities may contribute to the conservation of the environment, biodiversity and sustainable agricultural practices.²⁰² However, the international community has only recently begun to consider whether there is a need to take steps to protect such knowledge, and whether the existing system of intellectual property will suffice, or whether new forms of protection are required.

Pursuant to Article 8(j) of the Biodiversity Convention, each contracting party is instructed,

[s]ubject to national legislation, [to] respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilization of such knowledge innovations and practices.

In 1996, the Conference of the Parties to the 1992 Biodiversity Convention called for case studies on the impact of intellectual property rights on the achievement of the Convention's objectives, including relationships between such rights and the knowledge, practices and innovations of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity.²⁰³ The Conference of the Parties also established a working group specifically to address the implementation of Article 8(j) and related provisions of the Convention. Decision VII/19 of the Conference of the Parties requested this working group to collaborate with the Ad Hoc Working Group on Access and Benefit-Sharing on an international instrument related to their areas of competence: these efforts gave rise to the Nagoya Protocol elaborating a regime for access to genetic resources and associated traditional knowledge and sharing of the benefits with countries of origin and their indigenous and local communities. In respect of traditional knowledge associated with genetic resources, parties to the Protocol will be obliged to adopt measures to ensure that the benefits arising from utilisation of such knowledge are shared in a fair and equitable way, on mutually agreed terms, with the indigenous and local communities holding such knowledge.²⁰⁴ Parties will also be required to ensure through domestic law that traditional knowledge is only accessed with the prior informed consent or approval and involvement of the indigenous or local

²⁰¹ Art. 8(j).

²⁰² C. Correa, *Traditional Knowledge and Intellectual Property* (Quaker United Nations Office, Geneva, 2001), cited in the report of the UK Department for International Development, *ibid*. The author notes the other benefits which flow from such protection: the custodians of traditional knowledge could receive fair compensation if the traditional knowledge leads to commercial gain; the profile of the knowledge and the people entrusted with it may be raised, both within and outside their communities; it may prevent appropriation by unauthorised parties and may avoid 'biopiracy'; and may promote development.

²⁰³ Decision III/17 (1996), Preamble. See also Doha WTO Ministerial Declaration, para. 19 (2001); 1992 Biodiversity Convention Conference of the Parties Decision VI/10 (2002).

²⁰⁴ Art. 5(5).

communities concerned and that mutually agreed terms have been established.²⁰⁵ In implementing obligations under the Protocol, parties will be required, in accordance with domestic law, to take into consideration indigenous and local communities' customary laws, community protocols and procedures with respect to traditional knowledge associated with genetic resources and to establish mechanisms, with the effective participation of such communities, to inform potential users of traditional knowledge about their obligations. Parties are further expected to support efforts by indigenous and local communities, including women in such communities, to develop: community protocols in relation to access and benefit sharing for traditional knowledge; minimum requirements for mutually agreed terms; and model contractual clauses for benefit sharing arrangements. That this may be quite demanding on the resources of indigenous and local communities is recognised by the Protocol's provisions on capacity-building, which include reference to special measures 'to increase the capacity of indigenous and local communities with emphasis on enhancing the capacity of women within those communities in relation to access to genetic resources and/or traditional knowledge associated with genetic resources'.²⁰⁶

The new provisions of the Nagoya Protocol complement the extensive work undertaken by other international organisations, such as UNCTAD and WIPO, in the field of traditional knowledge, to bring about some degree of international harmonisation of standards of protection in this area. Other relevant international developments include the introduction of farmers' rights into the FAO International Undertaking on Plant Genetic Resources and the 2001 Treaty,²⁰⁷ and recognition, in the 2007 UN Declaration on the Rights of Indigenous Peoples, of the right of indigenous peoples to maintain, control, protect and develop their traditional knowledge and intellectual property over such traditional knowledge.²⁰⁸ These efforts provide firm basis for the further development of international rules governing the protection of traditional knowledge, always recognising the tension between the objective of facilitating access to environmental benefits, on the one hand, and providing appropriate financial and other benefits to the holders of the knowledge, including through sharing of the monetary and other benefits of commercialisation.

CONCLUSIONS

The provision of financial resources and the transfer of environmentally sound technologies to developing countries represent two of the most important mechanisms for implementing international environmental obligations. The legal relationship between environmental protection and financial resources, technology transfer, and intellectual property rights is now well established and becoming increasingly complex. This results from the developments at the regional and global levels in the period shortly before UNCED, in the two conventions and other international acts adopted at UNCED, and in subsequent legislative and judicial developments. The consequence is a two-way interchange, also reflected in developments relating to the interplay of trade and environment discussed in Chapter 19: on the one hand, international environmental law and lawyers must take account of, and apply, legal concepts and rules deriving from the rules relating to the international economic system, including the protection

²⁰⁵ Art. 7. ²⁰⁶ Art. 22(5)(j). ²⁰⁷ Art. 9. ²⁰⁸ UNGA Res. 61/L.67 (7 September 2007), Art. 31.

of intellectual property rights; on the other hand, international economic institutions and their legal systems must integrate environmental considerations across the range of their activities.

This is a logical step in the progressive development of international environmental law, and follows earlier phases in which standards were set, institutions created, and procedural requirements put in place. It is evidenced by developments with respect to international development assistance resources, and in particular those provided by the multilateral development banks, which are now largely subjected to a regime which: (1) sets forth clear international legal obligations which ensure that adequate environmental standards are applied; (2) ensures that procedural obligations relating to environmental information and assessment exist and are complied with; and (3) establishes efficient and effective mechanisms to ensure that decisions which do not satisfy basic environmental requirements are reviewed and rejected if found wanting. There are three other fundamental challenges that will need to be properly addressed as part of continuing efforts to move environmental considerations from the periphery of international legal and institutional arrangements to their centre. The first such challenge for the law is posed by the creation of mechanisms which have been established to provide financial resources dedicated to addressing regional or global environmental objectives, such as the GEF and other funds established under international environmental conventions. The creation of these new arrangements has raised complex constitutional issues, as the early wrangling over the establishment of the GEF illustrates. It will therefore be important to ensure that their creation takes a long-term view; that their activities reflect the needs of the communities which they are intended to serve; that their decision-making structures continue to be broadly acceptable to donors and recipients and allow the effective participation of interested and affected members of the international community; and that they target real environmental needs on the basis of internationally agreed environmental obligations. The developments that have taken place with respect to bilateral and multilateral development assistance may equally serve as a model for the dedicated environmental funds, the successful operation of which will play a large part in determining whether international environmental obligations are effectively implemented.

The second challenge, which is closely linked to the need to provide international funds, is the development of effective modalities to ensure the transfer of environmentally sound technologies, which will allow developing countries to 'leapfrog' the dirty and obsolete technologies that have been used to underwrite mass industrialisation. Without international funding, it is unlikely that the technology transfer provisions set forth in environmental agreements will amount to very much. Additionally, however, international institutional questions need to be addressed. One of the major institutional gaps, which UNCED did not fill, has been the absence of international institutional arrangements which can identify and assess appropriate technologies, provide information to buyers and sellers, and act as a conduit for independent advice on appropriate technologies. The idea of an international 'clearing-house' is now reflected in the 1997 Kyoto Protocol, the 1998 Chemicals Convention and the 2000 Biosafety Protocol. These arrangements, and others such as the Kyoto Protocol's Clean Development Mechanism, the 2001 Plant Treaty's Multilateral System and renewed efforts to develop a Technology Mechanism under the auspices of the Climate Change Convention, should go some way towards achieving greater transfers of clean technologies. The 2010 Nagoya Protocol demonstrates progress made in another important area; namely, ensuring that the benefits accruing from technological development based on genetic resources are fairly

and equitably shared. This treaty gives developing countries rich in genetic resources a stake in technological development that could benefit the conservation and sustainable use of biodiversity, rather than casting them always as the recipients of technology transfer from the developed world.

Finally, the third challenge relates to intellectual property rights, which raise a variety of international legal issues of relevance to the environmental agenda. The challenge here will be to construct a system which can fulfil at least three environmental functions: to ensure that technologies or practices which are likely to lead to significant damage to the environment will not be granted protected status; to contribute to the efficient transfer of environmentally sound technologies; and to allow the knowledge of indigenous peoples to be adequately protected. Again, the 2010 Nagoya Protocol signals significant progress in this regard through its provisions for benefit sharing, including in relation to intellectual property rights, associated with the use of genetic resources and associated traditional knowledge.

17

Liability for environmental damage

INTRODUCTION

General principles of international law imposing liability on actors for their illegal acts, or for the adverse consequences of their lawful activities, are relatively well developed at a general level, and are also reflected in the Articles on State Responsibility adopted by the International Law Commission (ILC) in 2001.¹ In relation to environmental damage, however, the liability rules are still evolving and are in need of further development. Environmental damage refers here to damage to the environment, which has generally been defined in treaties and other international acts to include four possible elements: (1) fauna, flora, soil, water and climatic factors; (2) material assets (including archaeological and cultural heritage); (3) the landscape and environmental amenity; and (4) the interrelationship between the above factors.² Most legal definitions of environment do not, therefore, include people and their property, although this is changing as a result of the increasing intersection of international environmental law with the area of human rights protection.³

Liability rules at the domestic or international level serve a variety of purposes. They may be a form of economic instrument that provides an incentive to encourage compliance with environmental obligations.⁴ They may also be used to impose sanctions for wrongful conduct, or to require corrective measures to restore a given environmental asset to its pre-damage condition. Finally, they may provide a technique for internalising environmental and other social costs into production processes and other activities in implementation of the polluter pays principle.⁵

This chapter follows the distinction which has been drawn in practice between the liability of states and other international persons under public international law, and the liability of actors (which could include states) under rules of national law adopted pursuant to treaties which aim to harmonise national civil liability rules, or set minimum standards. State liability refers here to the liability of international persons under the operation of rules of international law of state responsibility. Civil liability refers to the liability of any legal or natural person under the rules of national law adopted pursuant to international treaty obligations establishing harmonised minimum standards. However, the distinction between state and civil liability is becoming

¹ Report of the ILC, UN Doc. A/56/10 (2001).

² Chapter 1, pp. 13–15, above. ³ See Chapter 18 below.

⁴ See, in this regard, C. Murgatroyd, 'The World Bank: A Case for Lender Liability', 1 *Review of European Community and International Environmental Law* 436 (1992).

⁵ Chapter 6, pp. 228–9, above.

increasingly difficult to draw, as treaties and other international acts have established an obligation for the state to provide public funds where an operator cannot meet certain costs of environmental damage.⁶

States have long recognised the role of liability for environmental damage, as well as the gaps and inadequacies that exist. Principle 22 of the Stockholm Declaration recognised gaps, and called on states to ‘co-operate to develop further the international law regarding liability and compensation for victims of pollution and other environmental damage caused by activities within the jurisdiction or control of such states to areas beyond their jurisdiction’. The 1982 World Charter for Nature did not directly address liability, although it called for degraded areas to be rehabilitated and for individuals to have access to means of redress when ‘their environment has suffered damage or degradation’.⁷ The Rio Declaration reflected the limited progress made since 1972. It emphasised the development of national rules in addition to the further development of international rules for all adverse effects of environmental damage including, implicitly, liability for damage to the environment itself. Principle 13 of the Rio Declaration provides that:

states shall develop national law regarding liability and compensation for the victims of pollution and other environmental damage. States shall also co-operate in an expeditious and more determined manner to develop further international law regarding liability and compensation for adverse effects of environmental damage caused by activities within their jurisdiction or control to areas beyond their jurisdiction.

The shift in emphasis in the Rio Declaration reflects an unwillingness to establish rules of international law that might impose excessive costs. This was also evident following the Chernobyl accident in 1986, following which no claims were made, even though it provided a relatively clear-cut case on which an international liability claim could be made. That episode illustrated the inertia which has limited developments since 1972 in the development of state liability rules for environmental damage, although a significant number of treaties have been developed which establish international civil liability rules, as considered below. Other treaties commit their parties to develop rules on liability or responsibility,⁸ or support international efforts.⁹ For state and civil liability, international rules address certain substantive and

⁶ See 1960 Paris Convention and 1963 Brussels Supplementary Convention and 2004 Protocols, p. 740, below; 1988 CRAMRA, pp. 733–4, 760–1, below; and the 2001 ILC Articles on State Responsibility, p. 705, below. See also EU Parliament and Council Directive 2009/31/EC of 23 April 2009 on the geological storage of carbon dioxide (and amending Council Directive 85/337/EEC, European Parliament and Council Directives 2000/60/EC, 2001/80/EC, 2004/35/EC, 2006/12/EC and 2008/1/EC and Regulation (EC) No. 1013/2006), Preamble, paras. 33, 34, 35 and 37 and Arts. 17, 18 and 20.

⁷ Paras. 11(c) and 23.

⁸ 1978 Kuwait Convention, Art. XIII (civil); 1982 UNCLOS, Art. 235(3); 1982 Jeddah Convention, Art. XIII (civil liability); 1983 Cartagena de Indias Convention, Art. 14; 1986 Noumea Convention, Art. 20; 1992 Baltic Convention, Art. 25; 1996 Protocol to the London Convention, Art. 15; 2000 Biosafety Protocol, Art. 27 (giving rise to the 2010 Nagoya–Kuala Lumpur Supplementary Protocol on Liability and Redress, pp. 764–6, below); 2001 POPs Convention, Art. 17; 2003 Revised African Nature Convention, Art. XXIV; 2003 Tehran Convention, Art. 29; 2010 Nairobi Convention, Art. 16.

⁹ 1992 Watercourses Convention, Art. 7; 1992 Industrial Accidents Convention, Art. 13.

procedural elements that determine the nature and extent of the liability. The common issues that emerge are:

- whether to designate environmental damage as a distinct head of damage (separate from personal injury and property damage);
- defining environmental damage;
- establishing the standard of care (absolute, strict or fault);
- establishing the measure of damages;
- identifying the person or persons against whom the claim should be brought;
- determining who may bring a claim;
- designating the forum or fora before which claims may be brought;
- determining the remedies which are available; and
- providing for the availability of certain defences.

Many similarities exist among the various instruments, although each of the civil liability regimes sets its own rules in relation to each of these and other issues. The same is true of state liability rules adopted by treaty. In respect of such rules as exist under customary or general international law, it will be seen that, in the context of very limited state practice, defining the parameters of each aspect of state liability is not an easy task.

STATE LIABILITY¹⁰

Introduction

It is a well-established principle of international law, recognised in Article 1 of the ILC Articles on the Responsibility of States for Internationally Wrongful Acts (2001), that every internationally

¹⁰ L. F. E. Goldie, 'Liability for Damage and the Progressive Development of International Law', 14 *International and Comparative Law Quarterly* 1189 (1965); W. Jenks, 'Liability for Ultra-Hazardous Activities in International Law', 117 *Recueil des Cours* 99 (1966-I); J. M. Kelson, 'State Responsibility and the Abnormally Dangerous Activity', 13 *Harvard International Law Journal* 197 (1972); K. R. Hoffman, 'State Responsibility in International Law and Transboundary Pollution Injuries', 25 *International and Comparative Law Quarterly* 509 (1976); P.-M. Dupuy, 'International Liability of States for Damage Caused by Transfrontier Pollution', in OECD, *Legal Aspects of Transfrontier Pollution* (1977), 345; UNEP, 'Report of the Group of Experts on Liability for Pollution and Other Environmental Damage and Compensation for Such Damage', Doc. UNEP/WG.8/3 (1977); OECD, *Responsibilities and Liability of States in Relation to Transfrontier Pollution* (1979); R. C. d'Arge and A. V. Kneese, 'State Liability for International Environmental Degradation: An Economic Perspective', 20 *Natural Resources Journal* 427 (1980); G. Handl, 'State Liability for Accidental Transnational Environmental Damage by Private Persons', 74 *American Journal of International Law* 525 (1980); I. Brownlie, *System of the Law of Nations: State Responsibility* (1983); OECD, Report by the Environment Committee on 'Responsibility and Liability of States in Relation to Transfrontier Pollution' (1984); P. Allott, 'State Responsibility and the Unmaking of International Law', 29 *Harvard International Law Journal* 1 (1988); G. Doeker and T. Gehring, 'Private or International Liability for Transnational Environmental Damage – The Precedent of Conventional Liability Regimes', 2 *Journal of Environmental Law* 1 (1990); F. Francioni and T. Scovazzi (eds.), *International Responsibility for Environmental Harm* (1991); A. Rosas, 'Issues of State Liability for Transboundary Environmental Damage', 60 *Nordic Journal of International Law* 5 (1991); K. Zemanek, 'State Responsibility and Liability', in K. Neuhold, W. Lang and K. Zemanek (eds.), *Environmental Protection and International Law* (1991), 187; A. Rest, 'Ecological Damage in Public International Law', 22 *Environmental Policy and Law* 31 (1992); R. Lefeber, *Transboundary Environmental Interference and the Origin of State Liability* (1996); special issue on 'Environmental Damage', 5(4) *Review of European Community and International Environmental Law* (1996); P. Wetterstein (ed.), *Harm to the Environment* (1997); T. Vaissiere, 'L'Ethique de Responsabilité Chez Hans Jonas a l'Epreuve du Droit International de l'Environnement', *Revue*

wrongful act of a state entails the international responsibility of that state.¹¹ The same principle applies to other international persons, including international organisations.¹² A state responsible for an internationally wrongful act is under an obligation to cease that act, if it is continuing, and to offer appropriate assurances and guarantees of non-repetition if the circumstances so require, and to make full reparation for the injury caused by the internationally wrongful act.¹³ The obligation to make reparation – sometimes referred to as a liability¹⁴ – is well established. As the Permanent Court of International Justice (PCIJ) stated as early as 1928 in the *Chorzów Factory* case:

it is a principle of international law, and even a general conception of law, that any breach of an engagement involves an obligation to make reparation. In Judgment No. 8 (1927) (PCIJ, Ser. A, No. 9, 21) . . . the Court had already said that reparation was the indispensable complement of a failure to apply a convention, and there is no necessity for this to be stated in the convention itself.¹⁵

The approach was affirmed – in the environmental context – by the ICJ in the *Case Concerning the Gabčíkovo-Nagymaros Project*.¹⁶ The operation of these principles refers to rules of state responsibility and liability, although the term ‘state responsibility’ is perhaps misleading as it emerged at a time when states alone were considered as subjects of international law. To the extent that international organisations and other legal and natural persons may also be subjects of international law, the concept of ‘state responsibility’ may also inform the principle of the liability of other international persons under the rules of public international law.¹⁷

Interdisciplinaire d'Etudes Juridiques 135 (1999); E. Brans, *Liability for Damage to Public Natural Resources* (2001); M. Bowman and A. Boyle (eds.), *Environmental Damage in International and Comparative Law* (2002); J. Crawford, *The ILC's Articles on State Responsibility* (2002); J. Brunnée, ‘Of Sense and Sensibility: Reflections on International Liability Regimes as Tools for Environmental Protection’, 53 *International and Comparative Law Quarterly* 351 (2004); A. Boyle, ‘Globalising Environmental Liability: The Interplay of National and International Law’, 17 *Journal of Environmental Law* 3 (2005); R. M. Bratspies and R. A. Miller (eds.), *Transboundary Harm in International Law: Lessons from the Trail Smelter Arbitration* (2006); M. Faure and S. Ying, *China and International Environmental Liability: Legal Remedies for Transboundary Pollution* (2008); J. Crawford, A. Pellet and S. Olleson (eds.), *The Law of International Responsibility* (2010). See also M. Fitzmaurice, ‘International Responsibility and Liability’, in D. Bodansky, J. Brunnée and E. Hey (eds.), *The Oxford Handbook of International Environmental Law* (2007), Chapter 41; M. Fitzmaurice, D. M. Ong and P. Merkouris (eds.), *Research Handbook on International Environmental Law* (2010), Part V.

¹¹ See note 1 above; for background, see J. Crawford, First Report on State Responsibility, UN Doc. A/CN.4/490 and Add.1–7 (1998); Second Report, UN Doc. A/CN.4/498 and Add.1–4 (1999); Third Report, UN Doc. A/CN.4/507 and Add.1–4 (2000); and Fourth Report, UN Doc. A/CN.4/517 (2001). See generally J. Crawford, *The ILC's Articles on State Responsibility: Introduction, Text and Commentaries* (2002).

¹² See the draft Articles on Responsibility of International Organizations adopted by the ILC on first reading, *Official Records of the General Assembly, Sixty-Fourth Session, Supplement No. 10 (A/64/10)*, para. 50 (2009), Art. 3.

¹³ Articles on State Responsibility, Arts. 30 and 31.

¹⁴ The term ‘liability’ in international law has been described in a number of ways. For Dupuy and Smets, it means the ‘international obligation to compensate’: P.-M. Dupuy and H. Smets, ‘Compensation for Damage Due to Transfrontier Pollution’, in OECD, *Compensation for Pollution Damage* (1981), 182. For Goldie, the meaning is wider in that it designates more generally ‘the consequences of a failure to perform [a] duty, or to fulfil the standards of performance required. That is, liability connotes exposure to legal redress once responsibility and injury arising from a failure to fulfil that legal responsibility have been established’: L. F. E. Goldie, ‘Concepts of Strict and Absolute Liability and the Ranking of Liability in Terms of Relative Exposure to Risk’, 16 *Netherlands Yearbook of International Law* 175 at 180 (1985).

¹⁵ PCIJ (1928) Ser. A No. 17, at 47. ¹⁶ (1997) ICJ Reports 226, paras. 149 *et seq.*

¹⁷ The ILC is separately considering the responsibility of international organisations (see note 12 above) and has also adopted Draft Principles on the Allocation of Loss in the Case of Transboundary Harm Arising Out of Hazardous Activities, *Yearbook of the International Law Commission* (2006-II), Part 2, which complement its draft Articles on the topic of prevention of transboundary harm from hazardous activities by providing for a regime of loss allocation in the event of unforeseeable or unavoidable accidents or incidents that give rise to damage across state borders.

In the environmental field, no single instrument sets forth the generally applicable international rules governing responsibility and liability. The ILC's Articles on State Responsibility bring together the rules of general international law, and they are applicable (to the extent they reflect customary law) with environmental rules established by treaties and other internationally applicable rules.

A number of non-binding instruments adopted in the environmental field have sought also to restate general principles. Principle 12 of the 1978 UNEP draft Principles affirms that states are responsible for the fulfilment of their international environmental obligations relating to the utilisation of shared natural resources, and that they 'are subject to liability in accordance with applicable international law for environmental damage resulting from violations of these obligations caused to areas beyond their jurisdiction'.¹⁸ The WCED Legal Principles Group states that:

[i]f one or more activities create a significant risk of substantial harm as a result of a transboundary environmental interference, and if the overall technical and socio-economic cost or loss of benefits involved in preventing or reducing such risks far exceeds in the long run the advantage which such prevention or reduction would entail . . . the state which carried out or permitted the activities shall ensure that compensation is provided should substantial harm occur in an area under national jurisdiction of another state or in an area beyond the limits of national jurisdiction.¹⁹

The Institut de Droit International (IDI) has made a singular contribution to this subject. Its 1987 resolution on transboundary air pollution recognised that 'states incur responsibility under international law for any breach of their international obligations with respect to transboundary air pollution', and called on states to conclude international treaties and enact laws and regulations to ensure an effective system of prevention and compensation for victims of transboundary air pollution.²⁰ In 1997, the IDI unanimously adopted a resolution on responsibility and liability under international law for environmental damage, which seeks to 'identify, harmonize and to the necessary extent develop the principles of international law applicable to responsibility and liability in the context of environmental damage'.²¹ The resolution affirms that 'the breach of an obligation of environmental protection established under international law engages responsibility of the State . . . entailing as a consequence the obligation to reestablish the original position or to pay compensation', the latter obligation also being capable of arising from a rule of international law providing for strict liability on the basis of harm or injury alone.²²

¹⁸ Principle 12 calls on states to 'co-operate to develop further international law regarding liability and compensation for the victims of environmental damage arising out of utilisation of a shared natural resource and caused to areas beyond their jurisdiction'.

¹⁹ Art. 11; Art. 11(2) provides that states 'shall ensure that compensation is provided for substantial harm caused by transboundary environmental interferences resulting from activities carried out or permitted by that state notwithstanding that the activities were not initially known to cause such interferences'.

²⁰ Arts. 6 and 7. ²¹ 4 September 1997, 37 ILM 1473 (1998). ²² Art. 1.

General international law

State liability for environmental damage is premised upon a breach of an international legal obligation established by treaty, or by a rule of customary international law, or possibly under general principles of international law. Article 2 of the ILC Articles on State Responsibility states:

There is an internationally wrongful act of a State when conduct consisting of an act or omission:

- (a) is attributable to the State under international law; and
- (b) constitutes a breach of an international obligation of the State.

The ILC Articles on State Responsibility elaborate on the circumstances in which an act or omission will be attributable to a state,²³ and indicate the circumstances in which a breach of an obligation will have occurred and that the state must be bound by the obligation in question 'at the time that act occurs'.²⁴ They also elaborate on the conditions that must be satisfied for one state to incur responsibility in connection with the acts of another state, for example where one state aids or assists another in the commission of an internationally wrongful act.²⁵ And they indicate the circumstances in which wrongfulness may be precluded, including where a state invokes necessity to justify an action to safeguard an essential interest against a grave and imminent peril.²⁶

For present purposes, the most pertinent international obligation is that requiring a state to prevent particular environmental harm, or to refrain from carrying out or permitting activities that could lead to environmental damage. As discussed in Chapter 6, the ICJ has affirmed that customary international law establishes an obligation to respect the environment of other states or of areas beyond national jurisdiction.²⁷ To a large extent, discussions of state liability are likely to be concerned with the consequences of a breach of this obligation, which encompasses the obligation not to cause significant harm. But responsibility and liability also arise in relation to other substantive obligations, as well as procedural requirements pertaining, for example, to access to information and the duty to carry out an environmental impact assessment. Additionally, some regimes (for example, the WTO system) establish their own rules and remedies governing the consequences of a failure to comply with the obligations therein established.²⁸

²³ Chapter II of the ILC's Articles (Arts. 4–11).

²⁴ Chapter III, Arts. 12 and 13. See also Arts. 14 (on breaches of a continuing character) and 15 (composite acts).

²⁵ Chapter IV, in particular Art. 16 (providing, *inter alia*, for international responsibility where aid or assistance is provided with knowledge of the circumstances of an internationally wrongful act). This confirms that a state (or international organisation) may be internationally responsible if it provides financial support (for example in the form of an export credit guarantee or insurance) in relation to the construction of a project the operation of which might, for example, contribute to a breach of an obligation relating to the equitable use of an international watercourse.

²⁶ Chapter V, in particular Art. 25 (in the *Gabčíkovo-Nagymaros* case, the ICJ confirmed that a state of ecological necessity may be invoked to preclude wrongfulness; see Chapter 8, pp. 315–16, above). The other circumstances in which wrongfulness may be precluded are consent (Art. 20), self-defence (Art. 21), countermeasures (Art. 22), *force majeure* (Art. 23), distress (Art. 24) and compliance with a peremptory norm (Art. 26).

²⁷ Chapter 6, pp. 195–6, 199, above.

²⁸ Chapter 19, below. See P. Mavroides, 'Remedies in the WTO Legal System: Between a Rock and a Hard Place', 11 *European Journal of International Law* 763 (2000).

With regard to the obligation to prevent environmental damage, general international law requires at least four related issues to be addressed. (1) Is the obligation aiming to prevent any transboundary environmental damage, or only transboundary environmental damage which has serious, or significant, or appreciable consequences? (2) Is the obligation based upon the need to prove fault or is it imposed by operation of absolute or strict liability? (3) What reparation should be made for environmental damage? (4) What is the extent of liability and the measure of damages? Other legal requirements would need to be satisfied to bring an international claim, including (as appropriate) the exhaustion of local remedies rule, the nationality of claims rule, any rules governing limitation on the time within which a claim can be brought, and the rules governing attribution of state responsibility for the acts of public bodies and private persons.²⁹ In respect of these and other questions, state practice, case law, treaties and the writings of jurists do not provide conclusive answers. Each case must be judged on its own merits.

Defining environmental damage

Defining environmental damage remains a complex issue. Two related issues need to be distinguished. What constitutes environmental damage? And what level of environmental damage might give rise to liability?

In defining environmental damage, treaties and state practice reflect various approaches. A narrow definition of environmental damage is limited to damage to natural resources alone (air, water, soil, fauna and flora, and their interaction); a more extensive approach includes damage to natural resources *and* property that forms part of the cultural heritage; the most extensive definition includes landscape and environmental amenity.³⁰ On each approach, environmental damage generally does not include damage to persons or damage to property, although such damage can be consequential to environmental damage. Loss of environmental amenity, which may be included under the provisions of the 1993 Council of Europe Convention on Liability for Environmental Damage (1993 Lugano Convention) referring to the 'characteristic aspects of the landscape',³¹ could be treated as environmental damage or damage to property, depending on the definition of the latter. The 2010 Nagoya–Kuala Lumpur Supplementary Liability Protocol to the Biosafety Protocol suggests an even broader approach: it defines 'damage' to mean 'an adverse effect on the conservation and sustainable use of biological diversity, taking also into account risks to human health'.³²

Environmental damage has been defined in instruments establishing civil liability, particularly in relation to oil pollution, hazardous wastes and activities, and genetically modified organisms.³³ In respect of state liability, the only treaty definition is provided

²⁹ See generally R. Jennings and A. Watts (eds.), *Oppenheim's International Law* (1992, 9th edn), vol. I, Part I, 511–27 and 540–54.

³⁰ See e.g. ILC Draft Principles on the Allocation of Loss in the Case of Transboundary Harm Arising Out of Hazardous Activities, Principle 2.

³¹ See also *ibid.*

³² Nagoya–Kuala Lumpur Supplementary Protocol on Liability and Redress to the Cartagena Protocol on Biosafety, Nagoya, 15 October 2010, not in force, BS VI-11, Art. 2(2)(b).

³³ See pp. 737–71, below.

by the 1988 CRAMRA, which defines damage to the Antarctic environment or ecosystem very broadly, to include:

any impact on the living or non-living components of that environment or those ecosystems, including harm to atmospheric, marine or terrestrial life, beyond that which is negligible or which has been assessed and judged to be acceptable pursuant to [the] Convention.³⁴

The concept of ‘pollution’, which is defined in the 1979 LRTAP Convention, the 1982 UNCLOS and elsewhere, provides some assistance but cannot be used interchangeably with ‘environmental damage’. ‘Air pollution’ in the 1979 LRTAP Convention is defined by reference to deleterious effects (which are themselves undefined) on living resources and ecosystems, human health and material property, as well as interference with amenities and other legitimate uses of the environment.³⁵ The distinction between environmental damage (and compensable environmental damage) and pollution is illustrated by the 1993 Lugano Convention, which provides that an operator of a dangerous activity will not be liable for damage (impairment of the environment) caused by pollution at ‘tolerable’ levels under local relevant circumstances.³⁶ Other treaties require ‘adverse effects’, rather than pollution, to define the consequences of activities that are to be avoided. Like pollution, the term ‘adverse effects’ provides some assistance in establishing a basis for, but cannot be used interchangeably with, a general definition of environmental damage. The 1985 Vienna Convention defines ‘adverse effects’ in relation to ozone depletion as, *inter alia*, ‘changes in the physical environment or biota, including changes in climate, which have significant deleterious effects on human health or on the composition, resilience and productivity of natural and managed ecosystems, or on materials useful to mankind’.³⁷ The 1992 Climate Change Convention introduces a similar definition, although it reverses the order by placing deleterious effects on the environment before effects on human health, and extends the definition to include effects on socio-economic systems and human welfare.³⁸ Most recently, and elaborately, the definition of ‘damage’ in the 2010 Nagoya–Kuala Lumpur Supplementary Liability Protocol speaks of ‘an adverse effect’ on biodiversity, which it describes as effect that: (i) ‘is measurable or otherwise observable taking into account, wherever available, scientifically established baselines recognized by a competent authority that takes into account any other human induced variation and natural variation’;³⁹ and (ii) is ‘significant’ when judged in light of factors such as the long-term or permanent change, the extent of qualitative or quantitative changes that adversely affect the components of biodiversity, reduction of the ability of components of biodiversity to provide goods and services, and the extent of any adverse effects on human health.⁴⁰ Thus, terms such as ‘pollution’ and ‘adverse effects’ help in determining the threshold beyond which environmental damage might trigger liability, but they do not actually define it.

Other state practice is limited. Environmental damage in the pure sense was not considered by the arbitral tribunal in the *Trail Smelter* case, although the *Lac Lanoux* arbitration implicitly recognised the possibility of pure environmental damage when it referred to changes in the

³⁴ Art. 1(15). The Convention has not entered into force. ³⁵ Art. 1(a); see also 1982 UNCLOS, Art. 1(4).

³⁶ See pp. 766–70, below. ³⁷ Art. 1(2). ³⁸ Art. 1(1). ³⁹ Art. 2(2)(b). ⁴⁰ Art. 2(3).

composition, temperature or other characteristics of the waters of the River Carol which injured Spanish interests.⁴¹ Treating environmental damage as a separate head was recognised in the claims by Australia and New Zealand in the *Nuclear Tests* cases, and by Nauru in the *Case Concerning Certain Phosphate Lands in Nauru*. It was also recognised – implicitly – by the ICJ in the *Case Concerning the Gabčíkovo–Nagymaros Project*.⁴² Most recently, in its 2011 Advisory Opinion on *Responsibilities and Obligations in the Area*, ITLOS considered the concept of ‘damage’ in Article 139(2) of UNCLOS, which provides ‘damage caused by the failure of a State Party or international organization to carry out its responsibilities under this Part shall entail liability’.⁴³ Neither UNCLOS nor Regulations issued by the International Seabed Authority specify what constitutes compensable damage for the purposes of this provision. The Tribunal was of the view that ‘the damage in question would include damage to the [Deep Seabed] Area and its resources constituting the common heritage of mankind, and damage to the marine environment’.⁴⁴

Clear support for the provision of compensation for environmental damage under rules of state liability was provided by the UN Security Council in 1991 when it reaffirmed that Iraq was ‘liable under international law for any direct loss, damage, including environmental damage and the depletion of natural resources, or injury to foreign Governments, nationals and corporations’ occurring as a result of its unlawful invasion and occupation of Kuwait.⁴⁵ UN Security Council Resolution 687, binding on the world, unequivocally determined that a state can be liable for the environmental damage and depletion of natural resources which result from unlawful use of force. Resolution 687 did not, however, define environmental damage or depletion of natural resources, or provide guidance to the Compensation Commission on their assessment, or the measure, of reparation or compensation.⁴⁶ The practice of the Claims Commission, which concluded its processing of claims in 2005, may provide some assistance to other international bodies, including courts and tribunals in defining environmental damage.⁴⁷

Threshold at which environmental damage entails liability

Whilst all pollution or human activity having adverse effects might give rise to environmental damage, it is unlikely that all environmental damage results in state liability. There are no agreed international standards that establish a threshold for environmental damage that triggers liability and allows claims to be brought. State practice, decisions of international tribunals and the writings of jurists suggest that environmental damage must be ‘significant’ or ‘substantial’ (or possibly ‘appreciable’, which suggests a marginally less onerous threshold) for liability to be triggered.

⁴¹ See Chapter 8, pp. 307–8, above.

⁴² (1997) ICJ Reports 226, para. 152 (‘Hungary is entitled to compensation for the damage sustained as a result of the diversion of the Danube, since Czechoslovakia, by putting into operation Variant C, and Slovakia, in maintaining it in service, deprived Hungary of its rightful part in the shared water resources, and exploited those resources essentially for their own benefit’).

⁴³ See further pp. 731–3, below. ⁴⁴ *Responsibilities and Obligations in the Area*, para. 179.

⁴⁵ Security Council Res. 687 (1991); see pp. 720 *et seq.*, below.

⁴⁶ See pp. 720 *et seq.*, below; and UNEP, *Report of the Working Group of Experts on Liability and Compensation for Environmental Damage Arising from Military Activities* (1996).

⁴⁷ See pp. 720 *et seq.*, below, for a discussion of the practice of the Commission.

A 1993 European Commission Green Paper on Environmental Liability identified several possibilities for determining the level of environmental damage triggering liability. These included defining environmental damage by reference to ‘critical loads’, which describe the point at which a pollutant becomes concentrated in the environment at a level which cannot be diluted or broken down by natural processes;⁴⁸ or by reference to environmental indicators and environmental accounting to measure environmental performance, pressures and conditions;⁴⁹ or by reference to existing international legislation which establishes quality standards for flora and fauna, water and air quality and which might be considered to establish a threshold for environmental damage above which a person responsible for the increase would be considered liable for the consequences. International instruments that set environmental quality standards, or product, emissions or process standards, may also provide some guidance as to the level of environmental damage considered to be tolerable or acceptable by the international community.

Some guidance may also be found in the exchange between the then President of the ICJ, Sir Humphrey Waldock, and the government of Australia in the *Nuclear Tests* case, reflecting a view that not every transmission of chemical or other matter into another state’s territory, or into the global commons, will create a legal cause of action in international law.⁵⁰ The tribunal in the *Trail Smelter* case held that the injury must have a ‘serious consequence’ to justify a claim.⁵¹ In its claim against Australia, Nauru argued for a general principle based upon an obligation not to bring about changes in the condition of territory which will cause ‘irreparable damage to, or substantially prejudice’ the legal interest of another state.⁵² A similar approach underlay Hungary’s Original Application in the *Case Concerning the Gabčíkovo-Nagymaros Project*⁵³ and is at issue in the current case regarding *Aerial Herbicide Spraying* brought by Ecuador against Colombia before the ICJ.⁵⁴ The Canadian claim following the crash of Cosmos 954 was brought in the context of damage to land which made it ‘unfit for use’, a level of damage which supports the view that the impact on the environment must be more than nominal to establish a claim.⁵⁵ A number of the civil liability instruments discussed below establish thresholds for environmental damage or adverse effects which are ‘significant’,⁵⁶ or ‘serious’,⁵⁷ or above ‘tolerable levels’,⁵⁸ and the International Law Association’s Montreal Rules call on states to prevent ‘substantial injury’.⁵⁹ In its efforts to draft rules on liability for transboundary harm from hazardous activities, the ILC initially used the term ‘appreciable’ in describing the threshold of damage.⁶⁰ However, after a review of relevant international instruments, the Commission reached a different view. Its 2001 draft Articles on the Prevention of Transboundary Harm refer to the concept of ‘significant transboundary

⁴⁸ COM (93) 47, 17 March 1993, at e.g. Chapter 8; see also 1992 Climate Change Convention, Art. 2 (stabilisation of greenhouse gas concentrations); 1985 SO₂ Protocol, Art. 2; and 1991 VOC Protocol, Art. 2 (critical levels).

⁴⁹ OECD Council Recommendation, Environmental Indicators and Information, C(90)165/final (1991).

⁵⁰ Chapter 7, pp. 241–2, above. ⁵¹ Chapter 7, pp. 239–40, above.

⁵² Chapter 11, pp. 549–50, above. ⁵³ Chapter 8, pp. 313–19, above.

⁵⁴ *Aerial Herbicide Spraying (Ecuador v. Colombia)*, General List No. 138, Application Instituting Proceedings, 31 March 2008, available at www.icj-cij.org/docket/files/138/14474.pdf.

⁵⁵ See pp. 728–9, below. ⁵⁶ 1992 Watercourses Convention, Art. 1(2).

⁵⁷ 1992 Industrial Accidents Convention, Art. 1(d).

⁵⁸ 1993 Lugano Convention, Art. 8(d). See also the 2010 Nagoya–Kuala Lumpur Supplementary Liability Protocol that speaks of ‘adverse effects’: pp. 764–6, below. ⁵⁹ Art. 3(1).

⁶⁰ UN Doc. A/CN.4/428 and Add.1; *Yearbook of the International Law Commission (1990-II)*, Part 1 (Documents of the Forty-Second Session) A/CN.4/SER.A/1990/Add.1, 83 at 89.

harm',⁶¹ and its later 2006 Draft Principles on the Allocation of Loss for Transboundary Harm are directed to compensation for 'significant damage'.⁶² In the commentaries to the 2006 Draft Principles, the ILC observed:

The term 'significant' is understood to refer to something more than 'detectable' but need not be at the level of 'serious' or 'substantial'. The harm must lead to a real detrimental effect on matters such as, for example, human health, industry, property, environment or agriculture in other States. Such detrimental effects must be susceptible of being measured by factual and objective standards.⁶³

Establishing the appropriate threshold turns on the facts of each case, and may vary according to local or regional circumstances.⁶⁴ The limited state practice supports the view that the threshold to be crossed may still be established at a relatively high level of environmental damage. The difficulty of agreeing a threshold was illustrated by the Chernobyl accident, which raised numerous issues over what constituted harmful levels of radioactivity in the absence of legally binding international standards. Several international guidelines establish radiation dose limits for the whole human body or for specific organs or tissues. The European Commission had published recommendations on dose levels as guidelines for national authorities in setting specific levels at which products might be deemed unsafe (intervention levels),⁶⁵ and similar guidelines had also been prepared by the International Commission on Radiological Protection (ICRP),⁶⁶ the WHO,⁶⁷ the IAEA⁶⁸ and UNSCEAR. At the time of the Chernobyl accident, little consideration had been given to the control of foodstuffs contaminated by an accidental release of radioactivity, and national authorities set their own intervention levels according to a range of different standards,⁶⁹ which led to disputes on the permissibility of intervention measures which affected international trade. The European Commission initially suspended the import of certain agricultural products from Central and Eastern Europe, and then laid down the maximum permitted level of radioactivity for products originating from

⁶¹ ILC, Draft Articles on Prevention of Transboundary Harm from Hazardous Activities with commentaries, 2001, *Yearbook of the International Law Commission* (2001-II), Part 2, Arts. 1 and 2, and see the commentary to Art. 2, para. 4.

⁶² UN Doc. A/61/10; ILC, Draft Principles on the Allocation of Loss in the Case of Transboundary Harm Arising Out of Hazardous Activities with commentaries, 2006, *Yearbook of the International Law Commission* (2006-II), Part 2, Principle 2.

⁶³ UN Doc. A/61/10; ILC, Draft Principles on the Allocation of Loss in the Case of Transboundary Harm Arising Out of Hazardous Activities with commentaries, 2006, *Yearbook of the International Law Commission* (2006-II), Part 2, commentary to Principle 2, para. 2.

⁶⁴ See *ibid.*, commentary to Principle 2, para. 3.

⁶⁵ Radiological Protection Criteria for Controlling Doses to the Public in the Event of Accidental Releases of Radioactive Material: A Guide on Emergency Reference Levels of Dose from the Group of Experts Convened under Article 41 of the EURATOM Treaty (1982).

⁶⁶ 'Protection of the Public in the Event of Major Radiation Accidents: Principles for Planning', 40 *Annals of the ICRP*, No. 2, 5-7 and 12-14 (1984).

⁶⁷ Nuclear Power: Principles of Public Health Actions for Accidental Releases (1984).

⁶⁸ Principles for Establishing Intervention Levels for the Protection of the Public in the Event of a Nuclear Accident or Radiological Emergency (IAEA Safety Series No. 72, 1985).

⁶⁹ See FAO, 'Report of the Expert Consultation on Recommended Limits for Radionuclide Contamination of Foods' (1987), Table II, for examples of varying post-Chernobyl 'action levels' applied by some countries for certain radionuclides (in terms of becquerels per kilogram or litre (Bq/kg or Bq/l)) in imported foods, as at December 1986.

these countries.⁷⁰ Individual EU member states adopted their own intervention levels that were used as the basis for undertaking national compensation to affected farmers and other businesses.⁷¹

The absence of generally accepted standards on safe levels of radioactivity made it difficult to assess whether these measures were justified, and resulted in confusion, concern and public suspicion, as well as constraints on international food trade.⁷² The FAO subsequently proposed 'Interim International Radionuclide Action Levels for Food' (IRALFs) to cover food being traded internationally, which, while non-binding and *ex post facto*, provided a useful standard for assessing whether the increases in radioactivity caused by the Chernobyl accident were harmful to foodstuffs and whether intervention levels were justified under international law.⁷³

Liability can be closely related to the adoption of regulatory standards. As the international community adopts such standards, the task of identifying the level of compensable environmental damage becomes easier. Conversely, in the absence of international standards concerning the quality of the environment, including conservation of flora and fauna, states will set their own standards, resulting in divergences with resulting economic and environmental consequences.

Standard of care

If there is an obligation to prevent significant, substantial or serious environmental damage, what is the standard of care applicable to that obligation? Options include fault (based upon intention or negligence), strict liability ('essentially a *prima facie* responsibility, and various qualifications or defences may be available')⁷⁴ and absolute liability ('for which there can be no mode of exculpation').⁷⁵ Although this question has received considerable attention from writers,⁷⁶ it is reasonable to conclude that there 'is probably no single basis of international responsibility, applicable in all circumstances, but rather several, the nature of which depends on the particular obligation in question'.⁷⁷ The obligation in question may distinguish between ultrahazardous activities and other activities.⁷⁸ This approach can be justified on policy grounds: dangerous activities are more likely to cause serious environmental damage, and a strict or absolute obligation is more likely to provide an incentive to states to adopt special precautions when engaging in or permitting such activities.

⁷⁰ Council Regulation (EEC) No. 86/1707, OJ L146, 31 May 1986, 88; the Regulation was extended on 30 September 1986 and on 27 February 1987 by Council Regulations (EEC) Nos. 86/3020 and 87/624. Council Regulation (EC) No. 733/2008 of 15 July 2008, as amended by Council Regulation (EC) No. 1048/2009 of 23 October 2009, establishes the current conditions governing imports of agricultural products originating in third countries following the accident at the Chernobyl nuclear power station and will expire on 31 March 2020.

⁷¹ West Germany, Equity Guideline, *Bundesanzeiger* of 27 May 1986, No. 95, p. 6417; United Kingdom, Food Protection (Emergency Prohibitions) (England) Order 1986 (SI 1986 No. 1411).

⁷² FAO Report, note 69 above, 3.

⁷³ The IRALF for Iodine-131 was set at 400 bq/kg; the EU imposed import restrictions on milk of 500 bq/kg and on vegetables of 350 bq/kg.

⁷⁴ I. Brownlie, *System of the Law of Nations, Part 1, State Responsibility* (1983), 44.

⁷⁵ *Ibid.*; see L. F. E. Goldie, 'Concepts of Strict and Absolute Liability and the Ranking of Liability in Terms of Relative Exposure to Risk', 16 *Netherlands Yearbook of International Law* 175 (1985).

⁷⁶ See the discussion by Brownlie, note 74 above, 40–6, and the literature cited therein.

⁷⁷ R. Jennings and A. Watts (eds.), *Oppenheim's International Law* (1992, 9th edn), vol. I, 509.

⁷⁸ On 'ultrahazardous' and 'dangerous' activities, see Chapter 11 generally.

International law remains inconclusive on general rules governing the standard of care to be shown in fulfilling international environmental obligations. Principle 21 of the Stockholm Declaration and Principles 2 and 13 of the Rio Declaration do not provide guidance either way, and the decisions of international tribunals in the *Trail Smelter* case, the *Corfu Channel* case, the *Lac Lanoux* case and the *Nuclear Tests* cases can be interpreted to support conclusions of absolute/strict liability or fault-based liability. In respect of ultrahazardous activities, certain treaties do support a standard of absolute or strict, liability. The 1972 Space Liability Convention supports absolute liability,⁷⁹ and, in reliance on this provision and general principles of international law, following the Cosmos 954 accident Canada claimed that ‘the principle of absolute liability applies to fields of activity having in common a high degree of risk . . . [and] has been accepted as a general principle of international law’.⁸⁰ The 1988 CRAMRA also supports liability without the need to prove fault.⁸¹ The standard of care required by the provisions of UNCLOS establishing liability in respect of damage caused by the failure of a state party to carry out its responsibilities under Part XI was considered by ITLOS in its recent Advisory Opinion on *Responsibilities and Obligations in the Area*.⁸² In relation to these provisions, the Tribunal held ‘the liability of sponsoring States arises from their failure to carry out their own responsibilities and is triggered by the damage caused by sponsored contractors’ and that there ‘must be a causal link between the sponsoring State’s failure and the damage, and such a link cannot be presumed’.⁸³ The Tribunal rejected the argument that the sponsoring state was subject to strict liability under Article 139(2) of UNCLOS, noting that ‘liability for damage of the sponsoring State arises only from its failure to meet its obligation of due diligence. This rules out the application of strict liability’.⁸⁴

Strict liability for ultrahazardous activities might be considered a general principle of law as it is to be found in the national law of many states in relation to ultrahazardous activities.⁸⁵ Under English law, ‘a person who for his own purposes brings on his land and collects and keeps there anything likely to do mischief if it escapes, must keep it in at his peril, and, if he does not do so, is *prima facie* answerable for all the damage which is the natural consequence of its escape’.⁸⁶ Many civil liability treaties also adopt the principle of strict liability for hazardous activities, including nuclear activities, hazardous waste shipments and the carriage of oil by sea, as well as dangerous activities generally.⁸⁷ Strict liability is also supported by Jenks, who considered that, in relation to nuclear damage, the principle of absolute liability ‘is generally accepted, but the expression is somewhat misleading in that it does not exclude the possibility of exceptions’.⁸⁸ The ILC’s 1996 draft Articles on International Liability for Injurious Consequences Arising Out of Acts Not Prohibited by International Law proposed that a state of origin would be strictly liable for harm to the environment and the resulting harm to property and persons.⁸⁹ This proposal was controversial, and when the Commission was requested to resume work on liability by the General Assembly in 2001 it

⁷⁹ Art. II. ⁸⁰ 18 ILM 907 (1992). ⁸¹ Art. 8. ⁸² UNCLOS, Art. 139(2) and Annex III, Art. 4(4).

⁸³ *Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area* (Advisory Opinion) (Seabed Disputes Chamber of the International Tribunal for the Law of the Sea, ITLOS Case No. 17, 1 February 2011) (‘ITLOS, Advisory Opinion on *Responsibilities and Obligations in the Area*’), para. 184.

⁸⁴ *Ibid.*, para. 189. ⁸⁵ A. Tunc (ed.), *International Encyclopedia of Comparative Law*, vol. XI, Chapter V.

⁸⁶ *Rylands v. Fletcher* (1868) LR 3 HL 330. ⁸⁷ See pp. 731–71, below.

⁸⁸ W. Jenks, ‘The Scope and Nature of Ultra-Hazardous Liability in International Law’, 117 *Recueil des Cours* 99 at 144 (1966).

⁸⁹ See pp. 734–7, below; Arts. 24, 26 and 28.

pursued a different tack.⁹⁰ Its 2006 Draft Principles on the Allocation of Loss in the Case of Transboundary Harm Arising Out of Hazardous Activities do not impose state liability, but rather call for a state of origin to impose liability on operators or other entities for significant damage caused to persons, property or the environment, which liability 'should not require proof of fault'.⁹¹

For general industrial and other activities that are not ultrahazardous or dangerous, it is less easy to argue for a standard of care based upon strict or absolute liability. In considering this matter the OECD's Environment Committee has observed that there is a 'custom based rule of *due diligence* imposed on all states in order that activities carried out within their jurisdiction do not cause damage to the environment of other states', which includes establishing and applying an effective system of environmental law and regulations, and principles of consultation and notification.⁹² Due diligence was identified by the ICJ in the *Pulp Mills* case as the applicable standard in respect of 'obligations of conduct' imposed under international environmental treaties, i.e. obligations to adopt and enforce regulatory and administrative measures to achieve a given environmental goal.⁹³ Similarly, in the Advisory Opinion on *Responsibilities and Obligations in the Area*, ITLOS observed that the expression 'to ensure' is 'often used in international legal instruments to refer to obligations in respect of which, while it is not considered reasonable to make a State liable for each and every violation committed by persons under its jurisdiction, it is equally not considered satisfactory to rely on mere application of the principle that the conduct of private persons or entities is not attributable to the State under international law'.⁹⁴

The *Pulp Mills* decision and ITLOS Advisory Opinion also clarify what a due diligence standard might entail. The ICJ described 'an obligation to act with due diligence' as one 'which entails not only the adoption of appropriate rules and measures, but also a certain level of vigilance in their enforcement and the exercise of administrative control applicable to public and private operators, such as the monitoring of activities undertaken by such operators'.⁹⁵ The Court also referred to 'due diligence, and the duty of vigilance and prevention which it implies' as not being exercised 'if a party planning works liable to affect the régime of the river or the quality of its waters did not undertake an environmental impact assessment on the potential effects of such works'.⁹⁶

For its part, ITLOS in its Advisory Opinion indicated that due diligence is 'a variable concept', which may change over time in response to developments in scientific and technological knowledge, as well as in relation to the risks involved in the activity.⁹⁷ Accordingly, the Tribunal stated that 'the standard of due diligence has to be more severe for riskier activities'.⁹⁸

⁹⁰ See also ITLOS, Advisory Opinion on *Responsibilities and Obligations in the Area*, para. 209, noting that the ILC's efforts have not resulted in provisions entailing state liability for lawful acts.

⁹¹ See pp. 734–7, below; Principle 4(2).

⁹² OECD, Report by the Environment Committee, 'Responsibility and Liability of States in Relation to Transfrontier Pollution' (1984), 4. See also ILC, Draft Articles on Prevention of Transboundary Harm from Hazardous Activities with commentaries, 2001, *Yearbook of the International Law Commission* (2001-II), Part 2, Art. 3, para. 7.

⁹³ *Pulp Mills on the River Uruguay (Argentina v. Uruguay)* (International Court of Justice, 20 April 2010) ('*Pulp Mills* case'), para. 187. The basic documents, decisions, pleadings, transcripts, press releases and other materials are available at www.icj-cij.org.

⁹⁴ *Ibid.*, para. 112, citing examples such as Arts. 139 and 194 of UNCLOS. ⁹⁵ *Ibid.*, para. 197.

⁹⁶ *Ibid.*, para. 204. On environmental impact assessment, see Chapter 14 above.

⁹⁷ ITLOS, Advisory Opinion on *Responsibilities and Obligations in the Area*, para. 117. ⁹⁸ *Ibid.*

ITLOS also considered that the precautionary approach is an integral part of the general obligation of due diligence of sponsoring states under UNCLOS, which requires them to take all appropriate measures to prevent damage that might result from the activities of contractors that they sponsor. This obligation applies in situations where scientific evidence concerning the scope and potential negative impact of the activity in question is insufficient but where there are plausible indications of potential risks. A sponsoring state would not meet its obligation of due diligence if it disregarded those risks, as such disregard would amount to a failure to comply with the precautionary approach.⁹⁹

Reparation

The principle is well established that the perpetrator of an internationally wrongful act is under an obligation to make reparation for the consequences of the violation. As expressed in the judgment of the *Chorzów Factory* case, the PCIJ stated that:

The essential principle contained in the actual notion of an illegal act – a principle which seems to be established by international practice and in particular by the decisions of arbitral tribunals – is that reparation must, as far as possible, wipe out all the consequences of the illegal act and re-establish the situation which would, in all probability, have existed if that act had not been committed. Restitution in kind, or, if this is not possible, payment of a sum corresponding to the value which a restitution in kind would bear; the award, if need be, of damages for loss sustained which would not be covered by restitution in kind or payment in place of it – such are the principles which should serve to determine the amount of compensation due for an act contrary to international law.¹⁰⁰

The approach is now reflected in the ILC Articles on State Responsibility (2001), which envisage that reparation for an injury caused by an internationally wrongful act shall take the form of restitution, compensation and satisfaction, either singly or in combination.¹⁰¹ Restitution is aimed at re-establishing the situation that existed before the wrongful act was committed, provided and to the extent that it is not materially impossible and does ‘not involve a burden out of all proportion to the benefit deriving from restitution instead of compensation’.¹⁰² Compensation is to be provided for damage that is not made good by restitution, and should cover ‘any financially assessable damage including loss of profits insofar as it is established’.¹⁰³ Satisfaction is to be provided if the injury cannot be made good by restitution or compensation, for example by an acknowledgment of the breach, an expression of regret or a formal apology.¹⁰⁴

In most environmental cases, the victim will be seeking an end to the harmful act, or restitution, or financial compensation to cover the costs associated with material damage to environmental resources (pure environmental damage) and consequential damage to people

⁹⁹ *Ibid.*, para. 131. ¹⁰⁰ PCIJ (1927) Ser. A No. 17, at 47. ¹⁰¹ Part I, Chapter II, Art. 34.

¹⁰² *Ibid.*, Art. 35. ¹⁰³ *Ibid.*, Art. 36.

¹⁰⁴ *Ibid.*, Art. 37. In the *Rainbow Warrior (New Zealand v. France)* case, France was required to give a ‘formal and unqualified apology’ to New Zealand for the sinking of Greenpeace’s vessel in Auckland Harbour, and ordered to pay US\$7 million in compensation: 82 ILR 500 at 575–7 (1990); 33 *Annuaire Français de Droit International* 922–3 (1987) and 34 *Annuaire Français de Droit International* 896–8 (1988).

and property (consequential environmental damage), including restoration or reinstatement.¹⁰⁵ In relation to restitution, it will be necessary to identify the baseline conditions prior to which the damage occurred, which may be difficult. Compensation raises the problem of assessing the measure of environmental damage:¹⁰⁶ should it be by reference to the costs of measures of reinstatement, or on the basis of an abstract quantification calculated in accordance with a theoretical model, or on some other basis? The problem arises because environmental damage does not fit easily with the traditional approaches of civil and state liability which are designed to compensate an injured person by requiring the responsible person to pay the economic costs of resulting damage, which is frequently calculated by reference to a depreciation of the economic value of the damaged item, or the cost of repairing the damage. Pure damage to the environment may be incapable of calculation in economic terms, although it may have a non-economic value requiring restoration to the state prior to the damage occurring.¹⁰⁷ Even here, difficulties of law and policy will continue to exist, as the European Commission's 1993 Green Paper on Environmental Liability recognised:

An identical reconstruction may not be possible, of course. An extinct species cannot be replaced. Pollutants emitted into the air or water are difficult to retrieve. From an environmental point of view, however, there should be a goal to clean-up and restore the environment to the state which, if not identical to that which existed before the damage occurred, at least maintains its necessary permanent functions . . . Even if restoration or clean-up is physically possible, it may not be economically feasible. It is unreasonable to expect the restoration to a virgin state if humans have interacted with that environment for generations. Moreover, restoring an environment to the state it was in before the damage occurred could involve expenditure disproportionate to the desired results. In such a case it might be argued that restoration should only be carried out to the point where it is still 'cost-effective'. Such determinations involve difficult balancing of economic and environmental values.¹⁰⁸

The rules of international law relating to reparation for environmental damage remain undeveloped, as evidenced by the general lack of legal precedents. Similar limitations exist at the national level. In the United States, restoration of damaged environments has been described as a 'fledgling activity shot through with uncertainty and controversy'.¹⁰⁹ Alternatives to valuing

¹⁰⁵ For example, in its Original Application in the *Gabčíkovo-Nagymaros Project* case, Hungary claimed that Czechoslovakia was under an obligation to 'cease the internationally wrongful act, re-establish the situation which would have existed if the act had not taken place and provide compensation for the harm which resulted from the wrongful act': Hungary, Original Application, 22 October 1992, para. 32. The 1997 IDI Resolution states that '[t]he fact that environmental damage is irreparable or unquantifiable shall not result in exemption from compensation': Art. 29.

¹⁰⁶ See R. Stewart (ed.), *Natural Resource Damages: A Legal, Economic and Policy Analysis* (1995); P. Sands and R. Stewart, 'Valuation of Environmental Damage - US and International Law Approaches', 5 *Review of European Community and International Environmental Law* 290 (1996); M. Bowman and A. Boyle, *Environmental Damage in International and Comparative Law: Problems of Definition and Valuation* (2002); M. Wilde, *Civil Liability for Environmental Damage: A Comparative Analysis of Law and Policy in Europe and the United States* (2002); L. Burlington, 'Valuing Natural Resource Damages: A Transatlantic Lesson', 6 *Environmental Law Review* 77 (2004).

¹⁰⁷ M. Bowman, 'Biodiversity, Intrinsic Value, and the Definition and Valuation of Environmental Harm', in M. Bowman and A. Boyle (eds.), *Environmental Damage in International and Comparative Law* (2002), 42.

¹⁰⁸ Communication from the EC Commission to the EC Council and European Parliament on Environmental Liability, 32, para. 5.2 (1993).

¹⁰⁹ R. Stewart, 'Tort Liability for Injury to Publicly Owned Natural Resources: A Category Mistake' (manuscript on file with author), 21.

the environment for the purpose of assessing claims include the price that the environmental resource commands in the market, the economic value attached to the use of environmental resources (such as methods of costing travel relying on expenditures made by an individual to visit and enjoy a resource, or a hedonic pricing method which takes the extra market value enjoyed by private property with certain environmental amenities and assumes that public resources with comparable amenities have similar economic values), or contingent valuation methods to measure the willingness of individuals to pay for environmental goods such as clean air or water or the preservation of endangered species (usually taken from public opinion surveys).¹¹⁰

The efforts of the UN Compensation Commission in applying Security Council Resolution 687 (see below) have made substantial progress in developing this aspect of international law, building on the precedents established by the *Trail Smelter* case and limited state practice, including the submission of claims. The approach taken by some of the civil liability precedents may also provide useful analogies in relation to state liability.

Trail Smelter case (1941)

The tribunal in the *Trail Smelter* case found that the smelter at Trail in Canada had caused damage in the United States. The tribunal was called upon to decide what indemnity should be paid for the damage.¹¹¹ In applying the ‘law and practice followed in dealing with cognate questions in the United States of America as well as international law and practice’,¹¹² the tribunal considered the indemnity claimed by the United States for damage occurring after January 1932 in respect of: (a) cleared land and improvements thereon; (b) uncleared land and improvements thereon; (c) livestock; (d) property; (e) the wrong done to the United States in violation of sovereignty; (f) interest on the US\$350,000 recommended as damages in the report of the International Joint Commission delivered on 28 February 1931 but not paid until 2 November 1935; and (g) business enterprises. The United States did not put forward a pure environmental damage claim, although this could be read into the claim in respect of ‘uncleared land’. In its 1938 award, the tribunal found that damage to cleared land used for crops had occurred in varying degrees from 1932 to 1936 but not in 1937, and adopted the measure of damages applied by the US courts for nuisance or trespass, namely, ‘the amount of reduction in the value of use or rental value of the land caused by fumigations’.¹¹³ The tribunal also recognised some evidence of ‘special damage’ (rust and destruction of metalwork) which entitled owners to a nominal amount.

As to damage for cleared land not used for crops and to all uncleared land other than that used for timber, the tribunal adopted the same measure of damages, and rejected the US claim to the value of uncleared land at a ratio of loss measured by the reduced crop yield on cleared land. No damages were awarded for pasture lands, and as to cleared land used for merchantable timber the measure of damages was also that applied by US courts, namely, ‘the reduction in the value of the land due to such destruction of timber’. For growing timber, the measure of

¹¹⁰ See generally *ibid.*, 21–32. See also D. Pearce, A. Markandya and E. B. Barbier, *Blueprint for a Green Economy* (1989), 51–81; M. Getzner, C. Spash and S. Stagl, *Alternatives for Environmental Valuation* (2005).

¹¹¹ Chapter 7, pp. 239–40, above.

¹¹² See 1935 Convention, Art. IV, Chapter 7, pp. 239–40, above.

¹¹³ *Trail Smelter* award, 199; see Chapter 7, pp. 239–40, above.

damages was 'the reduction in the value of the land itself due to such destruction and impairment',¹¹⁴ but the tribunal rejected the claim for damages due to lack of reproduction. On the basis of these considerations, the tribunal awarded US\$62,000 for damage to cleared and uncleared land (other than land used for timber), and US\$16,000 for damage to uncleared land used for timber.

The tribunal rejected the claim for damage to livestock (due to the failure to prove injury from fumes from the smelter), damage to property in the town of Northport (lack of proof) and damage to business enterprises ('too indirect, remote and uncertain to be appraised and not such for which an indemnity can be awarded').¹¹⁵ The tribunal also rejected the US claim for damages from the 'injurious effects' to the Columbia River caused by the disposal of waste slag. The tribunal held that it was 'unnecessary to decide whether the facts proven did or did not constitute an infringement or violation of the sovereignty of the United States under international law independent of the Convention' establishing the tribunal, since the Convention only submitted to the tribunal the question of damages caused by the Trail Smelter in the state of Washington, and it interpreted the intention of the parties as evidenced in the Convention not to include moneys spent by the US in investigating the problems, since the Convention used the words 'damages caused by the Trail Smelter'.¹¹⁶ For the same reason, the tribunal rejected the claim for interest on the earlier payment of US\$350,000.

In its 1941 award, the tribunal held that the United States had failed to prove that any fumigation between 1 October 1937 and 1 October 1940 had caused injury to crops, trees or otherwise and that no indemnity was due.¹¹⁷ As to any damage occurring after 1 October 1940, irrespective of compliance with the regime it had established, the tribunal held that an indemnity should be paid for such damage when and if the two governments arranged for the settlement of claims under Article XI of the Convention, as well as up to US\$7,500 per year to be paid to the United States as compensation in order to ascertain whether damage had occurred, provided that the two governments had determined under Article XI of the Convention that damage had occurred in the year in question.

The two awards of the tribunal did not deal with pure environmental damage *per se*, and rejected the opportunity to assess damages in respect of injurious consequences to the Columbia River. The tribunal basically took a market value approach that did not take account of loss of environmental amenity. In so doing, the tribunal took the measure of damage used by US courts, an approach which would most likely produce a different result today because of changes in US law, which reflect loss of environmental amenity or resources as a separate measure of damage.

State practice

In January 1955, the US government paid US\$2 million to Japan for the 'purposes of compensation for the injuries or damage sustained' by Japanese nationals as a result of thermonuclear tests carried out by the US near the Marshall Islands in March 1954.¹¹⁸ The payments were made *ex gratia* and 'without reference to legal liability', and it is unclear whether the compensation included an amount for damage to the marine environment or loss of environmental

¹¹⁴ *Ibid.*, 204. ¹¹⁵ *Ibid.*, 206. ¹¹⁶ *Ibid.*, 207. ¹¹⁷ *Ibid.*, 709 and 712.

¹¹⁸ See E. Margolis, 'The Hydrogen Bomb Experiments and International Law', 64 *Yale Law Journal* 629 at 638-9 (1955).

amenity.¹¹⁹ In its argument in the *Nuclear Tests* case, Australia argued that, if the existence of harm or damage was essential to liability, it could point to, *inter alia*, the ‘harm, all the more real for being incapable of precise evaluation, to which its population, both present and future, and environment have been subjected for no benefit to them’.¹²⁰ In April 1981, the Soviet Union agreed to pay, and Canada agreed to accept, C\$3 million in final settlement of the Canadian claim, under the 1972 Space Liability Convention and general principles of international law, for damage incurred by way of expense in locating, recovering, removing and testing radioactive debris and for cleaning up affected areas following the crash of Cosmos 954 in January 1978.¹²¹ And Nauru claimed ‘appropriate reparation’ in respect of the losses it had suffered as a result of Australia’s alleged breaches of legal obligations relating to, *inter alia*, changes in the condition of Nauru’s territory causing irreparable damage.¹²²

Following the Chernobyl accident, no state made a formal claim against the Soviet Union for damage resulting from radioactive fallout, although several reserved their right to do so, including the Federal Republic of Germany,¹²³ as they subsequently paid large sums of compensation to persons within their jurisdictions affected by the fallout.¹²⁴ Their reasons for not bringing claims reflect political and legal uncertainties. According to the Swedish Government:

In terms of treaties there is no international agreement existing, whether bilateral or multilateral, on the basis of which a Swedish claim for damages against the USSR could be conceived. Insofar as customary international law is concerned, principles exist which might be invoked to support a claim against the USSR. The issues involved, however, are complex from the legal as well as the technical point of view and warrant careful consideration. In present circumstances, the Government has felt that priority should be given, in the wake of the Chernobyl accident, to endeavours of another nature.¹²⁵

The position of the United Kingdom government was complicated by outstanding disputes relating to the problem of acid rain in Scandinavia, contamination of the Irish Sea by nuclear waste from the Windscale/Sellafield nuclear plant, and alleged damage to Australian territory, from the nuclear tests carried out by the United Kingdom in the 1950s. On 21 July 1986, the Secretary of State for Foreign and Commonwealth Affairs in a written answer in the House of Commons said:

¹¹⁹ *Ibid.*, 639.

¹²⁰ Oral Arguments of Australia, *Australia v. France*, ICJ Pleadings (Nuclear Tests) 481 (1973).

¹²¹ See pp. 728–9, below.

¹²² *Certain Phosphate Lands in Nauru (Nauru v. Australia)*, Preliminary Objections, Judgment (1992) ICJ Reports 240 at 244.

¹²³ Communication between the Embassy of the Federal Republic of Germany in London and the author, 8 December 1987.

¹²⁴ By 1 December 1987, the United Kingdom had paid £4,950,199 in compensation (figures supplied by Ministry of Agriculture, Fisheries and Food); the Federal Republic of Germany had paid DM390 million in compensation (figures supplied by London Embassy of the Federal Republic of Germany); and Sweden had paid SK204 million in compensation to farmers, up to 30 June 1987, and SK117 million to the reindeer industry during the budget year 1986/7 (figures supplied by Swedish Embassy in London).

¹²⁵ Correspondence with the Swedish Embassy in London, 10 December 1987.

On 10 July we formally reserved our right with the Soviet government to claim compensation on our own behalf on behalf of our citizens for any losses suffered as a consequence of the accident at Chernobyl. The presentation of a formal claim, should we decide to make one, would not take place until the nature and full extent of any damage suffered had been assessed.¹²⁶

Three months later, the Minister of State for Agriculture, Fisheries and Food stated that:

We have reserved our position on whether the USSR will be required – as it should be if the case is proved – to pay compensation.¹²⁷

The position was put thus by the Parliamentary Under-Secretary of State for Scotland:

The USSR is not a party to any of the international conventions relating to third party liability in nuclear energy, and is therefore not subject to any specific treaty obligation to compensate for damage caused outside its national boundaries.¹²⁸

Following the accident, the IAEA convened various meetings on liability for nuclear damage, which led to the establishment of a Standing Committee on Nuclear Liability.¹²⁹ The IAEA Board of Governors requested the Director General to invite comments from member states on the question of international liability, which elicited responses from thirty-two states representing a broad range of views on the current rules of international law.¹³⁰ Responses of states can be categorised into four types: (1) five states considered that principles or rules of international law existed upon which state liability for nuclear damage could be established;¹³¹ (2) one state saw lacunae;¹³² (3) twenty-four states expressed no view either way;¹³³ and (4) two

¹²⁶ *Hansard*, House of Commons, 21 July 1986, vol. 102, col. 5(W).

¹²⁷ *Hansard*, House of Commons, 24 October 1986, vol. 102, col. 1455.

¹²⁸ *Hansard*, House of Commons, 16 November 1987, vol. 122, col. 894.

¹²⁹ See pp. 744–5, below.

¹³⁰ IAEA Docs. GOV/INF/550 (1988); Add.1 (1988); and Add.2 (1989).

¹³¹ Canada ('the existence of such general principles has been recognised in diplomatic practice, by scholars, in judicial and arbitral decisions, in resolutions and declarations of international conferences, and in many bilateral and multilateral treaties': GOV/INF/550, 6); Chile; Federal Republic of Germany ('[i]t is undisputed that states are liable for nuclear damage caused by conduct that is contrary to international law': GOV/INF/550, 23); Thailand ('there exist principles of customary international law that can be applicable to an incident which results in radiological releases beyond the limits of national jurisdiction': GOV/INF/550, 35); and Guatemala (recognising the possibility: GOV/INF/550/Add.2, 2).

¹³² Austria.

¹³³ Algeria, Bulgaria, Cameroon, China, Colombia, Czechoslovakia, Egypt (supporting 'a widening of the scope of liability in time and place', GOV/INF/550, 21), Finland, German Democratic Republic, Hungary, Ireland, Italy (but noting 'the absence of a well-established set of customary rules accepted by the state community as such', GOV/INF/550, 25), Luxembourg, Mexico, Netherlands, Norway, Pakistan, Poland, the Soviet Union, Sweden, Switzerland, Turkey, the United Kingdom and the United States.

states considered or suggested that norms of liability could only be based upon treaty.¹³⁴ It is therefore difficult to discern firm principles arising from the Chernobyl experience.

In the *Case Concerning the Gabčíkovo-Nagymaros Project*, the ICJ confirmed that Hungary was entitled to 'compensation for the damage sustained as a result of the diversion of the Danube', but did not specifically indicate that Hungary was entitled to reparation for purely environmental damages.¹³⁵ As regards the measure of compensation, the Court merely observed that 'the issue of compensation could satisfactorily be resolved in the framework of an overall settlement if each of the Parties were to renounce or cancel all financial claims and counter-claims'.¹³⁶ The judgment therefore provides no practical guidance on how to calculate the measure of such environmental damage as the Court appeared willing to take into account in proposing the settlement. The reluctance is consistent with the limited international practice concerning reparation for environmental damage at the inter-state level, outside of the work of the UN Compensation Commission.

In April 2002, the Marshall Islands Nuclear Claims Tribunal made an award of US \$324,949,311 to the people of Enewetak, as 'just and adequate' settlement for claims of Marshall Islanders in respect of damages to land arising out of the nuclear testing programme carried out by the United States between 1946 and 1958.¹³⁷ The award included payments in respect of past and future loss of use (US\$199,154,811), restoration to a 'safe and productive state' (US\$91,710,000) and hardship as a result of relocation (US\$34,084,500). The Tribunal applied standards agreed by the parties, in particular standards applicable under US law. In relation to restoration, the Tribunal accepted the position adopted by the IAEA to the effect that 'policies and criteria for radiation protection of populations outside national borders from releases of radioactive substances should be at least as stringent as those for the population within the country of release', and accordingly applied the current standards applied by the US Environmental Protection Agency.¹³⁸

UN Compensation Commission¹³⁹

The UN Compensation Commission was established in 1991 to provide reparation for the consequences of Iraq's unlawful invasion of Kuwait. Its decisions concerning restoration and compensation for environmental claims provide a unique source of contemporary international legal practice offering important lessons in an area 'where precedents are few and far between'.¹⁴⁰ The Commission established criteria for claims in respect of environmental

¹³⁴ Belgium ('the situation in international law is more or less comparable to what we find in ancient Roman law, which did not know any general principle of liability and which only penalised the acts contained in a legal list of illicit acts', citing J. A. Salmon, *International Liability* (1979–80, 3rd edn), vol. 1, 6, in GOV/INF/550, 5) and Spain.

¹³⁵ (1997) ICJ Reports 226, para. 151.

¹³⁶ *Ibid.*, para. 152.

¹³⁷ Award of 13 April 2000, 39 ILM 1214 (2000).

¹³⁸ *Ibid.*, 1220. The EPA standard was described in 'Establishment of Cleanup Levels for CERCLA Sites with Radioactive Contamination', providing that 'Cleanup should generally achieve a level of risk with the 10⁻⁴ to 10⁻⁶ carcinogenic range based on the reasonable maximum exposure for an individual . . . If a dose assessment is conducted at the site . . . then 15 millirem per year (mrem/yr) effective dose equivalent (EDE) should generally be the maximum dose limit for humans': *ibid.*, 1220–1.

¹³⁹ M. Kazazi, 'Environmental Damage in the Practice of the UN Compensation Commission', in M. Bowman and A. Boyle (eds.), *Environmental Damage in International and Comparative Law* (2002), 111.

¹⁴⁰ P. H. Sand, 'Compensation for Environmental Damage from the 1991 Gulf War', 35(6) *Environmental Policy and Law* 244, 248 (2005).

damage and the depletion of natural resources based upon a Working Paper submitted by the United States, which in turn drew upon its domestic legislation, including provisions of the Oil Pollution Act of 1990 adopted following the *Exxon Valdez* oil spill in 1989.¹⁴¹ In paragraph 35 of Decision 7, the Commission's Governing Council decided that payments would be available for direct environmental damage and the depletion of natural resources, including losses or expenses resulting from:

- (a) abatement and prevention of environmental damage, including expenses directly relating to fighting oil fires and stemming the flow of oil in coastal and international waters;
- (b) reasonable measures already taken to clean and restore the environment or future measures which can be documented as reasonably necessary to clean and restore the environment;
- (c) reasonable monitoring and assessment of the environmental damage for the purposes of evaluating and abating the harm and restoring the environment;
- (d) reasonable monitoring of public health and performing medical screenings for the purposes of investigation and combating increased health risks as a result of the environmental damage; and
- (e) depletion of or damage to natural resources.¹⁴²

In addressing these claims, the Commission was directed to apply Security Council Resolution 687 (1991) and the above criteria and, where necessary, 'other relevant rules of international law'.¹⁴³

Whereas paragraph 35(b) of the Governing Council criteria recognised a liability in respect of 'reasonable measures . . . to clean and restore the environment', paragraph 35(e) recognised an apparently additional liability in respect of loss relating to 'depletion of or damage to natural resources'. No guidance was provided by the Governing Council as to the meaning of the distinction drawn between claims in respect of 'environmental damage' and those in respect of 'depletion of natural resources'. In 1995, a UNEP Working Group suggested that the distinction may relate to the idea that a 'natural resource' has, primarily, a commercial value, whereas 'environmental damage' relates to injury caused to components of the environment to which typically no commercial value attaches.¹⁴⁴ The UNEP Working Group suggested that environmental damage could relate to 'impairment of the environment', which may be defined as:

A change which has a measurable adverse impact on the quality of a particular environment of any of its components including its use and non-use values and its ability to support and sustain an acceptable quality of life and a viable ecological balance.¹⁴⁵

¹⁴¹ UN Security Council Doc. S/AC.26/1991/WP.20, 20 November 1991.

¹⁴² Governing Council, UN Compensation Commission, Decision 7, para. 35, UN Doc. S/23765, Annex (1992), 31 ILM 1051 (1992).

¹⁴³ UN Compensation Commission Provisional Rules for Claims Procedures, Art. 31, S/AC.26/1992/10, 26 June 1992.

¹⁴⁴ See R. Mackenzie and R. Khalastchi, 'Liability and Compensation for Environmental Damage in the Context of the Work of the UNCC', 5 *Review of European Community and International Environmental Law* 281 (1996).

¹⁴⁵ UNEP, *Report of the Working Group of Experts on Liability and Compensation for Environmental Damage Arising from Military Activities* (1996), para. 45.

On the definition of 'depletion of natural resources', the UNEP Working Group suggested that it could be desirable

to treat depletion of natural resources as referring to the destruction of natural resource assets which occur in their natural state . . . and which have a primarily commercial use or commercial value rather than a non-commercial use or value.¹⁴⁶

The Panel of Commissioners addressing environmental claims ultimately took a different approach to that proposed by the UNEP Working Group, although one that still encompassed the possibility of compensation for pure environmental damage. In its report on the fifth instalment of claims, the Panel saw no bar to claims regarding losses due to the depletion of, or damage to, natural resources lacking a commercial value.¹⁴⁷ Other Panel reports determined that 'environmental damage' was not limited to losses or expenses resulting from the activities and events identified in paragraph 35 of Decision 7, but could also cover other direct losses or expenses, such as measures undertaken to prevent or abate harmful impacts of airborne contaminants, provided that they were a direct result of the invasion.¹⁴⁸

Claims relating to the environment were referred to as category 'F4' claims, and could only be made by states and international organisations. A first group comprised claims for environmental damage and the depletion of natural resources in the Persian Gulf region, including those resulting from oil-well fires and the discharge of oil into the sea. A second group comprised claims for costs incurred by states outside the region in providing assistance to states that were directly affected by the environmental damage, including the alleviation of damage caused by oil-well fires and the prevention and clean-up of pollution. In total, the Commission has received around 170 F4 claims seeking a total of approximately US\$80 billion in compensation. As of April 2011, the Panel of Commissioners charged with processing F4 claims had addressed 168 claims in five instalments, awarding compensation of US\$5,261,746,450, the largest ever compensation award issued in international environmental law. In relation to the first instalment, the claims related to investigations of whether environmental damage or depletion of natural resources had occurred, studies to quantify the loss, and assessment of methodologies to abate or mitigate the damage.¹⁴⁹ Claims in the second instalment related to costs incurred for measures to abate and prevent environmental damage, to clean and restore the environment, to monitor and assess environmental damage, and to monitor public health risks alleged to have resulted from the invasion. Iran, Kuwait and Saudi Arabia claimed US\$829 million compensation for measures to respond to environmental damage and health risks from mines and other remnants of war, oil lakes, oil spills and pollutants released from oil-well fires. From outside the region, Australia, Canada, Germany, the Netherlands, the UK and the US claimed compensation of US\$43 million for expenses incurred in providing assistance to states in the Persian Gulf region to respond to

¹⁴⁶ *Ibid.*, para. 50.

¹⁴⁷ UNCC, Report and Recommendations Made by the Panel of Commissioners Concerning the Fifth Instalment of 'F4' Claims, S/AC.26/2005/10, 30 June 2005, para. 57.

¹⁴⁸ Report on First Instalment, S/AC.26/2002/26, 3 October 2002, para. 23.

¹⁴⁹ In 2001, a total of US\$243 million was awarded to five governments (Saudi Arabia, Kuwait, Iran, Jordan and Syria) in respect of these claims.

environmental damage or the threat of damage to the environment or health. The Panel recommended compensation payments of US\$711 million, out of US\$872 million claimed.¹⁵⁰ In the third and fourth instalments, claims were made for expenses resulting from measures already taken or to be undertaken in the future to clean and restore environmental damage. The fifth and final instalment claims were for compensation for damage to or depletion of natural resources, including cultural heritage resources, measures to clean and restore damaged environments, and damage to public health. These last three instalments of claims presented complex issues, requiring consideration, among other factors, of the 'reasonableness' of the claim, causality, and the methodology for assessing and valuing environmental damage.

The Panel's reports on each instalment of claims indicate the fundamental bases of its approach. As summarised by one of the F4 panel commissioners, the elements of the Commission's practice of potentially wider significance in the environmental field are:¹⁵¹

- (1) *Precautionary monitoring to identify and assess long-term risks to the environment and public health.* The Panel found that monitoring and assessment activities were reasonable if there was a plausible risk of environmental harm, even if the monitoring eventually established that no damage had been caused.¹⁵² It also confirmed that loss or damage occurring outside Kuwait and Iraq was compensable.¹⁵³ However, claims which were 'theoretical or speculative' or which had only a tenuous link with damage resulting from Iraq's invasion were excluded.¹⁵⁴
- (2) *Reimbursement of mutual assistance costs in environmental emergencies.* The Panel found that the costs of such assistance provided by countries outside the region were compensable¹⁵⁵ if the predominant purpose was to respond to actual or threatened environmental damage, i.e. 'environmental solidarity costs'.¹⁵⁶
- (3) *The obligation for claimants to mitigate and contain damage to the environment.* The Panel stressed that this duty was 'a necessary consequence of the common concern for the protection and conservation of the environment, and entails obligations towards the international community and future generations'.¹⁵⁷ Consequently, in cases where claimant governments had failed to take the necessary measures to prevent aggravation of environmental, damage

¹⁵⁰ UNCC, Report and Recommendations Made by the Panel of Commissioners Concerning the Second Instalment of 'F4' Claims, S/AC.26/2002/26, 2 October 2002 ('Report on Second Instalment'), para. 347. Iran (US\$67,000 million/US\$64.3 million claimed); Kuwait (US\$694 million/US\$715 million); Saudi Arabia (US\$8.2 million/US\$49.7 million); Australia (US\$7,000/US\$20,000); Canada (US\$529,000/US\$1.25 million); Germany (US\$2 million/US\$28.7 million); Netherlands (zero/US\$1.9 million); United Kingdom (US\$1.8 million/US\$2.2 million); and United States (US\$3.8 million/US\$9.1 million).

¹⁵¹ P. H. Sand, 'Compensation for Environmental Damage from the 1991 Gulf War', 35(6) *Environmental Policy and Law* 244 at 248 (2005).

¹⁵² UNCC, Report and Recommendations Made by the Panel of Commissioners Concerning the First Instalment of 'F4' Claims, S/AC.26/2001/16, 22 June 2001 ('Report on First Instalment'), paras. 31 and 32.

¹⁵³ *Ibid.*, paras. 53–4.

¹⁵⁴ *Ibid.*, paras. 30–1. In assessing the link, the Panel had regard to the particular circumstances of each case and four considerations: (1) whether there was a possibility that damage or depletion could have been caused as a result of the invasion; (2) whether the areas or resources in respect of the activity claimed for could have been affected by pollutant released as a result of the invasion; (3) whether there was evidence of environmental damage or risk of such damage as a result of the invasion; and (4) whether there was a reasonable prospect that the activity could produce results that would assist the panel in reviewing claims: paras. 31–2.

¹⁵⁵ However, this was not to duplicate compensation paid to any country in the region: *ibid.*, paras. 34–5.

¹⁵⁶ Expenses resulting from activities undertaken by military personnel were found to be compensable if there was evidence to show that the predominant purpose of the activity engaged in was to respond to environmental damage or threats of damage to the environment or health: Report on Second Instalment, para. 29.

¹⁵⁷ Panel Reports F4/3(2003), paras. 42–3; F4/4/II(2004), para. 38; and F4/5(2005), paras. 40–1.

compensation was denied, or reduced to take account of the fact that some of the damage was due to factors not attributable to Iraq. In addition, the Panel – drawing on Principle 21 of the Stockholm Declaration and Principle 2 of the Rio Declaration – held that claimants ‘have the obligation under international law to ensure that the remediation measures that they take do not cause damage to the environment in other States or in areas beyond the limitations of national jurisdiction’.¹⁵⁸

- (4) *Valuation methods to ensure the remediation of lost ecological services.* In valuing environmental damage, including pure environmental damage, the Panel employed novel valuation methods, such as ‘habitat equivalency analysis’.¹⁵⁹ The latter method was used for the purpose of determining the nature and extent of compensatory remediation in the event of the loss of ecological services.¹⁶⁰
- (5) *Follow-up tracking to ensure the environmental effectiveness of remediation, making the disbursement of compensation awards conditional upon compliance with agreed environmental objectives (‘green conditionality’).* Requirements were instituted for the receipt and independent review of progress reports from governments receiving funds for monitoring and assessment activities, and environmental remediation activities, to ensure the funds were spent on such activities in a transparent and appropriate manner.¹⁶¹ In December 2005, the Governing Council adopted a detailed set of Guidelines for the Follow-up Programme for Environmental Awards.¹⁶² In 2011, the Governing Council adopted a further decision on the fulfilment of the Follow-up Programme for Environmental Awards calling upon participating governments to establish certain systems and controls for the management, accounting and auditing of funds and to provide reports on such for independent review.¹⁶³

A particular difficulty faced by the Panel across all the various claims instalments was that of ascertaining whether and to what extent damage that was identified was attributable to Iraq’s invasion, and the inadequacy of documented baseline information on the state of the environment or of conditions and trends regarding natural resources prior to the invasion.¹⁶⁴ While many environmental claims were rejected on an evidentiary basis, the Commission allowed a number of substantial claims seeking restoration of the environment to its pre-invasion state. In respect of such claims, the Commission affirmed that the ‘primary emphasis must be placed on

¹⁵⁸ Panel Report F4/3(2003), para. 50. The obligation to consider transboundary effects of remediation or other measures is reiterated in the fourth and fifth reports: UNCC, Report and Recommendations Made by the Panel of Commissioners Concerning Part One of the Fourth Instalment of ‘F4’ Claims, S/AC.26/2004/16, 9 December 2004 (‘Report on Part One of Fourth Instalment’), Technical Annexes, Introduction, para. 4(g); UNCC, Report and Recommendations Made by the Panel of Commissioners Concerning Part Two of the Fourth Instalment of ‘F4’ Claims, S/AC.26/2004/17, 9 December 2004 (‘Report on Part Two of Fourth Instalment’), Technical Annexes, Introduction, para. 4(g); UNCC, Report and Recommendations Made by the Panel of Commissioners Concerning the Fifth Instalment of ‘F4’ Claims, S/AC.26/2005/10, 30 June 2005 (‘Report on Fifth Instalment’), Technical Annexes, Introduction, para. 4(f).

¹⁵⁹ By contrast, the Panel rejected other methods such as travel costs surveys as inadequate for quantifying Kuwait and Saudi Arabia’s loss of recreational shoreline uses.

¹⁶⁰ F4/5(2005), paras. 353–66 (rangeland wildlife habitats in Jordan); F4/5(2005), paras. 442–56 (natural shoreline habitats in Kuwait and Saudi Arabia).

¹⁶¹ Governing Council Decisions 132 (S/AC.26/Dec.132 (2001)), 212 (S/AC.26/Dec.212 (2003)), 234 (S/AC.26/Dec.234 (2004)), 235 (S/AC.26/Dec.235 (2004)) and 248 (S/AC.26/Dec.248 (2005)).

¹⁶² S/AC.26/Dec.258 (8 December 2005).

¹⁶³ S/AC.26/Dec.269 (7 April 2011).

¹⁶⁴ Report on First Instalment, S/AC.26/2001/16, 22 June 2001, paras. 33–4. The Panel applied ‘generally accepted scientific criteria and methodologies’ (para. 35).

restoring the environment to pre-invasion conditions, in terms of its overall ecological functioning rather than on the removal of specific contaminants or restoration of the environment to a particular physical condition'. In addition, it indicated that proposed measures for the complete removal of contaminants 'likely to result in more negative than positive effects' would not qualify as 'reasonable' clean-up and restorative measures.¹⁶⁵

In terms of process, the Commission also adopted several novel approaches, compared with more conventional bilateral environmental dispute settlement proceedings. In reviewing the second instalment of claims, the Panel was assisted by a multidisciplinary team of independent experts retained by the Commission, having regard to the complexity of the issues and the need to consider scientific, legal, social, commercial and accounting issues.¹⁶⁶ As indicated above with respect to valuation methodology, the Panel embraced methods of assessment relying upon the abstract quantification of damage, such as habitat equivalency analysis. This was important in respect of claims for compensatory remediation resulting from the irreversible loss of ecological services as a result of the Gulf War.¹⁶⁷ In this regard, the conclusions reached by the Panel differed from those of the International Oil Pollution Convention Fund, which decided in 1980 that the assessment of compensation would not be made on the basis of 'an abstract quantification of damage calculated in accordance with theoretical models', an approach which does not allow claims for loss of environmental amenity.¹⁶⁸ The approach of the International Oil Pollution Convention Fund has been reflected in certain other civil liability treaties: the 1993 Lugano Convention allows compensation for impairment of the environment, other than loss of profit from such impairment, limited to 'the costs of measures of reinstatement actually undertaken or to be undertaken'.¹⁶⁹ By contrast, the 2010 Nagoya–Kuala Lumpur Supplementary Liability Protocol suggests an approach more in line with that of the UN Compensation Commission: 'response measures' under the Protocol encompass reasonable actions to restore biological diversity, in the first instance, to 'the condition that existed before the damage occurred, or its nearest equivalent', or, where that is determined not to be possible, by 'replacing the loss of biological diversity with other components of biological diversity for the same, or for another type of use either at the same or, as appropriate, at an alternative location'.¹⁷⁰

International crimes

International responsibility may also trigger liability of a criminal nature.¹⁷¹ At one time, the International Law Commission (ILC) shared this view, proposing in earlier versions of its draft Articles on State Responsibility that certain environmental damage may be so serious in the

¹⁶⁵ Report on Part One of Fourth Instalment, para. 50; Report on Part Two of Fourth Instalment, para. 41.

¹⁶⁶ Report on the Second Instalment, paras. 42–3. Experts were retained in the fields of oil spill response, ordnance removal and disposal, accounting, civil engineering, electric power systems operations, fisheries, marine biology and oceanography.

¹⁶⁷ Three such compensatory projects were elaborated in the Panel's final report: Report on Fifth Instalment, Technical Annexes I–III.

¹⁶⁸ See p. 712, above.

¹⁶⁹ Art. 2(8)(c), pp. 766–70, below; see also 1989 CRTD Convention, p. 759, below.

¹⁷⁰ Art. 2(2)(d).

¹⁷¹ G. Gilbert, 'The Criminal Responsibility of States', 39 *International and Comparative Law Quarterly* 345 (1990); A. Vercher, 'The Use of Criminal Law for the Protection of the Environment in Europe: Council of Europe Resolution 77 (28)', 10 *Northwestern Journal of International Law and Business* 442 (1990); R. Prévost, 'International Criminal Environmental Law', in G. Goodwin-Gill and S. Talmon (eds.), *The Reality of International Law: Essays in Honour of Ian Brownlie* (1999).

eyes of the international community that it should be categorised as criminal, or delictual. In Article 19 of its 1980 draft Articles on State Responsibility, the ILC proposed classifying as an international crime or delict ‘a serious breach of an international obligation of essential importance for the safeguarding and preservation of the human environment, such as those prohibiting massive pollution of the atmosphere or of the seas’.¹⁷² However, the draft Articles on State Responsibility adopted in 2001 eliminated Article 19, having regard to the fact that the responsibility with which it was concerned was that of a state, and not of individuals.¹⁷³ The provisions that were adopted – Articles 40 and 41 on serious breaches – identify the legal consequences for violations of peremptory norms of general international law, but do not state exhaustively what those norms are.¹⁷⁴ Massive pollution and other environmental catastrophes are not referred to as examples of serious breaches in the Articles or in the commentary on the Articles, although the commentary does not purport to be exhaustive.¹⁷⁵ It is plain also that Articles 40 and 41 were intended to be open-ended, so as not to preclude the development of rules detailing the consequences of serious breaches.¹⁷⁶

Other ILC work has maintained a reference to environmental crimes, although in the context of individual (as opposed to statal) criminality. The ILC’s Draft Code of Crimes Against the Peace and Security of Mankind, adopted on second reading in 1996, identifies widespread environmental damage as a crime against the peace and security of mankind.¹⁷⁷ By draft Article 20(g) (formerly Article 22), an individual who employs methods or means of warfare ‘which are intended or may be expected to cause widespread, long-term and severe damage to the natural environment’ would be liable to be guilty of an exceptionally serious war crime. The standard applicable to the level of environmental damage is taken from the 1977 ENMOD Convention and Protocol I Additional to the 1949 Geneva Conventions.¹⁷⁸ The draft Articles as adopted excluded draft Article 26 (from the first draft), which was stated to apply in times of peace as well as during armed conflict, and which provided that an individual who ‘wilfully causes or orders the causing of widespread, long-term and severe damage to the natural environment’ would also be guilty of a crime.

The ILC’s work informed the drafting of the Statute of the International Criminal Court (ICC Statute), which defines as a war crime an intentional attack with the knowledge that it will cause ‘widespread, long-term and severe damage to the natural environment which would be clearly excessive in relation to the concrete and direct overall military advantage anticipated’.¹⁷⁹ It remains to be seen whether the ICC Statute will be interpreted to include environmental crimes in relation to acts of genocide or crimes against humanity, as has been suggested.¹⁸⁰ In March 2005, the Security Council referred the situation in Darfur, Sudan, to the Prosecutor of the ICC,¹⁸¹ who decided to open an investigation in June 2005. Currently, four cases are being heard before the ICC’s Pre-Trial Chamber I against members of the Sudanese

¹⁷² Part I, *Yearbook of the International Law Commission* (1980-II), Part 2, 30, Art. 19.

¹⁷³ See p. 705, above. ¹⁷⁴ *Yearbook of the International Law Commission* (2001), 292.

¹⁷⁵ See *ibid.*, 277–92. ¹⁷⁶ *Ibid.*, 292.

¹⁷⁷ Report of the ILC, 48th Session, UN Doc. A/51/10 (1996), Art. 20; the first draft (1991) is available at 30 ILM 1584 (1991).

¹⁷⁸ Chapter 18, pp. 794–6, below.

¹⁷⁹ Rome, 17 July 1998, in force 2 July 2002, 37 ILM 999 (1998), Art. 8(2)(b)(iv).

¹⁸⁰ See generally P. Sharp, ‘Prospects for Environmental Liability in the International Criminal Court’, 18 *Virginia Environmental Law Journal* 217 (1999).

¹⁸¹ Security Council Res. 1593 (2005).

government and Janjaweed militia, which may provide an opportunity to consider the notion of environmental crimes given allegations of destruction of crops and deliberate contamination of water supplies.¹⁸²

It should also be noted that in 1998 the Council of Europe adopted a Convention on the Protection of the Environment Through Criminal Law, requiring parties to criminalise under their domestic law intentional (Article 2) or grossly negligent (Article 3) acts falling within certain categories which cause substantial environmental damage.¹⁸³ The Convention identifies certain categories of environmentally damaging acts as being especially serious,¹⁸⁴ and other acts in respect of which sanctions or other measures may be appropriate.¹⁸⁵ The Convention identifies as sanctions imprisonment, fines and reinstatement of the environment, and allows parties to establish criminal liability for corporations.¹⁸⁶

Treaties

The liability of states for environmental damage in relation to particular activities or regions is addressed by a small number of treaties. These establish rules of state liability, or provide a basis for the development of such rules on state liability,¹⁸⁷ or deny that the treaty contains any such rule on liability.

1972 Space Liability Convention¹⁸⁸

The Convention on International Liability for Damage Caused by Space Objects (1972 Space Liability Convention)¹⁸⁹ is one of the few treaties to establish a clear rule of state

¹⁸² J. Wyatt, 'Law-making at the Intersection of International Environmental, Humanitarian and Criminal Law: The Issue of Damage to the Environment in International Armed Conflict', 92(879) *International Review of the Red Cross* 593 (2010).

¹⁸³ Strasbourg, 4 November 1998, not in force, ETS No. 172. Under Art. 6, on jurisdiction, states are to criminalise activities committed on their territory, on ships or aircrafts registered in their territory or flying their flags, or by their nationals if the offence is criminal where it is committed.

¹⁸⁴ Art. 2(1)(a)–(e). The intentional unlawful acts include: the discharge, emission or introduction of a quantity of substances or ionising radiation into air, soil or water which causes death or serious injury to any person, or creates a significant risk of causing death or serious injury to any person (Art. 2(1)(a)); unlawful discharge, emission or introduction of a quantity of substances or ionising radiation into air, soil or water which causes or is likely to cause their lasting deterioration or death or serious injury to any person or substantial damage to protected monuments, other protected objects, property, animals or plants (Art. 2(1)(b)); unlawful disposal, treatment, storage, transport, export or import of hazardous waste (Art. 2(1)(c)); unlawful operation of a plant in which a dangerous activity is carried out (Art. 2(1)(d)); and manufacture, treatment, storage, use, transport, export or import of nuclear materials or other hazardous radioactive substances (Art. 2(1)(e)). Art. 1(a) defines 'unlawful' as 'infringing a law, an administrative regulation or a decision taken by a competent authority, aiming at the protection of the environment'.

¹⁸⁵ Art. 4 (the acts include: unlawful introduction of substances or ionising radiation; causing of noise; disposal, treatment, storage, transport, export or import of waste; operation of a plant; manufacture, treatment, use, transport, export or import of nuclear materials, other radioactive substances or hazardous chemicals; causing of changes detrimental to natural components of a national park, nature reserve, water conservation area or other protected areas; and possession, taking, damaging, killing or trading of or in protected wild flora and fauna species).

¹⁸⁶ Arts. 6 and 9.

¹⁸⁷ See notes 18 and 8 above.

¹⁸⁸ R. E. Alexander, 'Measuring Damages under the Convention on International Liability for Damage Caused by Space Objects', 6 *Journal of Space Law* 151 (1978); C. Q. Christol, 'International Liability for Damage Caused by Space Objects', 74 *American Journal of International Law* 346 (1980); B. Schwartz and N. L. Berlin, 'After the Fall: An Analysis of Canadian Legal Claims for Damage Caused by Cosmos 954', 27 *McGill Law Journal* 676 (1982).

¹⁸⁹ See also 1967 Outer Space Treaty, Art. VII; 1979 Moon Treaty, Art. XIV.

liability.¹⁹⁰ Subject to the exceptions set out in Articles VI and VII, a state that launches a space object is 'absolutely liable to pay compensation for damage caused by its space object on the surface of the earth or to aircraft in flight'.¹⁹¹ 'Damage' is defined as 'loss of life, personal injury or other impairment of health; or loss of or damage to property of states or of persons, natural or judicial, or property of international intergovernmental organisations'.¹⁹² Although the definition does not refer to 'environmental' harm, it can be interpreted to allow compensation claims for the 'property of states' that are environmental assets or other natural resources:

Compensation is to be determined in accordance with international law and the principles of justice and equity, in order to provide such reparation in respect of the damage as will restore the person, natural or judicial, state or international organisation on whose behalf the claim is presented to the condition which would have existed if the damage had not occurred.¹⁹³

A party will be liable for damage other than on the surface of the Earth to another space object or persons or property on board only if the damage is due to fault.¹⁹⁴ In some situations, states may be jointly and severally liable, notably where damage is caused on the surface of a third state as a result of damage by one space object to another.¹⁹⁵

The only claim under the 1972 Convention was presented by Canada in 1979 to the former Soviet Union for damage caused by the crash of Cosmos 954, a nuclear-powered satellite that disintegrated over Canada.¹⁹⁶ Canadian authorities took steps to locate, recover, remove and test the radioactive debris and to clean up the affected areas of the Northwest Territories and the Provinces of Alberta and Saskatchewan, claiming some C\$6 million from the Soviet Union. The Canadian claim was based on relevant international agreements (the 1972 Convention and Article VII of the 1967 Outer Space Treaty) and general principles of international law. Canada claimed that the deposit and presence of hazardous radioactive debris over large areas of Canadian territory rendering part of it unfit for use constituted damage to property within the meaning of the 1972 Convention.¹⁹⁷ Canada also claimed the Soviet Union had failed to minimise the effects by providing timely and complete answers to its questions, and under general principles of international law the Soviet Union was bound to prevent and reduce harmful consequences and to mitigate damage.¹⁹⁸ The claim covered the costs of restoring Canadian territory, to the extent possible, to the condition that would have existed if the intrusion had not occurred. In calculating the costs, Canada applied 'the relevant criteria established by general principles of international law and has limited the costs included in the claim to those costs that are reasonable, proximately caused by the intrusion of the satellite and deposit of debris and capable of being calculated with a reasonable degree of certainty'.¹⁹⁹

Canada also claimed under Article VII of the 1967 Outer Space Treaty that the Soviet Union must compensate in accordance with international law for the consequences of the intrusion of the satellite into Canadian air space and the deposit on Canadian territory of hazardous

¹⁹⁰ 29 March 1972, in force 1 September 1972, 961 UNTS 187. The Convention also establishes procedures and timetables for the presentation of compensation claims.

¹⁹¹ Art. II. ¹⁹² Art. I(a). ¹⁹³ Art. XII. ¹⁹⁴ Art. III. ¹⁹⁵ Arts. IV and V.

¹⁹⁶ Canada, Claim Against the USSR for Damage Caused by Soviet Cosmos 954, 23 January 1979, 18 ILM 899-908 (1979).

¹⁹⁷ *Ibid.*, 905. ¹⁹⁸ *Ibid.*, 805-6. ¹⁹⁹ *Ibid.*, 906.

radioactive debris.²⁰⁰ Finally, Canada claimed under general principles of international law that the violation of its sovereignty was established by 'the mere fact of the trespass of the satellite, the harmful consequences of this intrusion, being the damage caused by the presence of hazardous radioactive debris and the interference with the sovereign right of Canada to determine the acts that will be performed on its territory'.²⁰¹ This violation gave rise to an obligation to pay compensation and was based on a standard of absolute liability for space activities, which applied to activities in common having a high degree of risk and had been accepted as a general principle of international law.²⁰² The measure of compensation under this head was the same as that applied under the 1972 Convention. Canada additionally reserved its rights to present additional claims for compensation for damage not yet identified, for the costs incurred in establishing a Compensation Commission under the 1972 Convention, and for interest.²⁰³

The matter was settled in 1981 when the Soviet Union agreed to pay C\$3 million in full and final compensation, and Canada agreed to accept such payment in full and final settlement of its claim.²⁰⁴ Although the settlement agreement was silent as to the basis of the settlement, the reference in Article II of the agreement to Canada's claim allows a conclusion that the settlement was agreed on the basis of all the legal arguments proposed by Canada.²⁰⁵

1979 LRTAP Convention

The 1979 LRTAP Convention is of interest mainly because of a footnote entered in relation to Article 8, which commits parties to exchange available information on, *inter alia*, the extent of the damage which physico-chemical and biological data indicate can be attributed to long-range transboundary air pollution. The footnote provides that the Convention 'does not contain a rule on state liability as to damage', and reflects states' concern over inadvertently entering into an international agreement which may subsequently be used to establish their liability for damage. The footnote is neutral in its effect and does not prevent the application of general rules of international law concerning state liability for damage resulting from the breach of the terms of the 1979 LRTAP Convention itself.

1982 UNCLOS²⁰⁶

UNCLOS contains two rules on state liability for damage. The first provision is Article 235, according to which states are themselves

²⁰⁰ *Ibid.*, 907. ²⁰¹ *Ibid.*, 908. ²⁰² *Ibid.* ²⁰³ *Ibid.*, 909.

²⁰⁴ Protocol Between Canada and the Soviet Union, 2 April 1981, 20 ILM 689 (1981), Arts. I and II.

²⁰⁵ Although in an earlier communication, pre-dating the Canadian claim, the Soviet Union 'reaffirmed' that it was guided by 'the international agreements regulating the activities of states in the outer space', and that any compensation claim presented by Canada would be considered by the Soviet Union in strict accordance with the provisions of the 1972 Convention: Soviet Union, Note of 21 March 1978, 18 ILM 902 at 923 (1979).

²⁰⁶ B. Kwiatkowska-Czechowska, 'States' Responsibility for Pollution Damage Resulting from the Exploration for and Exploitation of Sea-Bed Mineral Resources', 10 *Polish Yearbook of International Law* 157 (1980); B. D. Smith, *State Responsibility and the Marine Environment* (1988); G. Kasoulides, 'State Responsibility and Assessment of Liability for Damage Resulting from Dumping Operations', 26 *San Diego Law Review* 497 (1989); L. de la Fayette, 'New Approaches for Addressing Damage to the Marine Environment', 20 *International Journal of Marine and Coastal Law* 167 (2005); P. Wetterstein, 'Complete Freedom of the Seas or the Polluter Pays for Everything – How Far Should We Go in Order to Protect the Environment?', 17 *Environmental Liability* 86 (2009). See also D. Anton, R. Makgill and C. Payne, 'Advisory Opinion on Responsibility and Liability for International Seabed Mining

responsible for the fulfilment of their international obligations concerning the protection and preservation of the marine environment. They shall be liable in accordance with international law.²⁰⁷

Article 235 incorporates existing rules of state liability into the Convention and does not create a new rule of liability for damage to the marine environment. UNCLOS does not define ‘damage’ to the marine environment nor establish a measure of compensation. The definition of marine ‘pollution’ in Article 1(4) provides some guidance as to the standard of damage which might be applied: ‘deleterious effects’ envisaged include harm to living resources and marine life, hazards to human health, hindrance to marine activities, impairment of water quality and reduction of amenities.

The second provision is Article 139, which applies to the ‘Area’ (i.e. the seabed and ocean floor and subsoil beyond the limits of national jurisdiction). Pursuant to this provision, states parties and international organisations have the responsibility to ensure that activities in the Area carried out by them, or by their nationals or by those effectively controlled by them or their nationals, comply with the UNCLOS rules on the Area.²⁰⁸ Article 139(2) provides:

Without prejudice to the rules of international law and Annex III, article 22, damage caused by the failure of a State Party or international organization to carry out its responsibilities under this Part shall entail liability; States Parties or international organizations acting together shall bear joint and several liability. A State Party shall not however be liable for damage caused by any failure to comply with this Part by a person whom it has sponsored under article 153, paragraph 2(b), if the State Party has taken all necessary and appropriate measures to secure effective compliance under article 153, paragraph 4, and Annex III, article 4, paragraph 4.²⁰⁹

Annex III, Article 4(4), provides:

A sponsoring State shall not, however, be liable for damage caused by any failure of a contractor sponsored by it to comply with its obligations if that State Party has adopted laws and regulations and taken administrative measures which are, within the framework of its legal system, reasonably appropriate for securing compliance by persons under its jurisdiction.

States parties are also required to take appropriate measures to ensure that international organisations of which they are members implement their responsibilities under Article 139.²¹⁰

(ITLOS Case No. 17): International Environmental Law in the Seabeds Disputes Chamber’, *Environmental Policy and Law* (2011) (forthcoming) (ANU College of Law Research Paper No. 11-06).

²⁰⁷ Art. 235(1). ²⁰⁸ Art. 139(1).

²⁰⁹ Art. 139(2). Art. 22 of Annex III provides, *inter alia*, that contractors shall have responsibility or liability for any damage arising out of wrongful acts in the conduct of operations in the ‘Area’, and that the authority shall have responsibility or liability for damage arising out of wrongful acts in the exercise of its powers and functions; in every case liability shall be ‘for the actual amount of damage’: Annex III, Art. 22.

²¹⁰ Art. 139(2) and (3).

These provisions were extensively considered by the Seabed Disputes Chamber of ITLOS in its Advisory Opinion on *Responsibilities and Obligations in the Area* issued in February 2011.²¹¹ The International Seabed Authority asked the Tribunal to render an advisory opinion on three questions, two of which related to matters of liability and associated state obligations under the Convention:

1. What is the extent of liability of a State Party for any failure to comply with the provisions of the Convention, in particular Part XI, and the 1994 Agreement, by an entity whom it has sponsored under Article 153, paragraph 2(b), of the Convention?
2. What are the necessary and appropriate measures that a sponsoring State must take in order to fulfil its responsibility under the Convention, in particular Article 139 and Annex III, and the 1994 Agreement?

At the outset of its consideration of the issue of liability, the Tribunal noted that Article 139(2) of the Convention and related provisions prescribe or refer to different sources of liability, namely:

- (1) rules concerning the liability of states parties (Article 139(2), first sentence);
- (2) rules concerning sponsoring state liability (Article 139(2), second sentence);
- (3) rules concerning the liability of contractors and the International Seabed Authority (Annex III, Article 22); and
- (4) consequent upon the 'without prejudice' clause in Article 139(2), rules of international law concerning state liability that supplement the rules concerning the liability of the sponsoring state set out in UNCLOS.²¹²

In respect of the first category of liability, the Tribunal confirmed that a sponsoring state only incurs liability under Article 139(2), first sentence, as a result of a failure to carry out its own responsibilities, and is not liable for the failure of the sponsored contractor to meet its obligations.²¹³ Accordingly, the Tribunal observed that two conditions must be fulfilled in order for liability to arise: first, the failure of the sponsoring state to carry out its responsibilities through an act or omission contrary to such responsibilities and, second, the occurrence of damage.²¹⁴ No liability arises in cases where there is no damage or in cases where damage occurs but the sponsoring state has met its relevant obligations under the Convention. Moreover, the Tribunal held that there must be a causal link between the damage and the failure of the state to meet its responsibilities, and that such a causal link cannot be presumed and must be proven.²¹⁵

As to the entities entitled to invoke such liability, the Tribunal indicated that the Authority may have the capacity to do so 'on behalf' of mankind.²¹⁶ Relying on Article 48 of the ILC Articles on State Responsibility, which refers to the possibility of states other than an injured state invoking the responsibility of another state,²¹⁷ the Tribunal also suggested each state

²¹¹ *Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area* (Advisory Opinion) (Seabed Disputes Chamber of the International Tribunal for the Law of the Sea, ITLOS Case No. 17, 1 February 2011).

²¹² *Ibid.*, para. 171. ²¹³ *Ibid.*, para. 172. ²¹⁴ *Ibid.*, paras. 176 and 177.

²¹⁵ *Ibid.*, paras. 181–2 and 184. In other words, the conventional rules regarding the attribution of the conduct of private entities to the state apply.

²¹⁶ *Ibid.*, para. 180, relying on Art. 137(2). ²¹⁷ Chapter 5, p. 145, above.

party may be entitled to claim compensation 'in light of the *erga omnes* character of the obligations relating to preservation of the environment of the high seas and in the Area'.²¹⁸ This is the first indication of the existence of a right of *actio popularis* arising under an international environmental treaty outside the context of non-compliance procedures.

Turning to the exemption to sponsoring state liability provided in Article 139(2), second sentence, and Annex III, Article 4(4),²¹⁹ the Tribunal observed that the pre-condition for this exemption is that the sponsoring state has taken 'all necessary and appropriate measures to secure effective compliance' by the sponsored contractor.²²⁰ States, however, do not have unlimited discretion with respect to the measures taken to avoid liability. The Tribunal indicated several requirements in this regard, including the need for administrative measures aimed at securing compliance, having in place measures at all times that a contract with the Authority is in force, ensuring that measures cover the obligations of the contractor after the completion of the exploration phase, and undertaking regular review of measures to ensure that they meet current standards and that the contractor meets its obligations effectively without detriment to the common heritage of mankind.²²¹ The Tribunal also emphasised the need for regulatory measures governing such matters rather than a purely contractual approach.²²² As to the content of the measures, the Tribunal did not feel it appropriate to render specific advice on this issue, which might encroach on the policy choices of states. Instead, it suggested some general considerations for states in making their choice of measures under the relevant provisions of the Convention.²²³

The Tribunal also indicated a number of other principles applicable to sponsoring state liability where it arises. It rejected the application of a strict liability standard in such cases²²⁴ and indicated that, in circumstances of multiple sponsorship of an activity, the states concerned would bear liability jointly and severally.²²⁵ The extent of sponsoring state liability, the Tribunal found, would be 'for the actual amount of the damage' and would extend beyond the completion of the exploration phase – the same standards that are applicable to contractors.²²⁶ It also indicated that different forms of reparation may be available, expressing the view that the eventual form reparation takes 'will depend on both the actual damage and the technical feasibility of restoring the situation to the *status quo ante*'.²²⁷ Finally the Tribunal pointed out that 'the regime of international law on responsibility and liability is not considered to be static', allowing for evolution of the deep seabed mining liability regime in light of new developments in international law.²²⁸

In the view of the Tribunal, sponsoring state liability under Article 139(2) exists in parallel to that of the sponsored contractor. Accordingly, where the contractor pays the actual amount of

²¹⁸ *Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area*, para. 180.

²¹⁹ This exemption does not apply to liability arising out of violations of parties' 'direct obligations' under the Convention, identified by the Tribunal as the obligation to assist the Authority in the exercise of control over activities in the Area; the obligation to apply a precautionary approach; the obligation to apply best environmental practices; the obligation to take measures to ensure the provision of guarantees in the event of an emergency order by the Authority for protection of the marine environment; the obligation to ensure the availability of recourse for compensation in respect of damage caused by pollution; and the obligation to conduct environmental impact assessments: *ibid.*, paras. 122 and 207.

²²⁰ *Ibid.*, para. 186. ²²¹ *Ibid.*, paras. 218–22. ²²² *Ibid.*, para. 226. ²²³ *Ibid.*, paras. 228 and 230–41.

²²⁴ *Ibid.*, para. 189.

²²⁵ *Ibid.*, para. 192. This is subject to any regulations the International Seabed Authority might issue with respect to liability; as the Tribunal indicated these are more likely to be developed as projects proceed to the exploitation stage.

²²⁶ *Ibid.*, paras. 195 and 198. ²²⁷ *Ibid.*, para. 197. ²²⁸ *Ibid.*, para. 211.

the damage caused there is no room for reparation by the sponsoring state.²²⁹ Moreover, the liabilities of the contractor and sponsoring state are not joint and several.²³⁰ The Tribunal also came to the conclusion that there is 'no room for residual liability' of the sponsoring state under Article 139 of the Convention. Thus, in cases where the sponsored contractor is unable to discharge a liability in full, the gap cannot be recovered from the sponsored state,²³¹ nor is there any recourse to the liability of the sponsoring state under customary international law if the state has not failed to meet its obligations under the Convention.²³²

1988 CRAMRA and 1991 Antarctic Environmental Protocol²³³

In a manner similar to Article 139 of UNCLOS, the 1988 CRAMRA provides that a sponsoring state will be liable, in accordance with international law, if damage under Article 8(2) of the Convention would not have occurred or continued if it had 'carried out its obligations under [the] Convention' with respect to the operator.²³⁴ Although liability is limited to that not satisfied by the operator or otherwise, this provision establishes potentially unlimited state liability for environmental damage. The significance of this provision should not be overstated, however, given that the treaty is not in force and has effectively been replaced by the 1991 Environment Protocol to the Antarctic Treaty, which is seen as establishing a far less stringent liability regime.²³⁵ Annex VI to the 1991 Protocol finalised in 2005 establishes a liability regime applicable to 'environmental emergencies' in the Antarctic Treaty area which relate to scientific research programmes, tourism and all other governmental and non-governmental activities in the Antarctic Treaty area for which advance notice is required under Article VII(5) of the Antarctic Treaty, including associated logistic support activities.²³⁶ Liability is principally placed on operators (which in the context of research activities may often be state agencies), but Article 10 deals directly with state liability. It provides:

A Party shall not be liable for the failure of an operator, other than its State operators, to take response action to the extent that that Party took appropriate measures within its competence, including the adoption of laws and regulations, administrative actions and enforcement measures, to ensure compliance with this Annex.

²²⁹ *Ibid.*, paras. 181–2. ²³⁰ *Ibid.*, para. 201.

²³¹ *Ibid.*, para. 204. The Tribunal recommended that the Authority may wish to consider establishment of a trust fund to compensate for damage in such circumstances.

²³² *Ibid.*, para. 209.

²³³ H. C. Burmester, 'Liability for Damage from Antarctic Mineral Resource Activities', 29 *Virginia Journal of International Law* 621 (1989); M. Poole, 'Liability for Environmental Damage in Antarctica', 10 *Journal of Environmental and Natural Resources Law* 246 (1992); K. Scott, 'Liability for Environmental Damage in Antarctica: Annex VI to the Environmental Protocol on Liability Arising from Emergencies', 14 *Environmental Liability* 87 (2006); R. Wolfrum, 'Liability for Environmental Damage in Antarctica: Supplement to the Rules on State Responsibility or Lost Opportunity', in I. Buffard, J. Crawford, A. Pellet and S. Wittich (eds.), *International Law Between Universalism and Fragmentation: Festschrift in Honour of Gerard Hafner* (2008), 817.

²³⁴ Art. 8(3)(a); see Chapter 13, pp. 582–6, above. Damage not covered under Art. 8(2) is subject to the applicable rules of international law: Art. 8(3)(b).

²³⁵ R. Wolfrum, 'Liability for Environmental Damage in Antarctica: Supplement to the Rules on State Responsibility or Lost Opportunity', in I. Buffard, J. Crawford, A. Pellet and S. Wittich (eds.), *International Law Between Universalism and Fragmentation: Festschrift in Honour of Gerard Hafner* (2008), 817 at 818.

²³⁶ Art. 1. The Annex will enter into force after its approval by the contracting parties that participated in its negotiation. See further pp. 762–3, below.

This provision is substantially similar to Article 139 of UNCLOS and, like that provision, would not exclude state liability in the event of insufficient implementation by a state party of its obligations under the liability Annex. However, unlike CRAMRA, Article 10 does not provide for subsidiary state liability in the case where an operator is unwilling or unable to undertake the required response action in respect of an environmental emergency harming the Antarctic environment.

1992 Climate Change Convention

The 1992 Climate Change Convention does not contain a rule on the consequences of activities by states which harm the environment, although during the negotiations some states wanted to include a provision that the Convention did not prejudice the rules of international law concerning state responsibility and liability.²³⁷ The Climate Change Convention defines 'adverse effects of climate change',²³⁸ and under Article 4(4) requires developed country parties listed in Annex II and the EU to 'assist the developing countries parties that are particularly vulnerable to the adverse effects of climate change in meeting costs of adaptation to those adverse effects'.²³⁹ While this novel provision is not a formal expression of liability under the principles of state responsibility, it reflects an admission of responsibility with financial consequences.

The work of the International Law Commission²⁴⁰

Apart from its now completed work on state responsibility, the International Law Commission (ILC) began working in the late 1970s on the issue of the liability of states for acts not prohibited by international law, and in 1990 prepared a first set of draft Articles.²⁴¹ The draft Articles were incomplete, and somewhat controversial. They were intended to supplement the rules on state responsibility and to establish principles governing state and civil liability in respect of transboundary harm that arises from activities that are not unlawful *per se*. In 1992, the ILC divided the topic of international liability into prevention and remedial measures, and decided to focus initially on developing draft Articles on

²³⁷ See also the declarations adopted at the time of signature by Kiribati, Tuvalu and Nauru: Chapter 4, p. 104, above; and A. Jaitly and N. Khanna, 'Liability for Climate Change: Who Pays, How Much and Why?', 1 *Review of European Community and International Environmental Law* 453 (1992); P. A. Nollkaemper, 'Internationale Aansprakelijkheid Voor Klimaatverandering', 82 *Nederlands Juristenblad* 2873 (2007); M. Faure and M. Peeters (eds.), *Climate Change Liability* (2011).

²³⁸ Note 38 above. ²³⁹ See also 1997 Kyoto Protocol, Art. 2(3).

²⁴⁰ On the ILC's 1990 draft Articles, see R. Quentin Baxter, "Schematic Outline" on International Liability for Injurious Consequences Arising Out of Acts Not Prohibited by International Law', *Yearbook of the International Law Commission* (1982-II), Part 1, 51-64; J. Barboza, 'Preliminary Report on International Liability for Injurious Consequences Arising Out of Acts Not Prohibited by International Law', UN Doc. A/CN.4/394 (1985); D. B. Magraw, 'Transboundary Harm: The International Law Commission's Study of International Liability', 80 *American Journal of International Law* 305 (1986); S. C. McCaffrey, 'The Work of the International Law Commission Relating to Transfrontier Environmental Harm', 20 *New York Journal of International Law and Politics* 608 (1988); A. Boyle, 'State Responsibility and International Liability for Injurious Consequences of Acts Not Prohibited by International Law: A Necessary Distinction?', 39 *International and Comparative Law Quarterly* 1 (1990); C. Tomuschat, 'International Liability for Injurious Consequences Arising Out of Acts Not Prohibited by International Law: The Work of the ILC', in F. Francioni and T. Scovazzi (eds.), *International Responsibility for Environmental Harm* (1991); J. Barboza, 'International Liability for the Injurious Consequences of Acts Not Prohibited by International Law and Protection of the Environment', 247 *Recueil des Cours* 295 (1994-III).

²⁴¹ J. Barboza, Sixth Report, UN Doc. A/CN.4/428, 39 (1990).

prevention.²⁴² In 2001, the Drafting Committee of the ILC adopted, upon second reading, final draft Articles on the Prevention of Transboundary Harm from Hazardous Activities, completing its work on that part of the topic.²⁴³ This part does not address liability and reparation, as earlier drafts had done, although some states expressed the view that liability and reparation were closely related to prevention and should be considered jointly.²⁴⁴ The ILC decided, nevertheless, to develop the topics separately. In 2002, the ILC returned to its work on the related topic of liability,²⁴⁵ and, at its fifty-eighth session in 2006, adopted 'Draft Principles on the Allocation of Loss in the Case of Transboundary Harm Arising Out of Hazardous Activities'.²⁴⁶

The 2006 Draft Principles on the Allocation of Loss, consisting of eight principles, represent a far less ambitious outcome than that suggested by the ILC's earlier 1990 draft Articles. Nevertheless, the latter repay consideration, since they indicate an authoritative basis upon which to reflect upon some of the issues addressed in this chapter. The draft Articles were intended to establish basic principles applicable to the activities carried out in the territory of a state, or in other places under its jurisdiction, or under its control, the physical consequences of which cause, or create a risk of causing, transboundary harm throughout the process.²⁴⁷ In relation to reparation, the draft Articles articulated a principle requiring a state of origin to make reparation for appreciable harm caused by activities following negotiation between states and guided by the criteria set out in the draft Articles. Such reparation was to restore the balance of interests affected by the harm.

Chapter IV of the ILC's 1990 draft Articles addressed the issue of liability in the event of transboundary harm. Bearing in mind that the harm must, in principle, be fully compensated, concerned states were required to negotiate to determine the legal consequences of the harm.²⁴⁸ The draft Articles proposed that an affected state may agree a reduction in payments for which the state of origin is liable if it appeared equitable for certain costs to be shared.²⁴⁹ Under draft Article 24, a distinction was drawn between different harms. With regard to environmental harm, the state of origin was required to 'bear the costs of any reasonable operation to restore, as far as possible, the conditions that existed prior to the occurrence of the harm' or, if that proved impossible, to reach agreement on monetary or other compensation for the

²⁴² P. Rao, First Report on Prevention of Transboundary Damage from Hazardous Activity, UN Doc. A/CN.4/487, 3–4 (1998).

²⁴³ Chapter 6, pp. 200–1, above. Prevention of Transboundary Harm from Hazardous Activities: Draft Preamble and Draft Articles adopted by the Drafting Committee on second reading, 3 May 2001, UN Doc. 1/CN/4/L.601.

²⁴⁴ P. Rao, Third Report on International Liability for Injurious Consequences Arising Out of Acts Not Prohibited by International Law (Prevention of Transboundary Damage from Hazardous Activities), UN Doc. A/CN.4/510 (2000).

²⁴⁵ ILC, Report of Its Fifty-Fourth Session, UN Doc. A/57/10, paras. 442 *et seq.* (2002).

²⁴⁶ UN Doc. A/61/10. 'Principles' were apparently preferred to Articles by the ILC on the basis that this 'would have the advantage of not requiring a harmonization of national laws and legal systems, which is fraught with difficulties', and because it was 'felt that the goal of widespread acceptance of the substantive provisions is more likely to be met if the outcome is cast as principles': ILC, Draft Principles on the Allocation of Loss in the Case of Transboundary Harm Arising Out of Hazardous Activities with commentaries, 2006, *Yearbook of the International Law Commission* (2006-II), Part 2, General Commentary, para. 12.

²⁴⁷ ILC Draft Articles, Art. 1. The activities envisaged include those which involve 'the handling, storage, production, carriage, unloading or other similar operation of one or more dangerous substances; or [which] use technologies that produce hazardous radiation; or [which] introduce into the environment genetically altered organisms and dangerous micro-organisms': *ibid.*, Art. 2(a); see also Art. 2(b), (c) and (d) for definitions of 'dangerous substances', 'genetically altered organisms' and 'dangerous micro-organisms'.

²⁴⁸ Art. 21. ²⁴⁹ Art. 23.

deterioration suffered.²⁵⁰ Harm to persons or property as a consequence of environmental harm was also to be compensated.²⁵¹ The draft Articles did not settle on the consequences if there was more than one state of origin: two options considered were joint and several liability, or liability in proportion to the harm caused by each state.²⁵² The draft Articles also envisaged certain exceptions to liability,²⁵³ a limitation period for the bringing of claims,²⁵⁴ and the exclusion of the exhaustion of local remedies rule.²⁵⁵

Chapter V of the ILC's 1990 draft Articles envisaged civil claims being brought in the national courts of the state of origin as an alternative to inter-state claims for the same harm, and to provide access to affected states, individuals or legal entities.²⁵⁶ Individuals or states were able to institute proceedings in the courts of the affected state or the state of origin.²⁵⁷ The draft Articles proposed the non-discriminatory application of national law,²⁵⁸ the recognition of judgments,²⁵⁹ and a limitation on state immunity, except in respect of enforcement measures.²⁶⁰

When the ILC returned to the topic in 2002, its approach and aims were more modest.²⁶¹ In common with its earlier efforts, the ILC concentrated on hazardous activities not prohibited by international law that give rise to significant transboundary harm.²⁶² The reasons for this focus, as articulated in the Preamble to the Draft Principles on the Allocation of Loss, are that incidents involving hazardous activities may occur despite compliance by the relevant state with its obligations of harm prevention and result in other states and/or their nationals suffering harm and serious loss.²⁶³ The purpose of the Draft Principles is thus to ensure 'prompt and adequate compensation to victims of transboundary damage' and to 'preserve and protect the environment' in such circumstances 'especially with respect to mitigation of damage to the environment and its restoration or reinstatement'.²⁶⁴

Following a review of international liability regimes, which were found to be primarily concerned with civil liability for operators of hazardous activities, the ILC decided to focus on adopting a scheme of allocation of loss, spreading the loss among multiple actors (primarily operators), though with the potential for some loss to be borne by the state of origin.²⁶⁵ Accordingly, Principle 4 instructs states to take all necessary measures to ensure that prompt and adequate compensation is available for victims of transboundary damage caused by hazardous activities located within their territory or otherwise under their jurisdiction or control. Such measures should include the imposition of liability on the operator (or other appropriate person or entity) which liability should not require proof of fault. Any conditions, limitations or exceptions to liability are to be consistent with the purpose of the Draft Principles

²⁵⁰ Art. 24(a). ²⁵¹ Art. 24(b). ²⁵² Art. 25.

²⁵³ Art. 26; they include war, hostilities, civil war, certain natural phenomena, acts or omissions of third parties, or contributory negligence.

²⁵⁴ Art. 27; the proposal was for a limitation of three or five years from the date when the harm was known or could reasonably have been known, with an absolute limit of thirty years from the date of the accident or the last occurrence if the accident consists of a series of occurrences.

²⁵⁵ Art. 28(a). ²⁵⁶ Arts. 28(b) and 29(a). ²⁵⁷ Art. 29(c). ²⁵⁸ Arts. 29(b) and 30.

²⁵⁹ Art. 32. ²⁶⁰ Art. 31.

²⁶¹ See J. Brunnée, 'Of Sense and Sensibility: Reflections on International Liability Regimes as Tools for Environmental Protection', 53(2) *International and Comparative Law Quarterly* 351, 355 (2004).

²⁶² Principle 1. ²⁶³ Preamble. ²⁶⁴ Principle 3.

²⁶⁵ ILC, Draft Principles on the Allocation of Loss in the Case of Transboundary Harm Arising Out of Hazardous Activities with commentaries, 2006, *Yearbook of the International Law Commission* (2006-II), Part 2, General Commentary, para. 9.

as set out in Principle 3. Further requirements for state measures include an obligation on the operator (or other appropriate entity or person) to establish and maintain financial security to cover compensation claims and, in appropriate cases, a requirement for the establishment of national industry-wide funds. There remains some potential for the state of origin to bear responsibility for compensation of loss suffered in circumstances where the measures addressed to operator liability are insufficient to provide adequate compensation. This liability on the state is not capped or further circumscribed. Given that the regime was intended to be general and residual in character, the ILC took the view that it was not necessary to predetermine the share of loss to be allocated for the different actors or to precisely identify the role to be assigned to the state.²⁶⁶

The remaining Draft Principles cover some of the same ground as the earlier 1990 draft Articles, though in a more modest fashion. Principle 5 on response measures sets out requirements of notification, consultation and co-operation with affected states in the event of an incident involving a hazardous activity that results or is likely to result in transboundary damage. Novel and potentially more far-reaching requirements are that the state of origin, with the appropriate involvement of the operator, is to ensure that appropriate response measures are taken, relying upon the best available scientific data and technology;²⁶⁷ and that all states concerned should, where appropriate, seek the assistance of competent international organisations and other states on mutually acceptable terms and conditions.²⁶⁸ The states affected or likely to be affected by the transboundary damage are also under a duty to mitigate, and, if possible, eliminate the effects of such damage.²⁶⁹ Principle 6 deals with access to domestic remedies within the jurisdiction of the state of origin for victims of transboundary damage, without prejudice to their rights to seek other remedies. States may also provide for recourse to international claims settlement procedures that are expeditious and involve minimal expense. An innovative provision, drawing on developments in other areas of international environmental law,²⁷⁰ provides that states should guarantee appropriate access to information relevant for the pursuance of remedies, including claims for compensation.²⁷¹ The Draft Principles also call for the non-discriminatory application of national law,²⁷² and encourage the further development of international law on liability for particular categories or hazardous activities at the bilateral, regional or global level.²⁷³

CIVIL LIABILITY FOR ENVIRONMENTAL DAMAGE UNDER INTERNATIONAL LAW²⁷⁴

A growing number of treaties establish rules on civil liability for environmental or related damage, although several are not yet in force, and some will probably never enter into force.

²⁶⁶ ILC, Draft Principles on the Allocation of Loss in the Case of Transboundary Harm Arising Out of Hazardous Activities with commentaries, 2006, *Yearbook of the International Law Commission* (2006-II), Part 2, General Commentary, para. 9.

²⁶⁷ Principle 5(b). ²⁶⁸ Principle 5(e). ²⁶⁹ Principle 5(d).

²⁷⁰ On access to information, see Chapter 15, pp. 648 *et seq.*, above. ²⁷¹ Principle 6(5).

²⁷² Principle 8(2). ²⁷³ Principle 7.

²⁷⁴ S. C. McCaffrey, 'Private Remedies for Transfrontier Pollution Damage in Canada and the United States: A Comparative Survey', 15 *University of Western Ontario Law Review* 35 (1981); S. E. Gaines, 'International Principles for Transnational Environmental Liability: Can Developments in Municipal Law Help Break the Impasse?', 30 *Harvard International Law Journal* 311 (1989); Hague Conference on Private International Law, *Note*

This suggests that the willingness of states to establish and apply principles of civil liability turns on the nature of the activity to be regulated, and the content of the rules agreed upon. In broad terms, there appears to be an inverse relationship between the scope of application of the rules – in terms of the activity targeted and the potential financial consequences proposed – and the prospects that they will enter into force. Generally, the civil liability regimes have been developed in relation to specific activities that are considered to be ultrahazardous, and rules have been in force for some time for damage caused by nuclear activities and as a result of oil spills. International rules have also been adopted for damage caused by hazardous substances and wastes (including their international trade),²⁷⁵ living modified organisms,²⁷⁶ and for environmental damage resulting from certain dangerous activities.²⁷⁷ Efforts to develop general rules of civil liability for damage arising from unspecified activities, such as the 1993 Lugano Convention adopted by the Council of Europe, have been notably less successful and have not entered into force.

Typically, the civil liability regimes follow a similar approach, establishing rules which:

- (1) define the activities or substances covered;
- (2) define the damage (to persons, property and the environment);
- (3) channel liability;
- (4) establish a standard of care (usually strict liability);
- (5) provide for liability amounts;
- (6) allow exonerations;
- (7) require the maintenance of adequate insurance or other financial security;²⁷⁸
- (8) identify a court or tribunal to receive the claims; and
- (9) provide for the recognition and enforcement of judgments.

Nuclear installations²⁷⁹

Two conventions specifically regulate civil liability for risks from the peaceful use of nuclear energy: the 1960 Paris OECD Convention on Third Party Liability in the Field of Nuclear Energy

on the Law Applicable to Civil Liability for Environmental Damage (1992); G. Betlem, *Civil Liability for Transfrontier Pollution* (1993); C. Von Bar, 'Environmental Damage in Private International Law', 268 *Recueil des Cours* 291 (1997); E. Reid, 'Liability for Dangerous Activities: A Comparative Analysis', 48 *International and Comparative Law Quarterly* 731 (1999); A. Daniel, 'Civil Liability Regimes as a Complement to Multilateral Environmental Agreements: Sound International Policy or False Comfort?', 12(3) *Review of European Community and International Environmental Law* 255 (2003); R. Wolfrum, C. Langenfeld and P. Minnerop (eds.), *Environmental Liability in International Law: Towards a Coherent Conception* (2005).

²⁷⁵ See the 1989 Basel Convention, Art. 12; the 1999 Basel Liability Protocol; and the 2010 HNS Protocol.

²⁷⁶ 2010 Nagoya-Kuala Lumpur Supplementary Protocol.

²⁷⁷ 2003 Civil Liberty Protocol.

²⁷⁸ See OECD, *Pollution Insurance and Compensation Funds for Accidental Pollution* (1991).

²⁷⁹ M. J. L. Hardy, 'Nuclear Liability: The General Principles of Law and Further Proposals', 36 *British Year Book of International Law* 223 (1960); W. Berman and L. M. Hyderman, 'A Convention on Third Party Liability for Damage from Nuclear Incidents', 55 *American Journal of International Law* 966 (1969); OECD, *Nuclear Third Party Liability: Nuclear Legislation* (1976); L. A. Malone, 'The Chernobyl Accident: A Case Study in International Law Regulating State Responsibility for Transboundary Nuclear Pollution', 12 *Columbia Journal of Environmental Law* 203 (1987); P. Sands, *International Law of Liability for Nuclear Damage* (1990); O. Von Busekist, 'A Bridge Between Two Conventions on Civil Liability for Nuclear Damage: The Joint Protocol Relating to the Application of the Vienna Convention and the Paris Convention', 43 *Nuclear Law Bulletin* 10 (1990); L. de la Fayette, 'Nuclear Liability Revisited', 1 *Review of European Community and International Environmental Law* 443 (1992); P. Birnie, A. Boyle and C. Redgwell, *International Law and the Environment* (2009, 3rd edn), Chapter 9.

(1960 Paris Convention)²⁸⁰ and the 1963 IAEA Vienna Convention on Civil Liability for Nuclear Damage (1963 Vienna Convention).²⁸¹ Other agreements have been concluded in respect of damage caused by nuclear ships.²⁸² The Paris and Vienna Conventions generally follow the same approach, although the latter is potentially of global application. Both agreements are now obsolete, and in 1997 a Protocol amending the 1963 Vienna Convention was adopted,²⁸³ together with a new Convention on Supplementary Compensation (1997 Supplementary Compensation Convention).²⁸⁴ Compared to oil spill regimes, the recent ‘improvements’ are somewhat marginal, and it is likely that these instruments would be overwhelmed and inadequate in the event of a major nuclear accident.²⁸⁵

1960 Paris Convention

The purpose of the Paris Convention is to harmonise national legislation with regard to third party liability and insurance against nuclear risks and to establish a regime of minimum standards for liability and compensation in the event of a nuclear incident, as defined in Article 1(a)(i). The Paris Convention generally applies only to nuclear incidents occurring, and damage suffered, in the territory of contracting parties.²⁸⁶ A party in whose territory the nuclear installation of the operator liable is situated is free to provide otherwise in its national legislation,²⁸⁷ but the Convention is silent as to damage in areas beyond national jurisdiction.

The operator of the nuclear installation,²⁸⁸ whether a private entity or the state, is strictly liable for injury to or loss of life of any person and damage to or loss of property; no provision is made for liability in respect of environmental damage.²⁸⁹ Liability generally extends to damage caused by incidents outside the installation during carriage to another installation or to other persons.²⁹⁰ This applies also to incidents involving nuclear substances in the course of

²⁸⁰ 29 July 1960, in force 1 April 1968, 956 UNTS 251; sixteen states are party.

²⁸¹ Vienna, 21 May 1963, in force 12 November 1977, 1063 UNTS 265; thirty-eight states are party.

²⁸² Brussels Convention on the Liability of Operators of Nuclear Ships, 25 May 1962, not in force, 57 *American Journal of International Law* 268 (1963); M. J. L. Hardy, ‘The Liability of Operators of Nuclear Ships’, 12 *International and Comparative Law Quarterly* 778 (1963); P. Szasz, ‘The Convention on the Liability of Operators of Nuclear Ships’, 2 *Journal of Maritime Law and Commerce* 541 (1970–1); J. Handrlica, ‘Facing Plans for Multiplying Nuclear-Powered Vessels: Lessons Gained from the Brussels Convention on the Liability of Operators of Nuclear Ships of 1962’, 2(4) *International Journal of Nuclear Law* 313 (2009). See also 1963 Netherlands–United States Agreement on Public Liability for Damage Caused by the NS Savannah, The Hague, 6 February 1963, 487 UNTS 113.

²⁸³ Protocol to Amend the Vienna Convention on Civil Liability for Nuclear Damage, Vienna, 12 September 1997, 4 October 2003, 36 ILM 1454 (1997).

²⁸⁴ Convention on Supplementary Compensation for Nuclear Damage, Vienna, 12 September 1997, not in force, 36 ILM 1473 (1997).

²⁸⁵ Damage from the Fukushima nuclear power plant disaster in March 2011 would not be covered as Japan is not a party to the Vienna Convention and its amending Protocol and Supplementary Convention.

²⁸⁶ Art. 2. ²⁸⁷ *Ibid.*

²⁸⁸ ‘Nuclear installation’ includes reactors other than those used in a means of transport, factories for manufacturing or processing nuclear substances or separating isotopes of or reprocessing nuclear fuels, and storage facilities for nuclear substances: Art. 1(a)(ii); ‘nuclear substances’ means nuclear fuel and radioactive products or waste: Art. 1(a)(iv).

²⁸⁹ Art. 3(a). Even this restrictive provision has been interpreted by the English High Court to exclude ‘pure economic loss’: see *Merlins v. British Nuclear Fuels plc* [1990] 3 All ER 711. Other countries, such as the Netherlands and Germany, have extended their domestic legislation to include ‘environmental’ damage.

²⁹⁰ Art. 4(b). See also the Convention Relating to Civil Liability in the Field of Maritime Carriage of Nuclear Material, 17 December 1971, in force 15 July 1975, Misc. 39 (1972), Cmnd 5094. The 1971 Convention is intended to ensure that the operator of a nuclear installation will be exclusively liable for damage caused by a nuclear incident occurring in the course of maritime carriage of nuclear material by exonerating any person apart from the operator of a nuclear installation from liability for such damage: Arts. 1 and 2.

carriage to or from that installation.²⁹¹ The operator's liability may be established by proving a causal connection between the damage and the nuclear incident; proof of fault on the part of the operator is not required, although the rule does not establish 'absolute' liability since exceptions to the operator's liability are provided by Articles 4 and 9. Unless a longer period is provided by national legislation, claims must be brought within ten years from the date of the nuclear incident.²⁹² Jurisdiction over actions will generally lie with the courts of the party in whose territory the nuclear incident occurred,²⁹³ and a state may not, except in respect of measures of execution, invoke any jurisdictional immunities.²⁹⁴ Judgments are enforceable in the territory of any party, and the Convention is to be applied without discrimination as to nationality, domicile or residence.²⁹⁵

The operator's maximum liability for damage caused by a nuclear incident is fifteen million European Monetary Agreement units of account (approximately US\$15 million), although any party may establish a greater or lesser amount, but not less than five million units of account.²⁹⁶ Operators are required to maintain insurance or other financial security.²⁹⁷

Recognising that in many cases the damage suffered might exceed the operator's liability, most parties have ratified the Brussels Supplementary Convention of 1963, which increases the total amount of compensation available to 120 million units of account per incident.²⁹⁸ Under the 1963 Supplementary Convention, the operator's liability is unchanged, but the party in whose territory the installation is situated is required to provide additional compensation of up to 70 million units of account.²⁹⁹ Should the damage exceed this amount, further compensation up to 120 million units of account is to be paid jointly by the parties to the 1963 Supplementary Convention according to a formula reflecting each party's gross national product and the thermal power of reactors situated in its territory.³⁰⁰ In 1982, further Protocols to the Paris Convention and the Brussels Supplementary Convention were adopted, which changed the unit of compensation to the 'special drawing rights' (SDRs) of the IMF and increased the compensation payable by a party and by parties jointly to 175 million SDRs and 300 million SDRs respectively.³⁰¹

The 1986 Chernobyl accident (see below) demonstrated that there was a need to increase the amounts of liability under the Paris and Brussels Supplementary Conventions and to broaden the coverage of types of damage. In response, a major international modernisation effort was undertaken, with the aim of ensuring that victims in all countries affected by a nuclear accident would be accorded equitable compensation for damage suffered. This effort encompassed amendments to the Vienna Convention in 1997, discussed below. The most recent initiative, which parallels many of the developments in the Vienna regime, was the revision of the Paris and Brussels Supplementary Conventions in two Protocols adopted in 2004.³⁰² Neither Protocol has yet entered into force.

²⁹¹ Art. 4. ²⁹² Art. 8.

²⁹³ Art. 13(a). See also the 1962 Brussels Nuclear Ships Convention, which allows the claimant to bring a claim either to the courts of the licensing state or to the courts of the party in whose territory nuclear damage has been sustained: Art. X(1).

²⁹⁴ Art. 13(e). ²⁹⁵ Arts. 13(d) and 14. ²⁹⁶ Art. 7(b). ²⁹⁷ Art. 10.

²⁹⁸ OECD Agreement Supplementary to the Paris Convention of 1960 on Third Party Liability in the Field of Nuclear Energy, 31 January 1963, in force 4 December 1974, 1041 UNTS 358 (as amended by 1964 Protocol), Art. 3(a).

²⁹⁹ Supplementary Agreement, Art. 3(b)(ii); twelve states are party.

³⁰⁰ Arts. 3(b)(iii) and 12. ³⁰¹ Paris, 16 November 1982, IELMT 963:101B.

³⁰² 2004 Protocol to Amend the Paris Convention; 2004 Protocol to Amend the Brussels Supplementary Convention on Nuclear Third Party Liability.

Under the 2004 Protocol to the Paris Convention, a nuclear operator's maximum liability for any one nuclear incident will be increased to an amount not less than €700 million, although any party may establish a greater or lesser amount, but not less than €70 million.³⁰³ The 2004 Protocol also recognises the possibility of a state party adopting an unlimited liability regime; however, in such cases, a limit must be established upon the financial security required of operators equal to €700 million or a lesser amount.³⁰⁴ Also extended is the range of damage covered: the 2004 Protocol would amend the Paris Convention to include new heads of damage including 'the costs of measures of reinstatement of impaired environment, unless such impairment is insignificant', 'loss of income deriving from a direct economic interest in any use or enjoyment of the environment, incurred as a result of a significant impairment of that environment' and 'the costs of preventive measures, and further loss or damage caused by such measures'.³⁰⁵ In addition, damage from a greater range of nuclear installations is covered, such as installations that are in the course of being decommissioned and all nuclear installations for the disposal of nuclear substances.³⁰⁶

Under the Paris Convention, a nuclear incident must occur in the territory of a contracting party and damage must be suffered there in order for the Convention to apply. The 2004 Protocol will remove this limitation to apply also to nuclear damage suffered in a non-Convention state (including its territories and maritime zones) if it is a party to the Vienna Convention and the 1988 Joint Protocol (see below), or if it has no nuclear installations, or its nuclear liability legislation affords equivalent reciprocal benefits and is based on principles identical to those contained in the Paris Convention.³⁰⁷ In respect of coastal states through whose waters shipments of nuclear materials are allowed, the 2004 Protocol provides that where a nuclear incident occurs in the state's exclusive economic zone its courts shall have exclusive jurisdiction in respect of claims for nuclear damage arising from that incident.³⁰⁸ Finally in recognition of the long-term effects of nuclear damage, the 2004 Protocol extends the time limit for bringing claims to 30 years for claims with respect to loss of life and personal injury, although the ten-year limit still applies with respect to other nuclear damage.³⁰⁹ The 2004 Protocol to the Brussels Supplementary Convention makes amendments to that Convention to bring it into accord with the amended Paris Convention. In particular, the maximum amounts of compensation payable have been increased: to €700 million for operator liability; an additional €500 million for states in whose territory a liable operator is situated, and a further €300 million made available by all of the contracting parties.³¹⁰ Contributions to the latter fund will continue to be based on a formula reflecting parties' gross national product and installed nuclear capacity but in different ratios: 35 per cent based on gross domestic product

³⁰³ 2004 Paris Convention Protocol, para. H, amending Art. 7(a) and (b); €80 million is the minimum specified for transport activities.

³⁰⁴ Para. K, amending Art. 10(b).

³⁰⁵ Para. B, amending Art. 1(a)(vii). In relation to the first two categories, such damage is only compensable insofar as they are not encompassed within loss or damage to property. 'Measures of reinstatement' are defined to mean 'any reasonable measures which have been approved by the competent authorities of the State where the measures were taken, and which aim to reinstate or restore damaged or destroyed components of the environment, or to introduce, where reasonable, the equivalent of these components into the environment'. 'Preventive measures' means any reasonable measures taken by any person after a nuclear incident or an event creating a grave and imminent threat of nuclear damage has occurred, to prevent or minimise nuclear damage.

³⁰⁶ Para. A, amending Art. 1(a)(ii). ³⁰⁷ Para. C, amending Art. 2. ³⁰⁸ Para. M, amending Art. 13.

³⁰⁹ Para. I, amending Art. 8(a). ³¹⁰ Para. C, amending Art. 3.

and 65 per cent on installed nuclear capacity.³¹¹ The 2004 Protocol also provides for an extended ambit of operation, under specified circumstances, to nuclear damage suffered in or above maritime areas beyond the territorial sea of a contracting party or in or above a contracting party's exclusive economic zone.³¹²

1963 Vienna Convention³¹³

The provisions of the 1963 Vienna Convention, which are not to be construed as 'affecting the rights, if any, of a contracting party under the general rules of public international law in respect of nuclear damage',³¹⁴ are generally to the same effect as those of the Paris Convention. The operator is liable for 'nuclear damage', which is defined as loss of life, personal injury or damage to property, upon proof that such damage was caused by a nuclear incident in the installation or, with certain limitations, in the course of carriage to or from the installation.³¹⁵ The Vienna Convention does not specifically provide for liability for environmental damage, although it allows the law of the competent court to provide for other damage.³¹⁶ Liability is stated to be absolute, although provision is made for certain defences and exceptions.³¹⁷ Generally, actions must be brought within ten years from the date of the nuclear incident, and jurisdiction over actions lies only with the courts of the party within whose territory the nuclear incident occurred.³¹⁸ If an action is brought against a state, it may not, except in respect of measures of execution, invoke any jurisdictional immunities.³¹⁹ Final judgments that are recognised are enforceable in the territory of any party.³²⁰ The Vienna Convention allows the installation state to limit the operator's liability, but in no event may it be limited to less than US\$5 million for any nuclear incident.³²¹ Operators must maintain insurance or other financial security; however, if the security is inadequate to satisfy claims, Article VII provides that the installation state is required to meet any deficiencies up to the limit, if any, of the operator's liability as established under Article V. In contrast to the position under the 1963 Brussels Supplementary Convention, no provision is made for further compensation beyond this limit by either the installation state or the parties jointly.

The Chernobyl accident highlighted the inadequacies of the liability regime established by the Paris and Vienna Conventions. The accident on 26 April 1986 released large amounts of radioactivity and led to increased levels of radiation over an extensive area.³²² In the former Soviet Union, more than 100,000 people were evacuated from a radius of twenty miles around

³¹¹ Para. L, amending Art. 12. ³¹² Para. B, amending Art. 2.

³¹³ Note 281 above. See IAEA, 'Civil Liability for Nuclear Damage', Official Records, Legal Services No. 2, 149 *et seq.* (1964) (*travaux préparatoires*).

³¹⁴ Art. XVIII.

³¹⁵ Arts. I(1)(k) and II(1). See also the Convention Relating to Civil Liability in the Field of Maritime Carriage of Nuclear Material, p. 739, fn 290, above.

³¹⁶ Art. I(1)(k)(ii). ³¹⁷ Art. IV. ³¹⁸ Arts. VI and XI. ³¹⁹ Art. XIV. ³²⁰ Art. XII(1) and (2).

³²¹ Art. V.

³²² Increased radiation levels were subsequently observed, *inter alia*, in Sweden, Denmark, Finland and Poland (27 April); Austria, German Democratic Republic, Hungary, Italy, Norway and Yugoslavia (29 April); Federal Republic of Germany, Switzerland and Turkey (30 April); France (1 May); Belgium, Greece, the Netherlands and the United Kingdom (2 May); and Iceland (7 May). Low-level increases were also detected in Japan and the United States. Significant increases of particular danger to human health and the environment were observed in levels of iodine-131, caesium-134 and caesium-137 immediately after the accident; see Summary Report of 22 July 1986 of the Working Group on Assessment of Radiation Dose Contamination in Europe Due to the Chernobyl Accident, noted in 28(3) *IAEA Bulletin* 27 (1986).

the plant within thirty-six hours, and thirty-one people died as a direct result within a few weeks. Within six months of the accident, the IAEA had sponsored two new international conventions on emergency notification and assistance,³²³ and the issue of nuclear liability returned to the international agenda. The Board of Governors of the IAEA, having considered a background paper by the IAEA secretariat on the question of international liability for nuclear damage,³²⁴ asked the secretariat to ‘consider whether it was necessary to devise a new instrument on state liability for nuclear damage . . . full account being taken of the work of the [ILC]’.³²⁵ The secretariat concluded that ‘there seems to be no doctrinal obstacle to the elaboration of special rules intended to regulate international liability for nuclear damage’, the rules of which might result from the work of the ILC,³²⁶ and suggested that a new instrument

could complement the existing civil law conventions on nuclear liability . . . in those areas where their regimes are incomplete because of legal lacunae (claims between states, damage to the environment) and it could provide the necessary framework for possibly combining international liability aspects and the issues already covered by the Vienna and Paris Conventions into a comprehensive nuclear liability regime, giving the parties to either of these instruments the option of providing remedies in accordance with appropriate procedures to be embodied within the framework.³²⁷

In 1989, the IAEA established a Standing Committee on Nuclear Liability to revise the 1963 Vienna Convention, which resulted in the adoption of the 1997 Protocol to the 1963 Vienna Convention, and the 1997 Convention on Supplementary Compensation. The slow progress of the Standing Committee’s work reflected political and economic sensitivities, and illustrated the difficulties in developing liability rules in other areas. A number of important nuclear power states, including France, the United Kingdom and the United States, strongly opposed rules of state liability in the amendments.

Controversial issues in the negotiations included the extension of the 1963 Vienna Convention to military installations, its application to damage in areas outside the territory of parties (including areas beyond national jurisdiction), and liability for environmental damage. Two other difficult issues concerned the extent to which the limits on the operator’s liability should be increased, and the differences between states supporting full compensation for the victim and restoration of the environment, and states wishing to limit liability to protect nuclear industries from insurance and other costs. Underlying the debate was concern that increases in the operator’s maximum liability to adequately cover a Chernobyl-type accident would make the insurance of nuclear plants difficult (if not impossible) in many countries and could limit the further development of nuclear power. On the other hand, it was clear that any limitation on liability amounted to an interference with the application of the polluter pays principle and a *de facto* subsidy to the nuclear industry.³²⁸

³²³ See Chapter 11, pp. 542–3, above.

³²⁴ IAEA, Note by Director General, ‘The Question of International Liability for Damage Arising from a Nuclear Accident’, IAEA Doc. GOV/INF/509, Annex (1987).

³²⁵ IAEA, Note by Director General, ‘The Question of Liability for Damage Arising from a Nuclear Accident’, IAEA Doc. GOV/2306, para. 1 (1987).

³²⁶ *Ibid.*, Annex 2, paras. 2 and 3. On the ILC’s work in this regard, see pp. 736–7, above.

³²⁷ *Ibid.*, Annex 2, para. 4.

³²⁸ See Chapter 6, pp. 228 *et seq.*, above.

Another issue that caused difficulty at the IAEA Standing Committee was the question of whether to establish an international claims tribunal to handle claims that might follow a major nuclear incident.³²⁹ Supporters of the original 1963 system, which requires all claims to be channelled to the courts (or a court) of the state in which the accident occurred, argued that this was the only way to achieve a uniform interpretation of the rules and an equitable disbursement of the funds in the context of the limited sums available. Opponents pointed out that it was unrealistic to expect individuals to file claims in a court located several thousand miles away and that no national court could cope with the deluge of claims that would follow a major accident. They also pointed out that the original system provided no incentive for countries such as Ireland and Luxembourg to join the conventions when their citizens could benefit from rights provided under the conventional rules of private international law, allowing them to choose their jurisdiction.³³⁰ In the end, the proponents of the original arrangements prevailed.

The 1997 Protocol entered into force on 4 October 2003, introducing several amendments for its parties.³³¹ As to the definition of 'nuclear damage', the Protocol specifies with greater particularity the types of damage which the laws of the competent court may treat as giving rise to liability, including economic loss, the costs of measures of reinstatement of impaired environment (unless insignificant), the costs of preventive measures, and loss of income deriving from an economic interest in any use or enjoyment of the environment (as a result of a significant impairment of that environment).³³² It is important to note, however, that the amended Convention does not require environmental damage to be compensated: only loss of life or personal injury or damage to property must be compensated. Among the other clarifications is provision to the effect that nuclear installations used for 'non-peaceful purposes' are excluded from the Convention,³³³ and that the Convention applies 'to nuclear damage suffered anywhere', subject to the right of a party to exclude damage suffered in the territory of a non-party or in any maritime zones established by a non-party in accordance with international law (provided these non-parties also possess nuclear installations within their territory and maritime zones but do not provide reciprocal benefits).³³⁴ The ability of a party to limit the liability of an operator is amended to establish a floor of not less than 300 million SDRs,³³⁵ with consequential changes to the provisions on financial security.³³⁶ Prescription periods are amended to a minor extent.³³⁷ The exclusive jurisdiction of the courts of the party in whose territory the nuclear incident occurred remains, but is extended to encompass damage

³²⁹ See, in this regard, the Marshall Islands Nuclear Claims Tribunal, and its decision in respect of US nuclear testing around the Marshall Islands (1946–58), p. 720, above.

³³⁰ See 1968 Brussels Convention and 1988 Lugano Convention; Chapter 5 above.

³³¹ A state which is a party to the Protocol but not to the 1963 Convention is bound by the provisions of the Convention as amended, unless it expresses a different intent at the time of becoming a party, in which case it is bound by the 1963 Convention in relation to states which are parties only to the Convention: 1997 Protocol, Art. 19(1).

³³² 1997 Protocol, Art. 2, amending Art. I(k) of the 1963 Convention. Art. 2(4) of the 1997 Protocol provides new definitions. Once the 2004 Protocol to the Paris Convention enters into force, the two nuclear liability regimes will cover the same types of nuclear damage.

³³³ 1997 Protocol, Art. 3, establishing a new Art. IB to the 1963 Convention.

³³⁴ 1997 Protocol, Art. 3, establishing a new Art. IA to the 1963 Convention.

³³⁵ 1997 Protocol, Art. 7(1), replacing Art. V of the 1963 Convention. The Protocol provides for 'transitional arrangements' for up to fifteen years, during which limits may be 100 million SDRs (Art. 7(2)). See also new Arts. VA to VD, providing, *inter alia*, for: payment of interest and costs; enforcement; and amendments to limits of liability by decision of the parties.

³³⁶ 1997 Protocol, Art. 9, amending Art. VI of the 1963 Convention.

³³⁷ 1997 Protocol, Art. 8, amending Art. VI of the 1963 Convention.

occurring in the exclusive economic zone.³³⁸ States are able to bring an action (in the party's courts having jurisdiction) on behalf of persons who have suffered damage,³³⁹ and the Protocol introduces a dispute settlement clause into the Convention.³⁴⁰ These are modest amendments, which do not modify the basic approach of the 1963 Convention or address the fundamental criticisms that have been levelled towards it.

Together with the 1997 Protocol, there was also adopted a 1997 Convention on Supplementary Compensation, which is yet to enter into force. This is intended to supplement the system of compensation that is provided under national law pursuant to the 1960 and 1963 Conventions (and any amendments to them) or which complies with the standards established in the Annex to the 1997 Convention.³⁴¹ Parties are to ensure the availability of 300 million SDRs or other amount as permitted and notified and, beyond that amount, additional public funds as required pursuant to a formula established under Article IV of the Convention.³⁴² The Convention provides detailed rules on the organisation of supplementary funding once it appears that damage caused by an incident exceeds the amount available under Article III(1)(a), as well as rules on jurisdiction and applicable law, generally following the approach in the 1960 and 1963 Conventions.³⁴³

1988 Joint Protocol

In 1988, a Joint Protocol Relating to the Application of the Vienna Convention and the Paris Convention³⁴⁴ linked the operative parts of the Paris and Vienna Conventions by providing that the operator of a nuclear installation in the territory of a party to either the Paris or Vienna Convention will be liable under that Convention for nuclear damage suffered in the territory of a state which is a party to the other Convention and the Protocol.³⁴⁵ The Joint Protocol provides for the exclusive application of each Convention and sets forth choice-of-law rules.³⁴⁶

Oil pollution³⁴⁷

Civil liability for damage caused by oil pollution is principally governed by three well-developed and well-applied international instruments adopted under the auspices of the

³³⁸ 1997 Protocol, Art. 12, establishing a new Art. XI(1bis) to the 1963 Convention.

³³⁹ 1997 Protocol, Art. 13, establishing a new Art. XIA to the 1963 Convention.

³⁴⁰ 1997 Protocol, Art. 17, establishing a new Art. XXA to the 1963 Convention.

³⁴¹ Art. II(1). The Convention is thereby potentially open to states such as the United States that are not party to the 1960 or 1963 Conventions.

³⁴² Art. III(1). The formula is (i) the amount which is the product of the party's installed nuclear capacity multiplied by 300 SDRs per unit of installed capacity, plus (ii) the amount determined by applying the ratio between the party's UN rate of assessment as assessed for the year preceding that in which the nuclear incident occurs, and the total of such rates for all parties to 10 per cent of the sum of the amounts calculated for all parties under (i) above, subject to a maximum contribution and the principle that states on the minimum UN rate of assessment with no nuclear reactors will not be required to make a contribution: Art. IV(1).

³⁴³ Arts. VI–XII and XIII–XIV.

³⁴⁴ Vienna, 21 September 1988, in force 27 April 1992, 42 *Nuclear Law Bulletin* 56 (1998).

³⁴⁵ Arts. II and IV. ³⁴⁶ Art. III.

³⁴⁷ P. N. Swan, 'International and National Approaches to Oil Pollution Responsibility: An Emerging Regime for a Global Problem', 50 *Oregon Law Review* 504 (1971); S. Bergman, 'No Fault Liability for Oil Pollution Damage', 5 *Journal of Maritime Law and Commerce* 1 (1973); T. Treves, 'Les Tendances Récentes du Droit Conventionnel de la Responsabilité et le Nouveau Droit de la Mer', 21 *Annuaire Français de Droit International* 767 (1975); R. E. Stein, 'Responsibility and Liability for Harm to the Marine Environment', 6 *Georgia Journal of International and Comparative Law* 41 (1976); G. Handl, 'International Liability of States for Marine Pollution', 21 *Canadian Yearbook*

IMO: the Brussels International Convention on Civil Liability for Oil Pollution Damage (1992 CLC); the Brussels International Convention on the Establishment of an International Fund for Compensation of Oil Pollution Damage (1992 Oil Fund Convention); and the 2003 Protocol to the 1992 Oil Fund Convention (2003 Supplementary Fund Convention); together with a Convention on Civil Liability for Bunker Oil Pollution Damage, adopted in 2001. In the 1970s, three private arrangements were set up to increase the amounts of funding available, but two – TOVALOP and CRISTAL – were wound up in 1997, after the entry into force of the 1992 IMO Protocols. They have since been replaced by two new arrangements: STOPIA 2006 and TOPIA 2006.

1992 Civil Liability Convention³⁴⁸

The original 1969 CLC was adopted following the accident involving the Liberian-registered *Torrey Canyon*, which ran aground in the Atlantic off the southwest coast of Britain on 18 March 1967 while carrying nearly 120,000 tons of crude oil. The escape of oil caused widespread damage to the British coastline and to marine life, and eventually polluted the coast of France.³⁴⁹ The accident led to a conference held in Brussels in 1969 and the adoption of two new conventions: the 1969 Intervention Convention³⁵⁰ and the 1969 CLC. The latter has been the subject of three amending Protocols, most recently by the 1992 Liability Protocol. With the entry into force of the 1992 Protocol, the 1969 CLC is now known as the International Convention on Civil Liability for Oil Pollution Damage 1992 (1992 CLC).

The 1992 CLC establishes the liability of the owner of a ship for pollution damage caused by oil escaping from the ship as a result of an incident on the territory of a party (including its

of International Law 85 (1983); M. Jacobsson and N. Trotz, 'The Definition of Pollution Damage in the 1984 Protocols to the 1969 Civil Liability Convention and the 1971 Fund Convention', 17 *Journal of Maritime Law and Commerce* 467 (1986); B. Maffei, 'The Compensation for Ecological Damage in the "Patmos" Case', in F. Francioni and T. Scovazzi (eds.), *International Responsibility for Environmental Harm* (1991); S. T. Smith, 'An Analysis of the Oil Pollution Act of 1990 and the 1984 Protocols on Civil Liability for Oil Pollution Damage', 14 *Houston Journal of International Law* 115 (1991); A. D. Cummings, 'The Exxon Valdez Oil Spill and the Confidentiality of Natural Resource Damage Assessment Data', 19 *Ecology Law Quarterly* 363 (1992); A. H. E. Popp, 'Legal Aspects of International Oil Spills in the Canada/US Context', 18 *Canada-US Law Journal* 309 (1992); P. Birnie, 'Liability for Damage Resulting from the Transport of Hazardous Cargoes by Sea', 25 *Law of the Sea Institute Proceedings* 377 (1993); C. B. Kende, 'Liability for Pollution Damage and Legal Assessment of Damage to the Marine Environment', 11 *Journal of Energy and Natural Resources Law* 105 (1993); D. J. Wilkinson, 'Moving the Boundaries of Compensable Damage Caused by Marine Oil Spills: The Effect of Two New International Protocols', 5 *Journal of Environmental Law* 71 (1993); C. de la Rue, *Liability for Damage to the Marine Environment* (1993); P. Wetterstein, 'Trends in Maritime Environmental Impairment Liability', *Lloyd's Maritime and Commercial Law Quarterly* 230 (1994); G. Gauci, *Oil Pollution at Sea: Civil Liability and Compensation for Damage* (1997); M. Goransson, 'Liability for Damage to the Marine Environment', in A. Boyle and D. Freestone (eds.), *International Law and Sustainable Development* (1999), 345; M. Faure and H. Wang, 'Compensation for Oil Pollution Damage: China Versus the International Regime', 9(5) *Asia Pacific Journal of Environmental Law* 11 (2005).

³⁴⁸ 29 November 1969, in force 19 June 1975, 973 UNTS 3; amended by the 1976 Protocol, 19 November 1976, in force 8 April 1981, 16 ILM 617 (1977); 1984 Protocol, 25 May 1984, not in force, 23 ILM 177 (1984); and 1992 Protocol, 27 November 1992, in force 30 May 1996, IMO LEG/CONF.9/15. The 1992 Liability Protocol replaced the 1984 Protocol and entered into force after it had been ratified by at least four states each with not less than 1 million units of gross tanker tonnage: Art. 13 (the 1984 Protocol required ratification by six such states). The consolidated text is available at www.iopcfund.org/npdf/Conventions%20English.pdf; 124 states are party.

³⁴⁹ See the report prepared by the UK Home Office, *The Torrey Canyon*, Cmnd 3246 (1967); C. Gill, F. Booker and T. Soper, *The Wreck of the Torrey Canyon* (1967); Brown, 21 *Current Legal Practice* 216 (1968); *British Practice in International Law* 90-2 (1967).

³⁵⁰ Chapter 9, pp. 391-2, above.

territorial sea), and covers preventive measures to minimise such damage.³⁵¹ Under the 1969 CLC, 'pollution damage' was defined as:

loss or damage caused outside the ship carrying oil by contamination resulting from the escape or discharge of oil from the ship, wherever such escape or discharge may occur, and includes the cost of preventive measures and further loss or damage caused by preventive measures.³⁵²

The view that this includes environmental damage is supported by the amended text of the 1992 CLC, which defines pollution damage as:

- (a) loss or damage caused outside the ship by contamination, resulting from the escape or discharge of oil from the ship, wherever such escape or discharge may occur, provided that compensation for impairment of the environment other than loss of profit from such impairment shall be limited to costs of reasonable measures of reinstatement actually undertaken or to be undertaken;
- (b) the costs of preventative measures and further loss or damage caused by preventative measures.³⁵³

This current definition, which develops the 1969 definition, implies that the latter is intended to include compensation for impairment of the environment. However, in order for a claim for environmental damage to be brought, the 1992 definition requires measures taken to be 'reasonable' and to have actually been undertaken or to be undertaken. The 1992 CLC establishes joint and several liability for damage which is not 'reasonably separable', and allows a limited number of exceptions, including war and hostilities, intentional acts, governmental negligence and contributory negligence, and it extinguishes all other claims for compensation.³⁵⁴ Under the original 1969 CLC, the owner could limit liability to 2,000 francs for each ton of the ship's net tonnage with an overall limit on liability of 210 million francs, but could not avail itself of the limit if the incident was the result of the owner's 'actual fault or privity'.³⁵⁵ The permitted limits were increased by the 1992 CLC to 3 million SDRs for ships not exceeding 5,000 units of tonnage, and 420 SDRs for each additional unit of tonnage to a maximum of 59.7 million SDRs.³⁵⁶ The owner must maintain insurance or other financial security to cover its

³⁵¹ Arts. II and III(1). The Convention does not apply to warships or other ships owned or operated by a state and being used at the time of the incident for non-commercial purposes: Art. XI(1). Art. 3 of the 1992 Protocol extended the application of the Convention to pollution damage caused in the EEZ of a party or, if the party has not declared an EEZ, to the area extending to no more than 200 nautical miles from the baseline from which its territorial sea is measured.

³⁵² Art. I(6). 'Preventive measures' were limited to 'reasonable measures' to prevent or minimise pollution damage: Art. I(7).

³⁵³ 1992 Protocol, Art. 2(3). The 1992 Protocol amended the definitions of other terms, including 'ship', 'oil' and 'incident': Art. 2.

³⁵⁴ Arts. III(2) and (3) and IV.

³⁵⁵ Art. V. The 1992 Protocol amended Art. V(2) by removing the owner's entitlement to limit liability if it is proved that the pollution damage resulted from the owner's 'personal act or omission, committed with the intent to cause such damage or recklessly and with knowledge that such damage would probably result': Art. 4(2). The 1992 Protocol established procedures for amending the limitation amounts: Art. 15.

³⁵⁶ Art. 6(1). The IMO's Legal Committee increased the compensation limits by 'tacitly amending' Art. 6(1) to 4.51 million SDRs for ships not exceeding 5,000 units of gross tonnage and 631 SDRs for each additional unit of tonnage

liability and, to limit its liability, establish a fund for the total sum of liability with the court in which action is brought.³⁵⁷ Under the 1992 CLC, claims may be brought before the courts of any party or parties in which the pollution damage has occurred or the preventive measures have been taken, and judgments are generally recognisable and enforceable in the courts of all parties.³⁵⁸ The court in which a fund is established is exclusively competent to apportion and distribute the fund.³⁵⁹ A hierarchical relationship exists between the 1992 Liability Convention and the 1992 Fund Convention with prior application of the latter.³⁶⁰

The 1992 Fund Convention³⁶¹

The 1992 (originally 1971) Fund Convention was adopted under the auspices of an International Legal Conference on Marine Pollution Damage to provide additional compensation for victims of oil pollution and to transfer some of the economic consequences to the owners of the oil cargo, as well as the shipowner subject to the original 1969 CLC. The original 1971 Convention was amended by three Protocols, most recently by the 1992 Fund Protocol. With the entry into force of the 1992 Protocol, the 1971 Fund Convention is known as the International Convention on the Establishment of an International Fund for Oil Pollution Damage, 1992 (1992 Fund Convention). From the time of its establishment until 2009, when it ceased to be in force due to a number of denunciations, the Fund had been involved in the settlement of claims arising out of 142 incidents.³⁶² As of 2008, the total compensation paid out of the 1971 and 1992 Funds amounted to £565.1 million.³⁶³

In general, the 1992 Fund Convention adopts the same definitions as the 1992 CLC.³⁶⁴ The 1992 Fund Convention, which establishes an International Oil Pollution Compensation Fund (IOPC Fund), has as its objective to provide compensation for pollution damage that is inadequately compensated by the 1992 CLC.³⁶⁵ The 1971 Convention represented the first time that

to a maximum, at 140,000 units of tonnage, of 89.77 million SDRs. The amendment entered into force on 1 November 2003.

³⁵⁷ Arts. V(3), VI and VII. ³⁵⁸ Arts. IX(1) and X. ³⁵⁹ Art. IX(3).

³⁶⁰ 1992 Protocol, Art. 9, establishing a new Art. XII^{bis} to the 1992 Convention.

³⁶¹ Brussels, 18 December 1971, in force 16 October 1978, 1110 UNTS 57, amended by Protocol, London, 19 November 1976, not yet in force, 16 ILM 621 (1977); 1984 Protocol, 25 May 1984, not yet in force; 1992 Fund Protocol, 27 September 1992, in force 30 May 1996, IMO LEG/CONF.9/16. The 1971 Fund Convention ceased to be in force on 24 May 2002, when the number of 1971 Fund member states fell below twenty-five. The 1992 Protocol entered into force after ratification by eight states in which contributing importers had received a total of 450 million tons of oil in the preceding calendar year (the 1984 Protocol required eight states and 600 million tons). The text of the 1992 Fund Convention is available at www.iopcfund.org/npdf/Conventions%20English.pdf; 105 states are party. In May 2003, a diplomatic conference adopted a Protocol on the Establishment of a Supplementary Fund for Oil Pollution Damage, creating an additional, third tier of compensation: Protocol to the International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage, 1992, London, 16 May 2003, in force 3 March 2005.

³⁶² International Oil Pollution Compensation Funds, *Annual Report 2009*, available at www.iopcfund.org/npdf/AR09_E.pdf, 20.

³⁶³ International Oil Pollution Compensation Funds, *Annual Report 2008*, available at www.iopcfund.org/npdf/AR08_E.pdf, 50–1.

³⁶⁴ Art. 1. See also 1992 Protocol, Art. 2(3)–(6).

³⁶⁵ Art. 2(1). The 1992 Protocol amended Art. 2(1) of the 1971 Fund Convention by removing a second objective (to relieve shipowners from additional financial burdens provided they have complied with safety at sea and other conventions) and extending the application of the Convention to include the EEZ or equivalent area: Arts. 3 and 4. The 1992 Protocol deleted Art. V of the 1971 Convention, whereby the Fund indemnified the owner and guarantor for that portion of the liability under the 1969 CLC that exceeded certain amounts: Art. 7.

linkage in an international legal instrument was explicitly made between the extent of a person's liability and compliance with obligations found in other treaties.

To fulfil its objective, the Fund pays compensation to any person suffering pollution damage if that person has been unable to obtain 'full and adequate' compensation under the 1992 CLC because no liability arises under that Convention, or the owner cannot meet obligations under that Convention, or the liability exceeds the limit established by that Convention.³⁶⁶ The 1992 Fund Convention limits the obligation of the Fund in certain situations, including war, lack of evidence that the damage resulted from an incident involving one or more ships, damage by warships or state-operated non-commercial ships, and contributory negligence.³⁶⁷ Originally, compensation payable under the 1971 Fund was limited to 450 million francs per incident, and an aggregate of 450 million francs for pollution damage 'resulting from a natural phenomenon of an exceptional, inevitable and irresistible character'.³⁶⁸ At its ninth session, the Fund Assembly increased the aggregate amount of compensation payable by the Fund for any one incident to 900 million francs (60 million SDRs) for incidents occurring after 30 November 1987.³⁶⁹ The 1976 Protocol amended the ceilings to 30 million SDRs or 450 million monetary units and 60 million SDRs or 900 million monetary units respectively.³⁷⁰ The 1992 Protocol replaced the entire text of Article 4(4) of the 1971 Fund Convention with a new provision increasing the maximum liability to 135 million SDRs per incident or for certain natural damage, and to 200 million SDRs for any period when there are three parties to the Convention where the combined relevant quantities of contributing oil received by persons in the territories of those parties equalled or exceeded 600 million tons in the preceding year.³⁷¹ In 2000, the Legal Committee of the IMO adopted a resolution further increasing the limits contained in the 1992 Fund Convention for incidents occurring on or after 1 November 2003. Pursuant to these amendments, the maximum amount payable by the 1992 Fund was raised to 203 million SDRs for any one incident.³⁷² The *Erika* and *Prestige* incidents in 1999 and 2002 respectively³⁷³ raised concerns among some states that the maximum compensation afforded by the 1992 Fund Convention was insufficient to meet compensation needs in some cases. Subsequent events such as the *Hebei Spirit* incident in December 2007, which caused damage to most of the western coast of Korea with estimated losses of around KRW 438.5 billion (approximately 276,000 SDRs), bear out this concern.³⁷⁴ Accordingly, in May 2003, a Protocol to the 1992 Fund Convention (Supplementary Fund Protocol) was adopted which provides a third tier of

³⁶⁶ Art. 4(1). ³⁶⁷ Art. 4(2) and (3); see also the 1992 Protocol, Art. 6(2). ³⁶⁸ Art. 4(4).

³⁶⁹ This is the maximum permitted under Art. 4(6) of the Fund Convention, and follows earlier increases to 675 million francs and 787.5 million francs.

³⁷⁰ Art. III(a). The 1984 Protocol would have amended Art. 4(6) by removing the right of the Assembly to increase the amounts of compensation, and provides for a new procedure for the amendment of compensation limits: Arts. 6(5) and 33.

³⁷¹ Art. 6(3). ³⁷² IMO Res. 82nd Session, 18 October 2000.

³⁷³ As regards the *Erika* oil spill, see pp. 754–5, below. The *Prestige* oil spill was caused by the sinking of the Bahamian-registered tanker, the *Prestige*, approximately 30 kilometres off the coast of Galicia in Spain, and is widely recognised as the largest environmental disaster in that country's history, affecting several thousands of kilometres of coastline. More than 140,000 tonnes of waste were collected during clean-up operations: International Oil Pollution Compensation Funds, *Annual Report 2003*, available at www.iopcfund.org/npdf/AR2003English.pdf, 105–9; and see J. A. Juanesa, A. Puentea, J. A. Revillaa *et al.*, 'The Prestige Oil Spill in Cantabria (Bay of Biscay)', 23 (4) *Journal of Coastal Research* 978 (2007).

³⁷⁴ IOPC, 'Hebei Spirit: Republic of Korea, 7 December 2007 (Report Updated 9 May 2011)', available at www.iopcfund.org/hebeispirit.htm. See also International Oil Pollution Compensation Funds, *Annual Report 2008*, available at www.iopcfund.org/npdf/AR08_E.pdf, 125–32.

compensation by establishing an International Oil Pollution Compensation Supplementary Fund (Supplementary Fund).³⁷⁵ Membership of the Supplementary Fund is optional and is open to any state that is a member of the 1992 Fund.³⁷⁶ The maximum amount payable for any one incident is 750 million SDRs, including the amount payable under the 1992 Conventions. The Supplementary Fund Protocol entered into force on 3 March 2005 and applies to incidents occurring on or after that date. The 1992 Fund Convention limits periods for the bringing of claims, and requires any action against the Fund for compensation to be brought only before a court competent under Article IX of the 1992 CLC.³⁷⁷ Where an action has been brought before a court against an owner under the 1992 CLC, that court has exclusive competence over any action against the Fund under Article 4 of the 1992 Fund Convention in respect of the same damage.³⁷⁸ Where that court is in a state that is not a party to the 1992 Fund Convention, the claimant may bring the case before the court where the Fund is headquartered (London) or any court of a party to the 1992 Fund Convention competent under Article IX of the 1992 CLC.³⁷⁹ The 1992 Fund Convention also sets forth rules concerning the effect of judgments on the Fund, the recognition and enforcement of judgments, and rights of recourse and subrogation.³⁸⁰

Annual contributions to the Fund are made, in respect of each party, by any person (including associated persons) who has received a total of more than 150,000 tons of contributing oil in the ports or terminals in the territory of that party contributing oil carried by sea, and contributing oil first received in any installations situated in the territory of that party which has first been carried by sea and discharged in a port or terminal of a non-party.³⁸¹ The assessment of each person's annual contribution that may be needed to balance the budget comprises a proportion of the total amount of contributions required by the Fund to fulfil its estimated annual expenditure.³⁸² The 1992 Protocol's transitional provisions governed contributions and placed a limit, for up to five years, on the contribution of any one party to a maximum of 27.5 per cent of the total contributions to the Fund.³⁸³

The IOPC Fund, which has legal personality under the laws of each party,³⁸⁴ comprises an Assembly, a Secretariat and an Executive Committee.³⁸⁵ The Assembly, in which all parties to the Convention are members, has overall responsibility for the administration of the Fund and for the proper execution of the Convention, and its functions include approving the settlement of claims, taking decisions in respect of distributions under Article 4(5) and provisional payments, and electing the Executive Committee.³⁸⁶ There are fifteen members of the Executive Committee, elected on the basis of equitable geographic distribution, including parties particularly exposed to the risks of oil pollution and having large tanker fleets, and approximately

³⁷⁵ Protocol to the International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage, London, 16 May 2003, in force 3 March 2005, 92FUND/A.8/4, Annex I.

³⁷⁶ Currently, twenty-seven states are members of the Supplementary Fund.

³⁷⁷ Arts. 6 and 7(1). ³⁷⁸ Art. 7(3). ³⁷⁹ *Ibid.* ³⁸⁰ Arts. 7(6), 8 and 9.

³⁸¹ Arts. 10(1) and (2) and 12; 'contributing oil' means crude oil and fuel oil as defined in Art. 1(3)(a).

³⁸² Art. 12(2) and (3).

³⁸³ 1992 Protocol, Art. 26, creating new Arts. 36*bis* and 36*ter* of the 1992 Fund Convention. This provision was included to encourage ratification by Japan, which in 1991 contributed 28.92 per cent of the Fund.

³⁸⁴ Art. 2(2).

³⁸⁵ Arts. 16–30. The 1992 Protocol discontinued the Executive Committee: Arts. 17–24.

³⁸⁶ Arts. 17 and 18. Decisions of the Assembly and the Executive Committee are generally taken on the basis of a simple majority of those present and voting, with special provision for certain decisions to be taken on the basis of a three-fourths or two-thirds majority of those present: Arts. 32 and 33.

one-half from those parties in whose territory the largest quantities of oil were received.³⁸⁷ The functions of the Executive Committee include approving the settlement of claims and giving instructions to the Director.³⁸⁸

IOPC Fund Resolution No. 3

The IOPC Fund has received numerous claims for environmental damage, and its practice may prove instructive to the international community as it seeks to define environmental damage in other contexts. It will be recalled that the Fund pays compensation for pollution damage, which means 'loss or damage outside the ship carrying oil by contamination'. The first claim to the Fund, arising out of the grounding of the Soviet-registered *Antonio Gramsci* off Ventspils, in the former Soviet Union, on 27 February 1979, raised the question of whether this definition included environmental damage or damage to natural resources, as claimed by the Soviet Union and others. The response of the Fund Assembly is to be found in Resolution No. 3, adopted in 1980, which determined that 'the assessment of compensation to be paid by the IOPC Fund is not to be made on the basis of an abstract quantification of damage calculated in accordance with theoretical models'.³⁸⁹ Accordingly, in the case of environmental damage (other than loss of profit from impairment of the environment), compensation is restricted to costs actually incurred or to be incurred for reasonable measures to reinstate the contaminated environment.

The Patmos claim

In 1985, on the basis of Resolution No. 3, the IOPC Fund addressed a £9.2 million claim (later reduced to £2.3 million) by the Italian government for damage to the marine environment arising out of a spillage from the *Patmos*, a Greek-registered tanker, off the coast of Calabria on 21 March 1985. In the absence of any documentation from the Italian government indicating the nature of the damage that had been caused or the basis on which the amount claimed had been calculated, the IOPC Fund rejected the claim.³⁹⁰ The Italian government took the case to the Italian courts, and in 1986 the Court of First Instance rejected the government's claim for compensation for ecological damage to marine flora and fauna on the grounds that the territorial sea was not crown or patrimonial property of the state but a *res communis omnium* which could not be violated by private parties, and that, even if it was, the state had not incurred any direct or indirect loss as a result of the oil spill since no disbursements for the cleaning of the coastline had been incurred nor had any loss of profit occurred.³⁹¹ In 1989, the Court of Appeal overruled the decision, interpreting the Convention to include as environmental damage 'everything which alters, causes deterioration in or destroys the environment in whole or in part'.³⁹² The Court of Appeal interpreted the terms of the 1969 CLC by reference to the 1969 Intervention Convention, which defines the threat to 'related interests' justifying

³⁸⁷ Art. 22. ³⁸⁸ Art. 26.

³⁸⁹ 10 October 1980, FUND/A/ES 1/13, para. 11(a) and Annex (1980). An Intersessional Working Group used similar language in finding that compensation could only be granted if a claimant had suffered economic loss.

³⁹⁰ FUND/EXC.16/8, 22 October 1986, para. 3.3.

³⁹¹ Joined Cases No. 676/86 and No. 337 and others, *General Nation Maritime Transport Company and Others v. Patmos Shipping Company and Others*, Court of Messina, 1st Civil Section, 30 July 1986, unofficial translation (on file with the authors), 27, 28.

³⁹² Cases 391, 392, 393, 398, 426, 459, 460 and 570/1986, Court of Appeal of Messina, Civil Section, Judgment of 30 March 1989, unofficial translation (on file with the author), 57.

intervention as including 'the conservation of living marine resources and of wildlife'.³⁹³ The Court of Appeal went on to hold that:

the environment must be considered as a unitary asset, separate from those of which the environment is composed (territory, territorial waters, beaches, fish etc.) and it includes natural resources, health and landscape. The right to the environment belongs to the state, in its capacity as representative of the collectivities. The damage to the environment prejudices immaterial values, which cannot be assessed in monetary terms according to market prices, and consists of the reduced possibility of using the environment. The damage can be compensated on an equitable basis, which may be established by the Court on the grounds of an opinion of experts ... The definition of 'pollution damage' as laid down in Article 1(6) is wide enough to include damage to the environment of the kind described above.³⁹⁴

The Court of Appeal held that the traditional view of property damage was no longer valid, and that the owner of the *Patmos*, the UK Club (an insurers' group) and the IOPC Fund were liable for the environmental damage claimed by the Italian government.³⁹⁵ It appointed three experts to ascertain the existence, if any, of damage to the marine resources resulting from the oil spillage.³⁹⁶ In their March 1990 report, the experts found that, with the exception of damage to fishing activities that they valued at approximately £465,000, there was a lack of data to evaluate the economic impact on other activities and that a precise assessment of damage to such activities was impossible. The experts also determined that the court was the appropriate body to carry out the evaluation.³⁹⁷ In December 1993, the Court of Appeal awarded a final judgment of £827,000 for environmental damage.³⁹⁸ The court decided that the lack of data and the inability of the experts to determine a precise damage award for environmental harms were not reasons to refuse compensation. It found that the experts were wrong to calculate damages based only on market prices for fish. Because the environment and its natural resources were worth more to the community, the Court of Appeal determined damages according to principles of equity. The decision itself does not make clear exactly how the judge assessed and calculated the environmental damages beyond the £465,000 previously indicated by the panel of experts.³⁹⁹

The Haven case

Another case before the Fund indicated the differences of interpretation which may be applied to the concept of 'environmental damage'. On 11 April 1991, the *Haven*, a Cypriot-registered tanker, caught fire and broke apart seven miles from Genoa in Italy and released over 10,000 tonnes of oil, causing damage to the Italian and French coasts and necessitating extensive clean-up operations.⁴⁰⁰ The Italian government submitted a claim for damage to the marine environment, this time in the provisional amount of 100,000 million Italian lire (£47 million), a figure which the Region of Liguria requested should be doubled.⁴⁰¹ One thousand two hundred

³⁹³ *Ibid.*, 58; 1969 Intervention Convention, Art. II(4)(c); see Chapter 9, pp. 391–2, above.

³⁹⁴ Summary of Judgment of the Court of Appeal, Doc. FUND/EXC.30/2, 29 November 1991, para. 4.15.

³⁹⁵ *Ibid.*, 59–60. ³⁹⁶ See *Annual Report 1991*, 30. ³⁹⁷ *Ibid.*

³⁹⁸ E. Brans, *Liability for Damage to Public Natural Resources: Standing, Damage and Damage Assessment* (2001), 329–31.

³⁹⁹ *Ibid.*, 330. ⁴⁰⁰ See *Annual Report 1991*, 59–62. ⁴⁰¹ *Ibid.*, 63.

Italian claimants, the French government, twenty-two French municipalities and two other public bodies also submitted claims. In the subsequent court proceedings at the Court of First Instance in Genoa, the question arose as to whether claims for damage to the marine environment could be pursued against the shipowners outside the Conventions under the relevant Italian law if such damage was not admissible under the 1969 CLC and the 1971 Fund Convention.⁴⁰² In his report on this matter, the Director of the Fund concluded that the 1969 and 1971 Conventions were designed to provide compensation to victims of pollution damage, that claims which did not relate to such compensation fell outside the scope of the Conventions, and that claims relating to non-quantifiable elements of damage to the environment were of a punitive nature and beyond the scope of the Convention.⁴⁰³ The Director took the view that the drafters of the 1971 Fund Convention could not have intended that the Fund should pay damages of a punitive character calculated on the basis of the seriousness of the fault of the wrongdoer or the profit earned by the wrongdoer, and that the result of including such damage would be unacceptable.⁴⁰⁴ On this basis, the Director concluded that such claims could be pursued outside the Conventions on the basis of national law.⁴⁰⁵ In rejecting the Director's analysis during a session of the Executive Committee, the Italian delegation maintained its view that the 1969 and 1971 Conventions did not exclude compensation for environmental damage which was non-quantifiable, that the state had a legal right to compensation for damage to the environment which had irreversible consequences or where the environment could not be reinstated, and that Italian law envisaged the possibility of compensation for damage to the marine environment for quantifiable and non-quantifiable elements.⁴⁰⁶ The Director's point of view was supported by France, the United Kingdom, Japan and the observer delegation of the International Group of P&I Clubs (shipping, insurance and freight companies).⁴⁰⁷

On 5 April 1996, the Court of First Instance in Genoa ruled that 'pollution damage' in the 1969 CLC and 1971 Fund Convention had a wide enough meaning to include natural resource and environmental damage.⁴⁰⁸ Because these could not be calculated according to commercial or economic valuations, the court awarded £13 million (40,000 million lire), about one-third of the clean-up cost, on the basis that the clean-up did not repair all the damage caused; the award essentially compensated the unremedied residual damage.⁴⁰⁹ The IOPC Fund appealed, and in response Italy requested that the environmental damages be increased to £284 million (883,435 million lire). On 4 March 1999, the parties (Italy, the shipowner, the UK Mutual Steam Ship

⁴⁰² *Ibid.*, 68. The relevant Italian legislation relating to the protection of the marine environment is the Act of 31 December 1982 (No. 979), containing provisions for the protection of the sea, and the Act of 8 July 1986 (No. 349), establishing the Ministry of Environment. The issue also raised the question of the relationship under Italian law between the legislation implementing the 1969 and 1971 Conventions (Act No. 506 of 27 May 1978) and this later legislation.

⁴⁰³ The study is set out in Doc. FUND/EXC.30/2 and summarised in the *Annual Report 1991*, 68–9.

⁴⁰⁴ *Ibid.* ⁴⁰⁵ *Ibid.*

⁴⁰⁶ See FUND/EXC.30/5, paras. 3.1.5 to 3.1.7. Art. 1226 of the Italian Civil Code allows for the possibility that the amount of damage could be determined in an equitable manner if it was not possible to achieve a precise quantification; see also the text of the Italian statement in Doc. FUND/EXC.30/WP.1, 16 December 1991.

⁴⁰⁷ See FUND/EXC.30/5, paras. 31.1.13 to 31.1.18.

⁴⁰⁸ E. Brans, *Liability for Damage to Public Natural Resources: Standing, Damage and Damage Assessment* (2001), 334. The court dismissed claims by provinces and municipalities because no economic loss was suffered: *ibid.* The IOPC Funds suggest that the judge meant that only Italy had standing to bring environmental claims. See IOPC Funds, *Annual Report 1999*, Section 10.2, Incidents Dealt with by the 1971 Fund During 1999, available at www.iopcfund.org/99AR_English.htm.

⁴⁰⁹ *Ibid.*

Assurance Association and the IOPC Fund) withdrew all legal action from Italian courts and signed an agreement.⁴¹⁰ The shipowner and the UK club made an *ex gratia* payment of £9.1 million (25,000 million lire), in addition paying the amount indicated by the Court of First Instance to Italy, without admitting liability beyond the shipowner's limits under the 1969 CLC.⁴¹¹

The Erika claim

This case addressed the question of the availability of compensation for pure environmental damage. On 12 December 1999, the Maltese-registered tanker, *Erika*, broke in two in the Bay of Biscay, about 60 nautical miles off the coast of Brittany, France, spilling some 19,800 tonnes of heavy oil and causing damage to around 400 kilometres of shoreline.⁴¹² As at the October 2010 session of the 1992 Fund Executive Committee, 7,131 claims for compensation had been submitted in respect of the incident for a total of €388.9 million. Payments of compensation have been made in respect of 5,939 claims for a total of €129.7 million, out of which Steamship Mutual, the shipowner's insurer, has paid €12.8 million and the 1992 Fund €116.9 million. Some 1,016 claims, totalling €31.8 million, were rejected.⁴¹³

On the basis of a report by an expert appointed by a magistrate in the Tribunal Correctionnel de Paris, criminal charges were brought in that court against the master of the *Erika*, the representative of the registered owner, and various other entities. A number of claimants, including the French government, several local authorities, and environmental associations joined the criminal proceedings as civil parties, claiming compensation totalling €400 million.⁴¹⁴ In its judgment, delivered in January 2008, the court held four parties criminally liable for the offence of causing pollution and also jointly and severally liable in civil law for the damage caused by the incident.⁴¹⁵ Claimants in the proceedings were awarded compensation based on national law for economic losses, damage to the image of several regions and municipalities, moral damages and damages to the environment. The court held that the 1992 Conventions did not deprive the civil parties of their right to obtain compensation for their damage in the criminal courts. The court assessed the total damages in the amount of €192.8 million, including €153.9 million for the French state. The court recognised the right to compensation for damage to the environment for a local authority with special powers for the protection, management and conservation of a territory. The judgment also recognised the right of an environmental protection association to claim compensation, not only for the moral damage caused to the collective interests which it was its purpose to defend, but also for the damage to the environment which affected the collective interests that it had a statutory mission to safeguard.⁴¹⁶

⁴¹⁰ *Annual Report 1999*, note 408 above.

⁴¹¹ In June 1999, the 1971 Fund paid £26.4 million to Italy, £1.3 million to France and £28,000 to Morocco, as well as indemnifying the UK club for £2.5 million. However, none of the 1971 Fund payments related to environmental damage: *ibid.*

⁴¹² International Oil Pollution Compensation Funds, *Annual Report 2007*, available at www.iopcfund.org/npdf/AR07_E.pdf, 77.

⁴¹³ International Oil Pollution Compensation Funds, *Incidents Involving the IOPC Funds – 2010*, available at www.iopcfund.org/npdf/incidents2010_e.pdf, 7.

⁴¹⁴ D. Papadopoulou, 'The Role of French Environmental Associations in Civil Liability for Environmental Harm: Courtesy of Erika', 21(1) *Journal of Environmental Law* 87 (2009).

⁴¹⁵ Tribunal Correctionnel de Paris, 16 January 2008, n8 99-34-895010.

⁴¹⁶ D. Papadopoulou, 'The Role of French Environmental Associations in Civil Liability for Environmental Harm: Courtesy of Erika', 21(1) *Journal of Environmental Law* 87 (2009).

In an appeal to the Cour d'Appel de Paris, the appellate court, in a judgment delivered in March 2010, confirmed the judgment of the Tribunal Correctionnel de Paris. The Court of Appeal accepted not only material damages (clean-up, restoration measures and property damage) and economic losses, but also accepted moral damage resulting from the pollution, including loss of enjoyment, damage to reputation and brand image, and moral damage arising from damage to the natural heritage. The Court of Appeal's judgment confirmed the compensation rights for moral damage awarded by the Tribunal Correctionnel de Paris to a number of local authorities and, in addition, accepted claims for moral damage from other civil parties. The Court of Appeal also accepted the right to compensation for pure environmental damage, i.e. damage to non-marketable environmental resources that constitute a legitimate collective interest. The Court of Appeal considered that it was sufficient that the pollution touched the territory of a local authority for these authorities to be able to claim for the direct or indirect damage caused to them by the pollution. It awarded compensation for pure environmental damage in the amount of €203.8 million to local authorities and environmental associations.

2001 Bunker Oil Convention

In 2001, the IMO adopted the International Convention on Civil Liability for Bunker Oil Pollution Damage, filling a lacuna left by previous oil pollution conventions, which did not cover liability for fuel spills from ships' bunkers, except for tankers.⁴¹⁷ The 2001 Convention is largely based on the 1992 CLC, which makes shipowners strictly liable for fuel spills,⁴¹⁸ but also allows states to limit liability in accordance with national or international regimes, such as the amended 1976 Convention on Limitation of Liability for Maritime Claims.⁴¹⁹ Article 7 of the 2001 Convention requires owners of ships registered in states parties to maintain insurance or other financial security equal to the limitation provided in Article 6. The 2001 Convention relies on the same approach to environmental damage as the 1992 CLC, limiting compensation for environmental damage to 'reasonable measures of reinstatement'.⁴²⁰

Private compensation schemes

In addition to these international treaty arrangements, shipowners and oil companies have entered into private agreements establishing compensation schemes. The original schemes were the 1969 Tanker Owners Voluntary Agreement Concerning Liability for Oil Pollution (TOVALOP),⁴²¹ the 1971 Contract Regarding a Supplement to Tanker Liability for Oil Pollution (CRISTAL)⁴²² and the 1974 Oil Companies Offshore Pollution Liability Agreement (OPOL).⁴²³ TOVALOP and CRISTAL were wound up in 1997, as a result of greater acceptance by states of the IMO civil liability regimes.⁴²⁴ OPOL is a voluntary agreement that came into effect on 1 May 1975, and originally applied only to offshore oil pollution incidents within the jurisdiction of the UK. All offshore oil operators working on the UK continental shelf are a

⁴¹⁷ London, 23 March 2001, in force 21 November 2008. ⁴¹⁸ 2001 Bunker Oil Convention, Art. 3.

⁴¹⁹ Art. 6. ⁴²⁰ Art. 1(9)(a).

⁴²¹ 7 January 1969, in force 6 October 1969, 8 ILM 497 (1969), as amended. In 1990, 97 per cent of the world's tanker tonnage was covered by TOVALOP: see *TOVALOP (The International Tanker Owners Pollution Federation Ltd and CRISTAL Ltd)* (1990, 2nd edn), 1.

⁴²² 14 January 1971 (as amended), 10 ILM 137 (1971).

⁴²³ 4 September 1974, 13 ILM 1409 (1974); see also Rules of OPOL, 2 October 1974, 14 ILM 147 (1975).

⁴²⁴ See www.itopf.com/about/history; and the first edition of this book at pp. 665–6.

party to OPOL.⁴²⁵ However, OPOL has been extended to offshore facilities within the jurisdictions of Denmark, the Federal Republic of Germany, France, the Republic of Ireland, the Netherlands, Norway, the Isle of Man, the Faroe Islands and Greenland, but excluding those offshore facilities located in the Baltic and Mediterranean Seas. It may also be extended so as to apply to offshore facilities within the jurisdiction of any other state. The Agreement provides for a voluntary regime of strict liability, with limitations to liability, for pollution caused by offshore facilities engaging in oil exploration or production from the seabed and its subsoil. As of October 2010, OPOL requires its operators to accept strict liability for up to US\$250 million per pollution incident and US\$500 million in aggregate.

Two additional voluntary funds were set up in 2006 to indemnify the 1992 Fund Convention and 2003 Supplementary Fund Protocol respectively for compensation paid above a ship-owner's limit of liability under the 1992 CLC.⁴²⁶ The Small Tanker Oil Pollution Indemnification Agreement 2006 (STOPIA) is a voluntary agreement between owners of small tankers (less than 29,548 gigatonnes) and their insurers. Under STOPIA, the liability of owners of small tankers is increased to 20 million SDRs. It applies to incidents involving participating tankers in all 1992 Fund Convention member states. A second agreement, known as the Tanker Oil Pollution Indemnification Agreement (TOPIA) applies to all tankers entered in protection and indemnity insurance (P&I) clubs that are members of the International Group of P&I clubs reinsured through the pooling arrangements of the Group. TOPIA indemnifies the Supplementary Fund for 50 per cent of the amounts paid in compensation by that Fund in respect of incidents involving covered tankers.

Marine environment

Apart from the various marine environment conventions that encourage the development of liability and compensation rules,⁴²⁷ two civil liability conventions have been adopted. The 1977 Convention on Civil Liability for Oil Pollution Damage Resulting from Exploration for and Exploitation of Seabed Mineral Resources,⁴²⁸ which has not entered into force, provides for the liability of the operator of an installation under the jurisdiction of a party for pollution damage resulting from an incident occurring beyond the coastal low-water line.⁴²⁹ Only states with coastlines on the North Sea, the Baltic Sea or northern parts of the Atlantic may become parties.⁴³⁰ The pollution damage must be suffered in the territory of a party, including the internal waters and territorial sea, or in areas in which the party has sovereign rights over natural resources under international law, as well as in respect of preventive measures wherever taken.⁴³¹ The definition of 'pollution damage' as 'loss or damage outside the installation caused by contamination resulting from the escape or discharge of oil from the installation' is sufficiently broad to include environmental damage.⁴³² The Convention provides for strict

⁴²⁵ Offshore Pollution Liability Association Ltd, OPOL Agreement, www.opol.org.uk/agreement.htm. The OPOL Agreement has been amended eleven times, most recently on 1 October 2010.

⁴²⁶ Agreements reproduced in IOPC Funds Assembly, SUPPFUND/A/ES.2/7, 1 February 2006.

⁴²⁷ Note 8 above.

⁴²⁸ London, 1 May 1977, not yet in force, 16 ILM 1450 (1977); W. N. Hancock and R. M. Stone, 'Liability for Transnational Pollution Caused by Offshore Oil Rig Blowouts', 5 *Hastings International and Comparative Law Review* 377 (1982).

⁴²⁹ Arts. 2(a) and 3(a). Art. 1(2) defines 'installation'.

⁴³⁰ Art. 18.

⁴³¹ Art. 2(b).

⁴³² Art. 1(6).

liability, joint and several liability, the extinction of other claims against the operator for pollution damage, an entitlement to limit liability, an insurance requirement, and recognition and enforcement of judgments.⁴³³ Liability may not be limited if it is proved that the damage occurred 'as a result of an act or omission by the operator himself, done deliberately with actual knowledge that pollution damage would result',⁴³⁴ and there will be no liability in respect of abandoned wells where the damage occurred more than five years after abandonment 'under the authority and in accordance with the requirements' of the controlling party.⁴³⁵ Actions under the Convention are subject to an overall limitation period of four years.⁴³⁶ By limiting actions to the courts of any party where the damage was suffered or in respect of an area in which 'in accordance with international law, a state has sovereign rights over natural resources', or the courts of the controlling party, the Convention appears to exclude the possibility of environmental claims concerning damage in areas beyond national jurisdiction.⁴³⁷

The 1992 Black Sea Convention requires each party to adopt rules and regulations on liability for damage caused by natural or juridical persons to the marine environment of the Black Sea, and to ensure that recourse is available for 'prompt and adequate' compensation or other relief for damage caused by pollution of the marine environment.⁴³⁸ The object of the rules is to ensure the 'highest degree of deterrence and protection for the Black Sea as a whole', and to that end the parties are committed to co-operating on the development and harmonisation of their laws and procedures relating to liability, assessment and compensation for damage.⁴³⁹

Waste

Liability for damage caused by waste has been an international legal issue since Article X of the 1972 London Convention committed parties to 'develop procedures for the assessment of liability' regarding dumping, in accordance with the principles of international law regarding state responsibility for environmental damage.⁴⁴⁰ The 1991 Bamako Convention requires each party to impose strict and unlimited liability, as well as joint and several liability, on hazardous waste generators, as well as committing the parties to develop a Protocol on liability and compensation.⁴⁴¹

In 1999, pursuant to Article 12 of the 1989 Basel Convention, parties adopted the Protocol on Liability and Compensation for Damage Resulting from Transboundary Movements of Hazardous Wastes and Their Disposal.⁴⁴² The Protocol includes numerous innovative provisions, and compares favourably with other recently adopted instruments. It is intended to provide a comprehensive regime for liability and for adequate and prompt compensation for damage, defined to include damage to persons and property and loss of income deriving from an economic interest in the environment, costs of measures reinstating the impaired environment,

⁴³³ Arts. 3–8 and 12. ⁴³⁴ Art. 6(4). ⁴³⁵ Art. 3(4). ⁴³⁶ Art. 10. ⁴³⁷ Art. 11(1).

⁴³⁸ Art. XVI(2) and (3), Chapter 9, pp. 437 *et seq.*, above. ⁴³⁹ Art. XVI(4).

⁴⁴⁰ See now Art. 15 of the 1996 London Protocol, committing parties to 'undertake to develop procedures regarding liability'.

⁴⁴¹ Art. 4(3)(b), see Chapter 12, pp. 571–2, above.

⁴⁴² 1999 Basel Liability Protocol; S. Choksi, 'The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal: 1999 Protocol on Liability and Compensation', 28 *Ecology Law Quarterly* 509 (2001).

and preventive measures.⁴⁴³ The Protocol expressly requires any person who is in operational control of the waste to take all reasonable measures to mitigate damage arising from an incident.⁴⁴⁴

The Protocol applies to damage due to an incident occurring during a transboundary movement, including illegal traffic and in respect of re-import, 'from the point where the wastes are loaded on the means of transport in an area under the national jurisdiction of the state of export'.⁴⁴⁵ Its application is subject to certain other exclusions.⁴⁴⁶ It covers all damage suffered in an area under the national jurisdiction of a party, but only damage to persons and property and preventive measures in areas beyond national jurisdiction, and provides particular rules where the state of import, but not the state of export, is a party to the Protocol.⁴⁴⁷

The Protocol provides generally for strict liability, with fault liability where there is a failure to comply with the Convention or damage occurs because of intentional, reckless or negligent acts or omissions.⁴⁴⁸ The Protocol does not affect the rights and obligations of parties under general international law.⁴⁴⁹ Under a regime of strict liability, the notifying entity is generally liable for damage until the disposer takes possession of the waste, at which point liability shifts to the disposer,⁴⁵⁰ with a special rule governing hazardous waste within the meaning of Article 1(1)(b) of the Convention (wastes determined to be hazardous by a party but not included in Annex I to the Convention).⁴⁵¹ Liability is excluded upon proof of damage arising as a result of certain acts, including armed conflict and insurrection, certain natural phenomena, and the wrongful conduct of a third party.⁴⁵²

Liability is limited for non-fault-based incidents to amounts determined by domestic law,⁴⁵³ but there are no liability limits for damage from fault-based incidents.⁴⁵⁴ The Protocol sets minimum liability for damage,⁴⁵⁵ and liable persons must also have insurance or financial guarantees covering these amounts.⁴⁵⁶ Claims may be brought in the courts of the party where the damage was suffered, or where the incident occurred, or where the defendant has his habitual residence or principal place of business, and provision is made for the mutual recognition and enforcement of judgments.⁴⁵⁷ Matters not regulated by Protocol are governed by the law of the competent court.⁴⁵⁸ Claims under the Protocol are inadmissible unless brought within ten years of the incident and within five years from the date when the claimant knew or ought reasonably to have known of the damage.⁴⁵⁹

⁴⁴³ Arts. 1 and 2(2)(c). 'Measures of reinstatement' and 'preventive measures' are defined at Art. 2(2)(d) and (e).

⁴⁴⁴ Art. 6.

⁴⁴⁵ Art. 3(1) and (4). A party may notify the exclusion of the application of the Protocol, where it is the state of export, for incidents occurring within an area under its national jurisdiction, as regards damage in such area: *ibid.* The Protocol further defines its scope of application in relation to particular activities: Art. 3(2).

⁴⁴⁶ Art. 3(6)(a) and (b), (7) and (8).

⁴⁴⁷ Art. 3(3)(a), (b) and (c). Special provision is made for damage to states of transit: Art. 3(3)(d) and Annex A.

⁴⁴⁸ Art. 5. ⁴⁴⁹ Art. 16. ⁴⁵⁰ Art. 4(1). ⁴⁵¹ Art. 4(2). ⁴⁵² Art. 4(5).

⁴⁵³ Art. 12(1) and Annex B(1). Annex B(2)(b) does not allow the maximum liability for disposers to be less than 2 million units of account for any incident.

⁴⁵⁴ Art. 12(2).

⁴⁵⁵ Annex B(2)(a) (1 million SDRs for shipments of less than 5 tonnes; 2 million SDRs for shipments of 5–25 tonnes; 4 million SDRs for shipments of 25–50 tonnes; 6 million SDRs for shipments of 50–1,000 tonnes; 10 million SDRs for 1,000–10,000 tonnes; and 1,000 SDRs for each additional tonne beyond 10,000 up to a maximum of 30 million SDRs).

⁴⁵⁶ Art. 14. ⁴⁵⁷ Arts. 17 and 21. ⁴⁵⁸ Art. 19. ⁴⁵⁹ Art. 13.

Transport

Transport issues are addressed by two instruments: the Geneva Convention on Civil Liability for Damage Caused During Carriage of Dangerous Goods by Road, Rail and Inland Navigation Vessels (1989 CRTD);⁴⁶⁰ and the 2010 Protocol to the International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea (2010 HNS Protocol).⁴⁶¹ Neither instrument is in force.

The 1989 CRTD was adopted under the auspices of the United Nations Economic Commission for Europe (UNECE), and provides for the liability of the carrier (the registered owner or person controlling the road vehicle or inland navigation vessel or operator of a railway line) for damage caused during the transport of dangerous goods.⁴⁶² Compensable damage includes loss of life or personal injury, loss of or damage to property, and:

loss or damage by contamination to the environment caused by dangerous goods, provided that compensation for impairment of the environment other than for loss of profit caused from such impairment shall be limited to costs of reasonable measures of reinstatement actually undertaken or to be undertaken.⁴⁶³

The carrier may limit its liability in case of rail or road transport to 18 million SDRs for claims covering loss of life or personal injury and to 12 million SDRs for other claims, and in the case of inland navigation vessels to 8 million SDRs and 7 million SDRs respectively.⁴⁶⁴ Under the CRTD, a victim has a choice of courts in which to bring actions: the courts of the party in which the accident occurred, or the damage or loss occurred, or where preventive measures were taken, or where the carrier has its habitual residence.⁴⁶⁵

The 2010 HNS Protocol was adopted in April 2010 as a successor to the 1996 HNS Convention, which had failed to receive sufficient ratifications to enter into force. The 1996 HNS Convention, adopted under the auspices of the IMO, provides for a two-tiered system of liability and compensation similar to the 1992 CLC and 1992 Fund Convention, and uses the same definitions as the 1989 CRTD to determine compensable damage, including environmental damage.⁴⁶⁶ The approach of the 1996 HNS Convention follows the 1992 CLC. Chapter II establishes a regime of strict liability for shipowners and a list of defences to liability, rules for joint and several liability for damage that is not reasonably separable by shipowner, and compulsory shipowner's insurance.⁴⁶⁷ Article 9(1) limits the shipowner's liability to specified amounts;⁴⁶⁸ Article 9(2),

⁴⁶⁰ 10 October 1989, not yet in force, ECE/TRANS/79.

⁴⁶¹ 2010 HNS Protocol. This treaty is intended to replace the 1996 International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea (1996 HNS Convention), London, 3 May 1996, 35 ILM 1404 (1996), which did not attract sufficient ratifications to enter into force.

⁴⁶² Art. 5.

⁴⁶³ Art. 1(10)(c). 'Damage' also includes the cost of preventive measures, defined as 'any reasonable measures taken by any person after an incident has occurred to prevent or minimise damage': Art. 1(10)(d) and (11).

⁴⁶⁴ Art. 9. ⁴⁶⁵ Art. 19. ⁴⁶⁶ 1996 HNS Convention, Art. 1(6)(a)–(d); 1989 CRTD, Art. 1(10)(a)–(d).

⁴⁶⁷ Arts. 7, 8 and 12.

⁴⁶⁸ The limitations for any one incident are: 10 million SDRs for ships under 2,000 units of tonnage; an additional 1,500 SDRs for each unit of tonnage between 2,001 and 50,000; and an additional 360 SDRs for every unit of tonnage over 50,000, provided that the total limit on liability does not exceed 100 million SDRs.

however, imposes no limit to liability if the shipowner intended to cause damage or acted recklessly with knowledge that damage would result. Chapter III establishes the HNS Fund which, like the 1992 Fund Convention for oil pollution, will compensate any person who suffers damage under Chapter II but is unable to obtain compensation because the shipowner is not liable, the shipowner is incapable of meeting all its financial obligations, or the damages exceed the shipowner's liability under Chapter II.⁴⁶⁹

By 2009, the 1996 HNS Convention had only been ratified by fourteen states and was considered unlikely to enter into force given the objection of a number of states to several of its provisions. These included the requirement for states to report to IMO the quantities of HNS substances that had been received,⁴⁷⁰ which was considered problematic in respect of packaged HNS goods. In response, the 2010 HNS Protocol removes the obligation for receivers of packaged goods to contribute to the HNS Fund, although maintaining packaged goods within the scope of the HNS regime so that compensation for incidents involving packaged HNS will continue to be covered.⁴⁷¹ Under the 2010 Protocol, if damage is caused by bulk HNS, compensation is first sought from the shipowner up to a maximum limit of 100 million SDRs. Where damage is caused by packaged HNS, or by both bulk HNS and packaged HNS, the maximum shipowner's liability is 115 million SDRs. If this limit is reached, additional compensation is paid from the second tier – the HNS Fund – up to a maximum of 250 million SDRs, including compensation paid under the first tier.⁴⁷² The 2010 HNS Protocol will enter into force eighteen months after the date on which it is ratified by at least twelve states, including four states each with not less than 2 million units of gross tonnage, and having received during the preceding calendar year a total quantity of at least 40 million tonnes of cargo that would be contributing to the general account.⁴⁷³

Antarctic

1988 CRAMRA

The 1988 CRAMRA was the first Antarctic treaty to address liability, although it is now unlikely to enter into force.⁴⁷⁴ Of particular note are the provisions concerning liability for environmental damage, and the relationship between the liability of the operator and the operator's sponsoring state. Under Article 8, the operator is under an obligation to take necessary and timely response action if its activities result in, or threaten, damage to the Antarctic environment or its dependent or associated ecosystems. Such action includes prevention, containment, clean-up and removal measures.⁴⁷⁵ The operator will be strictly liable for: damage to the Antarctic environment or dependent or associated ecosystems (including payment in the event that there has been no restoration to the *status quo ante*); loss of or impairment to established use; loss of or damage to people and property; and reimbursement of reasonable costs relating

⁴⁶⁹ Art. 14(1). ⁴⁷⁰ HNS Convention, Art. 21.

⁴⁷¹ 2010 HNS Protocol, Art. 3(3) and (1); amending HNS Convention, Art. 1(10) and (5)(a)(iv) and (vii). Art. 3(3) of the HNS Protocol amends Art. 1(10) of the Convention so that packaged goods are excluded from the definition of contributing cargo, which has the effect of exempting receivers of the goods from the obligation to contribute to the HNS Fund.

⁴⁷² HNS Protocol, Art. 7. ⁴⁷³ HNS Protocol, Art. 21. ⁴⁷⁴ Chapter 13 above. ⁴⁷⁵ Art. 8(1).

to necessary response action to restore the *status quo ante* (including prevention, containment, clean-up and removal).⁴⁷⁶ Environmental liability is widely defined.⁴⁷⁷

Where the damage would not have occurred if the sponsoring state had carried out its obligation under the Convention, that state will be liable for the part which remains unsatisfied by the operator.⁴⁷⁸ This innovative approach links civil and state liability in a unique way. CRAMRA would allow limited defences to liability,⁴⁷⁹ and provides for the elaboration of further rules and procedures on liability in a supplementary Protocol.⁴⁸⁰ Guidance is provided on the content of those rules and procedures, which are to be designed to enhance the protection of the Antarctic and discourage commercial activity. The rules and procedures could include provisions for appropriate limits on liability where they can be justified, means and mechanisms to assess and adjudicate claims, and means to provide immediate assistance for response action including where the operator is financially incapable of meeting its obligation in full or there is a defence to liability.⁴⁸¹

1991 Antarctic Environment Protocol

The 1991 Antarctic Environment Protocol dispensed with CRAMRA's substantive liability rules, and committed the parties to elaborate rules and procedures relating to liability for damage arising from activities taking place in the Antarctic and covered by the Protocol.⁴⁸² These rules were to be consistent with the objectives of the Protocol for the comprehensive protection of the Antarctic environment and dependent and associated ecosystems. In 1998, the group of legal experts, convened under Article 16 of the 1991 Protocol, presented their final report to the twenty-second Antarctic Treaty Consultative Meeting (ATCM). Members of the ATCM were unable to reach a consensus on the key issues contained in the group's report, including whether to adopt a comprehensive liability annex or a set of specific liability annexes, whether to compensate irreparable environmental damage, whether to establish an environmental protection fund, and whether to exclude environmental damages resulting from activities found to be acceptable by national authorities after environmental impact assessments.⁴⁸³ The ATCM member states decided to dissolve the group of legal experts and shift the responsibility for developing an Antarctic liability regime to its Working Group I.⁴⁸⁴ At the twenty-eighth ATCM in 2005, the Group finalised a restricted liability regime in a new Annex VI, which was adopted by the state representatives at the meeting.⁴⁸⁵

⁴⁷⁶ Art. 8(2).

⁴⁷⁷ Art. 1(15). This definition appears to be the first in an international treaty that does not set the threshold for damage to be compensable at a level which is 'significant' or 'substantial'.

⁴⁷⁸ Art. 8(3).

⁴⁷⁹ Art. 8(4) and (6) (including unforeseeable natural disaster; armed conflict or act of terrorism against which precautionary measures would not have been effective; and contributory negligence).

⁴⁸⁰ Art. 8(7). ⁴⁸¹ Art. 8(7)(c).

⁴⁸² Art. 16, see Chapter 13, pp. 586–91, above. The Final Act of the Eleventh Antarctic Treaty Special Consultative Meeting, which adopted the Protocol, underlined the commitment of the parties to develop at an early stage rules on liability, and their understanding that liability for damage to the Antarctic environment should be included in the rules: Chapter 13, p. 589, above. In June 2005, the parties agreed a new Annex VI containing rules on liability arising from environmental emergencies, discussed below.

⁴⁸³ R. Lefeber, 'General Developments: International/Civil Liability and Compensation', 9 *Yearbook of International Environmental Law* 158 at 164 (1998).

⁴⁸⁴ *Ibid.*

⁴⁸⁵ Final Report of the Twenty-Eighth Antarctic Treaty Consultative Meeting, Stockholm, 6–17 June 2005, 61. The rules form Annex VI to the Protocol and are not yet in force.

Annex VI provides a liability regime limited in scope to environmental emergencies in the Antarctic Treaty area which relate to scientific research programmes, tourism (including tourist vessels) and all other governmental and non-governmental activities in the Antarctic Treaty area for which advance notice is required under Article VII(5) of the Antarctic Treaty, including associated logistic support activities.⁴⁸⁶ In this sense, the liability Annex is more a specific elaboration of Article 15 of the Protocol than a comprehensive liability regime as envisaged by Article 16.⁴⁸⁷ An ‘environmental emergency’ is defined as any accidental event that occurs after the entry into force of Annex VI and results in, or imminently threatens to result in, any significant and harmful impact on the Antarctic environment.⁴⁸⁸ Each party must require its operators (including state-funded research agencies) to undertake reasonable preventative measures that are designed to reduce the risk of environmental emergencies and their potential adverse impact,⁴⁸⁹ and to establish contingency plans to respond to such incidents.⁴⁹⁰ In the event of an environmental emergency arising from the activities of one of its authorised operators, a state party must require the operator to take ‘prompt and effective response action’.⁴⁹¹ Such action consists of ‘reasonable measures’ in the wake of an environmental emergency taken to avoid, minimise or contain the impact of the emergency, including clean-up in appropriate circumstances, and determining the extent of the emergency and its impact.⁴⁹² If the operator does not take prompt and effective response action, the state party of that operator (in the first instance) and other parties (with notification to the first state and the Antarctic Treaty Secretariat)⁴⁹³ are ‘encouraged’ to take such action ‘including through their agents and operators specifically authorised by them to take such action on their behalf’.⁴⁹⁴ Other states parties should not take response action, however, ‘unless a threat of significant and harmful impact to the Antarctic environment is imminent and it would be reasonable in all the circumstances to take immediate response action, or the Party of the operator has failed within a reasonable time to notify the Secretariat of the Antarctic Treaty that it will take the response action itself, or where that response action has not been taken within a reasonable time after such notification’.⁴⁹⁵

⁴⁸⁶ Annex VI, Art. 1. Environmental emergencies caused by a party’s warships, naval auxiliaries, or other ships or aircraft owned or operated by the party and used, for the time being, only on government non-commercial service, are also covered.

⁴⁸⁷ R. Wolfrum, ‘Liability for Environmental Damage in Antarctica: Supplement to the Rules on State Responsibility or Lost Opportunity’, in I. Buffard, J. Crawford, A. Pellet and S. Wittich (eds.), *International Law Between Universalism and Fragmentation: Festschrift in Honour of Gerard Hafner* (2008), 817 at 818.

⁴⁸⁸ Art. 2(b). As Wolfrum notes, the limitation of damage to the ‘Antarctic environment’ gives the Liability Annex a narrower scope of operation than the CRAMRA which also extended to damage to associated and dependent ecosystems.

⁴⁸⁹ Art. 3(1). ⁴⁹⁰ Art. 4. ⁴⁹¹ Art. 5(1).

⁴⁹² Art. 2(f). ‘Reasonable’ as applied to preventative measures and response action, is defined to mean ‘measures or actions which are appropriate, practicable, proportionate and based on the availability of objective criteria and information, including: (i) risks to the Antarctic environment, and the rate of its natural recovery; (ii) risks to human life and safety; and (iii) technological and economic feasibility’: Art. 2(e).

⁴⁹³ Such notification is generally required prior to taking response action except in circumstances where threat of significant and harmful impact to the Antarctic environment is imminent and it would be reasonable in all the circumstances to take immediate response action: Art. 5(3)(a).

⁴⁹⁴ Art. 5(2). Wolfrum notes that this provision may unintentionally make states responsible for the consequences of activities carried out by operators they authorise to act on their behalf: R. Wolfrum, ‘Liability for Environmental Damage in Antarctica: Supplement to the Rules on State Responsibility or Lost Opportunity’, in I. Buffard, J. Crawford, A. Pellet and S. Wittich (eds.), *International Law Between Universalism and Fragmentation: Festschrift in Honour of Gerard Hafner* (2008), 817 at 824.

⁴⁹⁵ Art. 5(3)(b).

The standard of liability on operators is strict,⁴⁹⁶ and there is provision for joint and several liability in the case where an environmental emergency results from the activities of two or more operators,⁴⁹⁷ as well as a requirement for the maintenance of adequate insurance or financial security.⁴⁹⁸ Exemptions from liability are specified, including for an environmental emergency resulting from response action taken or authorised by a state to the extent that such response action was reasonable in all the circumstances.⁴⁹⁹ Limits on operator liability are also established:⁵⁰⁰ 3 million SDRs for an environmental emergency arising from an event which does not involve a ship, and different maxima for incidents involving ships depending on the tonnage involved.⁵⁰¹

Operators that fail to take prompt and effective response action to environmental emergencies arising from their activities are liable to pay the costs of response action taken by states parties.⁵⁰² Importantly, this provision applies to both state operators and non-state operators, although a distinction is drawn between state and non-state operators when it comes to the amount of compensation payable. In cases where a non-state operator should have taken prompt and effective response action but did not, and no response action was taken by any party, the non-state operator is liable to pay 'an amount of money that reflects as much as possible the costs of the response action that should have been taken'.⁵⁰³ Recovery of costs by a state from a non-state operator is to be by recourse to the courts in one of the parties in which the operator is incorporated, or has its principal place of business or residence. Compensation actions must be brought within three years of the commencement of the response action or within three years of the date on which the party bringing the action knew or ought reasonably to have known the identity of the operator, whichever is later, but in no case more than fifteen years after the commencement of the response action.⁵⁰⁴

In respect of state operators, they are subject to the same obligations as non-state operators to take prompt and effective response action in the event of an environmental emergency. When a state operator should have taken such action but fails to do so, and no response action was taken by any other party, the state operator is liable to pay the whole sum of the cost of the response action that should have been undertaken into a special fund established by Article 12. This amount is to be determined by a consensus decision of the ATCM.⁵⁰⁵ The liability of a state operator can also only be resolved by the ATCM, and, if no resolution can be reached in that forum, then in accordance with any enquiry procedure which may be established by the parties, the provisions of Articles 18, 19 and 20 of the Environmental Protocol and, as applicable, the Schedule to the Protocol on Arbitration.⁵⁰⁶

⁴⁹⁶ Art. 6(3). This money is to be paid directly to a fund set up under Art. 12, to the party of that operator or to the party that seeks reimbursement of costs pursuant to domestic law mechanisms under Art. 7(3). A party receiving such money shall make best efforts to make a contribution to the fund referred to in Art. 12 which at least equals the money received from the operator.

⁴⁹⁷ Art. 6(4). However, it is open to the operator to refute the operation of this provision by establishing that only part of the environmental emergency results from its activities.

⁴⁹⁸ Art. 11. ⁴⁹⁹ Art. 8(2).

⁵⁰⁰ Such limits do not apply in the case of reckless or intentional acts by the operator: Art. 9(3).

⁵⁰¹ Art. 9(1). ⁵⁰² Art. 6(1). ⁵⁰³ Art. 6(2)(b).

⁵⁰⁴ Art. 7(1). Parties must ensure that their courts have the necessary jurisdiction to hear such claims and that enforcement mechanisms exist under their domestic law: Art. 7(2) and (3).

⁵⁰⁵ Art. 7(5)(b). ⁵⁰⁶ Art. 7(5)(a).

Biodiversity

The 2010 Nagoya–Kuala Lumpur Supplementary Liability Protocol to the Biosafety Protocol (Nagoya–Kuala Lumpur Liability Protocol) is the most recent international instrument to be concluded in the field of civil liability. Negotiations to establish a supplementary liability regime under the Biosafety Protocol posed particular challenges in light of the potential for cumulative and diffuse impacts, time lags in the manifestation of harm and the issue of defining what constitutes damage.⁵⁰⁷ Unlike damage from oil pollution, or even radioactive substances, environmental damage that might be caused by genetically modified, living organisms to biodiversity or human health is much more difficult to detect, let alone quantify and value. These difficulties were reflected in the lengthy negotiating process, which commenced under the authority of Article 27 of the Biosafety Protocol in 2004 with the aim of adopting ‘a process with respect to the appropriate elaboration of international rules and procedures in the field of liability and redress for damage resulting from transboundary movements of living modified organisms’ (LMOs).⁵⁰⁸ Given its substantial period of gestation, the Nagoya–Kuala Lumpur Liability Protocol, adopted in October 2010 at the fifth Meeting of the Parties in Nagoya, Japan, is a rather disappointing result. The Protocol is less a far-reaching set of legally binding international rules on liability for damage from modified organisms than ‘a text allowing Parties to address LMO damage through existing civil liability systems or through newly developed civil liability mechanisms’.⁵⁰⁹ It establishes no internationally agreed substantive rules on liability associated with the transboundary movement of LMOs such as exist under most other civil liability regimes (e.g. requirements for operators to maintain appropriate insurance or financial security) due to concerns about the costs this might impose on the use of genetically modified crops. Instead, parties ‘will defer to the wisdom and capacity of States operating under their domestic law’.⁵¹⁰

The Preamble to the Protocol references Principle 13 of the Rio Declaration – calling for development of national and international law on liability and redress for environmental damage – and reaffirms the precautionary approach in Principle 15. The objective of the Protocol is declared to be ‘to contribute to the conservation and sustainable use of biological diversity, taking also into account risks to human health, by providing international rules and procedures in the field of liability and redress relating to living modified organisms’.⁵¹¹ The Protocol applies to damage resulting from LMOs that find their origin in a transboundary movement, including LMOs intended for direct use for food, feed or processing,⁵¹² destined for contained use, or intended for intentional introduction into the environment.⁵¹³ Importantly

⁵⁰⁷ On the Biosafety Protocol, see Chapter 10, pp. 466–71, above. See also J. Brunnée, ‘Of Sense and Sensibility: Reflections on International Liability Regimes as Tools for Environmental Protection’, 53(2) *International and Comparative Law Quarterly* 351, 362 (2004).

⁵⁰⁸ Art. 27 anticipated a four-year timeframe for the negotiations.

⁵⁰⁹ A. Telesetsky, ‘The 2010 Nagoya–Kuala Lumpur Supplementary Protocol: A New Treaty Assigning Transboundary Liability and Redress for Biodiversity Damage Caused by Genetically Modified Organisms’, 14(41) *ASIL Insights*, 10 January 2011.

⁵¹⁰ *Ibid.* ⁵¹¹ Art. 1.

⁵¹² A major issue of contention during the negotiations was whether the Protocol would extend to products derived from LMOs such as tofu made from genetically modified soybeans. The final text of the Protocol omits any reference to LMOs and the ‘products thereof’, though retaining the potential for application to damage from LMOs intended for direct use for processing.

⁵¹³ Art. 3(1).

the Protocol also extends to damage from unintentional and illegal transboundary movements of LMOs.⁵¹⁴ However, only damage occurring in areas within the limits of the national jurisdictions of parties is covered, thus excluding damage to areas of the global commons.⁵¹⁵

The key concept of ‘damage’ in the Protocol is defined as ‘an adverse effect on the conservation and sustainable use of biological diversity, taking also into account risks to human health’ that is (a) measurable or otherwise observable and (b) significant.⁵¹⁶ Significance of damage is to be determined on the basis of factors such as the degree of long-term or permanent change, the extent of qualitative or quantitative changes adversely affecting components of biodiversity, any reduction of the ability of biodiversity components to provide goods and services, and the extent of any adverse effects on human health.⁵¹⁷ The nature of these factors, together with the requirement that damage must be measurable or otherwise observable suggests that the assessment of damage will be primarily based on scientific evidence rather than taking into account other values e.g. community values, indigenous practices, socio-economic considerations etc. Liability under the arrangements established by the Protocol will fall on operators, defined to mean any person in direct or indirect control of an LMO and thereby potentially encompassing a range of entities along the chain of custody for LMOs.⁵¹⁸ The major innovation introduced by the Protocol is the requirement in Article 5 for states to require operators in the event of damage from LMOs to notify the national competent authority, evaluate the damage and take appropriate response measures.⁵¹⁹ Response measures are limited to ‘reasonable actions’ to prevent, minimise, contain, mitigate or otherwise avoid damage and to restore biodiversity.⁵²⁰ Restoration efforts are to be undertaken in the first instance with the intention of restoring biodiversity to the *status quo ante* or its nearest equivalent, but where this is determined not to be possible then restoration may take place by replacing the loss of biodiversity with other components of biodiversity for the same or for another type of use at the same or, as appropriate, at an alternative location. Operators are to be afforded the opportunity to pursue administrative or judicial review for decisions taken by national competent authorities in respect of required response measures.⁵²¹

Other aspects of the liability regime applied to operators are left to the discretion of states to specify in their applicable domestic civil liability framework. For instance, states may provide for exemptions from or mitigations of liability in their domestic law ‘as they see fit’,⁵²² specify time limits for actions related to response measures,⁵²³ establish financial limits for the recovery of costs and expenses related to response measures,⁵²⁴ and determine whether to require financial security on the part of operators.⁵²⁵ The requirement for a domestic civil liability framework may be met by applying existing domestic law or developing new civil liability rules and procedures, or a combination of both approaches.⁵²⁶ If developing a new civil liability framework only minimal requirements are specified by the Protocol that the framework shall include ‘as appropriate’ elements concerning: damage; the standard of liability (including whether this is strict or fault-based); channelling of liability; and the right to bring claims.⁵²⁷ Given the flexibility afforded to states parties to develop their own civil liability

⁵¹⁴ Art. 3(4) and (5). ⁵¹⁵ Art. 3(6). ⁵¹⁶ Art. 2(2)(b). ⁵¹⁷ Art. 2(3). ⁵¹⁸ Art. 2(2)(c).

⁵¹⁹ In the event that the operator does not take required response measures, the national competent authority may do so and recover the costs from the operator: Art. 5(4) and (5).

⁵²⁰ Art. 2(2)(d). ⁵²¹ Art. 5(6). ⁵²² Art. 6. ⁵²³ Art. 7. ⁵²⁴ Art. 8. ⁵²⁵ Art. 10. ⁵²⁶ Art. 12(1).

⁵²⁷ Art. 12(3). See also A. Telesetsky, ‘Introductory Note to the Nagoya–Kuala Lumpur Supplementary Protocol on Liability and Redress’, 50 ILM 105 (2011).

framework to fulfil the objective of the Protocol, it is difficult to predict what these individual regimes will eventually look like and whether they will provide a satisfactory response to the need to establish liability and redress for biodiversity damage caused by LMOs. In this respect, it is interesting to compare the rules under the Protocol with the Compact concluded by six major biotechnology companies in 2010 to define 'A Contractual Mechanism for Response in the Event of Damage to Biological Diversity Caused by the Release of a Living Modified Organism', which elaborates specific legal standards regarding issues of causation and limitations on liability.⁵²⁸

General instruments relating to dangerous goods or activities

Council of Europe

The 1993 Council of Europe Convention on Civil Liability for Damage Resulting from Activities Dangerous to the Environment (1993 Lugano Convention)⁵²⁹ aims to provide adequate compensation for damage resulting from activities dangerous to the environment, and to provide for prevention and restitution.⁵³⁰ Its far-reaching provisions have not commended themselves to many states, and it is unlikely to enter into force: as of May 2011, it has not received a single ratification. Nevertheless, it is of interest in suggesting a different approach. In establishing rules of application beyond a particular industrial sector or activity or source of harm, the 1993 Lugano Convention moves beyond other efforts described above, and is noteworthy as the first civil liability instrument to include provisions on access to information.⁵³¹ The Convention will not be construed as limiting or derogating from rights of persons who suffer damage, or as limiting provisions concerning environmental protection or reinstatement provided under the laws of any party or under any other treaty to which it is a party, and expressly provides that in their relations parties which are members of the EU are to apply EU rules and not the rules of the Convention except where there is no EU rule governing the subject concerned.⁵³²

The Convention is a regional instrument, which is open to signature by the members of the Council of Europe, non-member states which have participated in its elaboration, and the EU, although it is possible for any other state to become a party after its entry into force, and is potentially applicable regardless of where the damage is suffered when the incident occurs in the territory of a party.⁵³³ Article 4 sets out exceptions to which the Convention will not apply, including damage arising from carriage or to the extent that it is incompatible with the rules of applicable law relating to workmen's compensation or social security schemes.⁵³⁴ The Convention will not apply to damage caused by a nuclear substance which arises from a nuclear incident 'the liability of which is regulated either by' the 1960 Paris Convention (and its 1963 Additional Protocol) or by the 1963 Vienna Convention, or if liability for such damage is regulated by a specific internal law which is as favourable as these instruments.⁵³⁵ The drafting of the nuclear exception leaves a certain ambiguity that arises through the use of the word

⁵²⁸ The Compact: A Contractual Mechanism for Response in the Event of Damage to Biological Diversity Caused by the Release of a Living Modified Organism, 17 May 2010, available at www.croplife.org/Files/Upload/Docs/Compact%20-%20Execution%20Text%20-%20PUBLIC%20-%2017%20May%202010.pdf.

⁵²⁹ Lugano, 21 June 1993, not in force, 32 ILM 480 (1993). C. de Sola, 'The Council of Europe Convention on Environmental Damage', 1 *Review of European Community and International Environmental Law* 411 (1992).

⁵³⁰ Art. 1. ⁵³¹ Arts. 13–16; see Chapter 15, pp. 651–2, above. ⁵³² Art. 25.

⁵³³ Arts. 32, 33(1) and 3(a). ⁵³⁴ Art. 4(1) and (3). ⁵³⁵ Art. 4(2).

'regulated'. Article 4(2)(a) would appear to permit an interpretation allowing for the application of the 1993 Lugano Convention to the consequences of a nuclear incident in France which had effects in Luxembourg, or in the United Kingdom which had effects in Ireland (assuming all were parties to the 1993 Convention), since Luxembourg and Ireland are not parties to the 1960 Paris Convention or the 1963 Vienna Convention and the liability in respect of damage in or to their territory would not appear to be 'regulated' by those treaties. Similarly, to the extent that a state is a party to the 1993 Lugano Convention and the 1960 Paris Convention or the 1963 Vienna Convention, the 1993 Convention may apply to damage caused by the disposal or permanent deposit (as opposed to storage) of nuclear waste, or in respect of environmental damage, not regulated by the 1960 or 1963 Conventions. However, Article 4(2)(b) creates further difficulty by excluding the application of the 1993 Convention if liability for damage caused by a nuclear substance 'is regulated by a specific internal law, provided that such law is as favourable' as the 1960 or 1963 Conventions: the issue is whether that specific internal law is that of the state in which the accident occurred, or that of the state in which the damage was suffered, or both. The text does not provide clear guidance.

The 1993 Convention channels liability to the operator in respect of incidents causing damage from a dangerous activity, and departs from earlier instruments by not including a provision allowing parties to limit liability.⁵³⁶ The Convention does not require operators to be covered by mandatory insurance or other financial security, only requiring each party to ensure that operators are covered by a financial security scheme up to a certain limit where appropriate and taking due account of the risks of the activity.⁵³⁷ An incident includes any 'sudden occurrence or continuous occurrence or any series of occurrences having the same origin, which causes damage or creates a grave and imminent threat of causing damage', leaving open the possibility that preventive measures taken by a potential victim, such as evacuation or prohibitive measures taken to prevent an activity from being carried out, could give rise to the liability of the operator.⁵³⁸ The operator is the 'person who exercises control of a dangerous activity';⁵³⁹ no guidance is provided by the Convention on what constitutes control. The Convention applies only to incidents occurring after its entry into force, and transitional provisions apply in respect of damage occurring before and after entry into force.⁵⁴⁰ The Convention distinguishes between two sources of harm, and for both sources of harm the operator's right of recourse against third persons is not prejudiced.⁵⁴¹ For dangerous substances, genetically modified organisms and micro-organisms, and for certain waste installations or sites, the operator will be liable for damage caused by the activity as a result of any incident when he was exercising control of the activity.⁵⁴² Rules of joint and several liability apply for damage caused by continuous occurrences, or a series of occurrences having the same origin, although, if the operator can prove that the occurrence during the period when he was exercising control of the dangerous activity caused only a part of the damage, he will be liable only for that part of the

⁵³⁶ An earlier draft allowed internal law to limit the liability of the operator, taking account of the risks of the activity, the possible extent of damage and the aim of ensuring adequate compensation, and providing that the operator would not be entitled to limit his liability in certain circumstances: Council of Europe draft, 31 July 1992, DIR/JUR (92) 3, Art. 12.

⁵³⁷ Art. 12. ⁵³⁸ Art. 2(11). ⁵³⁹ Art. 2(5). ⁵⁴⁰ Art. 5. ⁵⁴¹ Arts. 6(5) and 7(4).

⁵⁴² Arts. 2(1)(a)–(c) and 6(1). 'Dangerous substance', 'genetically modified organism' and 'micro-organism' are defined at Art. 2(2)–(4) and Annex I. Annex II lists different types of waste installation or site.

damage.⁵⁴³ Where the damage becomes known after dangerous activity has ceased, the last operator of the activity will be liable, unless he or the person who suffered damage can prove that all or part of the damage occurred before he became the operator, in which case the provisions of Article 6(1)–(3) apply.⁵⁴⁴

The operator of a site for the permanent deposit of waste will be liable for damage caused by waste deposited at the site, and the last operator will be liable for damage caused by waste deposited before the closure of a site, which damage only becomes known after the site has closed.⁵⁴⁵ Liability under this provision will generally preclude liability under Article 6.⁵⁴⁶

Damage

Damage includes loss of life or personal injury, loss of or damage to property, and the costs of preventive measures and any loss or damage caused by preventive measures.⁵⁴⁷ The Convention also applies to environmental damage, which is:

loss or damage by impairment of the environment in so far as this is not considered to be damage within the meaning of [Article 2(7)(a) or (b)] . . . provided that compensation for impairment of the environment, other than for loss of profit from such impairment, shall be limited to the costs of reasonable measures of reinstatement actually undertaken or to be undertaken.⁵⁴⁸

The environment includes natural resources, property forming part of the cultural heritage, and the characteristic aspects of the landscape. Measures of reinstatement means:

any reasonable measures aiming to reinstate or restore damaged or destroyed components of the environment, or to introduce, where reasonable, the equivalent of these components into the environment. Internal law may indicate who will be entitled to take such measures.⁵⁴⁹

This definition must be read in the context of the Article 8 exceptions, which provides, *inter alia*, that the operator will not be liable for damage that he proves ‘was caused by pollution at tolerable levels under local relevant circumstances’.⁵⁵⁰ This approach calls for comment. It indicates clearly the distinction to be drawn between pollution and liability for environmental damage; while all environmental damage is likely to be included in the definition of pollution, not all pollution will give rise to liability. Moreover, it does not define a ‘tolerable level’ of pollution, which is problematic in the absence of agreed international standards. Finally, it recognises that tolerable levels are not absolute and may vary between localities or regions, and implements a shift in the burden of proof requiring the operator to prove that the pollution is at a tolerable level, and not for the victim to prove that the level of pollution is intolerable.

Exemptions and other rules

The operator may benefit from exemptions if it is able to prove that damage was caused by, *inter alia*, war or a natural phenomenon of an ‘exceptional, inevitable and irresistible

⁵⁴³ Art. 6(2) and (3). ⁵⁴⁴ Art. 6(4). ⁵⁴⁵ Arts. 2(1)(d) and 7(1). ⁵⁴⁶ Art. 7(2) and (3).

⁵⁴⁷ Art. 2(7)(a), (b) and (d). ⁵⁴⁸ Art. 2(7)(c). ⁵⁴⁹ Art. 2(8) and (10). ⁵⁵⁰ Art. 8(d).

character', or by the intent of a third party, or as a result of compliance with an order or compulsory measure of a public authority, or by a dangerous activity lawfully undertaken in the interests of the person who suffered the damage.⁵⁵¹ Contributory fault of the person suffering damage can result in a reduction or disallowance of compensation.⁵⁵² The Convention also includes a basic rule on proving causality, requiring the court to take due account of the increased danger of causing damage which is inherent in the dangerous activity.⁵⁵³

Actions for compensation and other claims

Under the Convention, claims may be brought to the court of the place where the damage was suffered, or where the dangerous activity was conducted, or where the defendant has his habitual residence.⁵⁵⁴ The Convention envisages claims by environmental organisations. Under Article 18, any association or foundation whose statute aims at the protection of the environment and which complies with the requirements of the internal law of the party where the request is submitted may request the prohibition of a dangerous activity which is unlawful and poses a grave threat of damage to the environment, or that the operator be ordered to take measures to prevent an incident or damage (including after an incident), or that the operator be ordered to take measures of reinstatement.⁵⁵⁵ Internal law may determine the admissibility of such requests, and the administrative or judicial body before which such a request should be made, and the Convention sets out rules governing requests by environmental organisations registered under the law of another party.⁵⁵⁶ Requests by organisations for the prohibition of a dangerous activity may only be brought within a court or administrative authority of the place where the dangerous activity is or will be conducted, and other requests may be taken to such a court or to the court of the place where the measures are to be taken.⁵⁵⁷ Provision is made for limitation periods, notification of proceedings, *lis pendens* (related actions) and the recognition and enforcement of judgments.⁵⁵⁸

The Convention establishes a Standing Committee to review problems related to the Convention and provides for amendment.⁵⁵⁹ Of note is the procedure envisaged for amendment of the definition of dangerous substances set out in Annex I which is necessitated because of the definition by reference to EU Directives which are frequently amended by the EU member states.⁵⁶⁰

Reservations

The sensitive and legally complex nature of the 1993 Lugano Convention required the permissibility of reservations in relation to three matters. Reservations are permitted to allow a party: to apply the Convention to damage suffered in the territory of non-parties only on the basis of reciprocity; to provide in internal law that the operator will not be liable for damage caused by substances or genetically modified organisms or micro-organisms if he proves that the state of

⁵⁵¹ Art. 8(a), (b), (c) and (e). ⁵⁵² Art. 9. ⁵⁵³ Art. 10.

⁵⁵⁴ Art. 19(1). The provisions on jurisdiction will not apply to parties bound by a treaty establishing rules for recognition and enforcement, such as the 1968 Brussels Convention and the 1989 Lugano Convention: Art. 24.

⁵⁵⁵ Art. 18(1). ⁵⁵⁶ Art. 18(2), (3) and (5). ⁵⁵⁷ Art. 19(3) and (4).

⁵⁵⁸ Arts. 17 and 20–23. The provisions on recognition and enforcement will not apply to parties bound by a treaty establishing rules for recognition and enforcement, such as the 1968 Brussels Convention and the 1989 Lugano Convention.

⁵⁵⁹ Arts. 26–31. ⁵⁶⁰ Art. 31.

scientific and technical knowledge at the time of the incident was not such as to enable the existence of the dangerous properties of the substance or the significant risk involved in the operation dealing with the organism to be determined; and to refrain from applying Article 18 (requests by organisations).

UNECE

In 2001, the governing bodies of and parties to the UNECE's 1992 Watercourses Convention and 1991 Industrial Accidents Convention established a working group to develop a Draft Legally Binding Instrument on Civil Liability for Transboundary Damage Caused by Hazardous Activities, Within the Scope of Both Conventions. The working group's mandate was to develop draft Articles to be adopted by a joint special session of the parties to both the Watercourses and Industrial Accidents Conventions in 2003.⁵⁶¹ The proposal followed the work of an earlier UNECE task force, which considered rules on responsibility and liability for transboundary water resources.⁵⁶²

The Protocol on Civil Liability and Compensation for Damage Caused by the Transboundary Effects of Industrial Accidents on Transboundary Waters was adopted in 2003. Its primary aim is to provide for 'adequate and prompt compensation for damage caused by the transboundary effects of industrial accidents on transboundary waters'⁵⁶³ affecting individual and other actors such as fishermen and downstream waterworks. An 'industrial accident' is defined under the Protocol as 'an event resulting from an uncontrolled development in the course of a hazardous activity: (i) in an installation, including tailing dams, for example during manufacture, use, storage, handling or disposal; (ii) during transportation on the site of a hazardous activity; or (iii) during off-site transportation via pipelines'.⁵⁶⁴ A 'hazardous activity' is any activity in which one or more hazardous substances are or may be present in quantities at or exceeding certain threshold quantities listed in Annex I to the Protocol, and which is capable of causing transboundary effects on transboundary waters and their water uses in the event of an industrial accident.⁵⁶⁵ The Protocol applies to 'damage' caused by the transboundary effects of an industrial accident on transboundary waters, so long as the damage is suffered in a party other than the party where the industrial accident occurred.⁵⁶⁶ The notion of damage, and related concepts such as 'measures of reinstatement' are defined in the Protocol terms that largely follow the 1993 Lugano Convention.

Overall, the provisions of the Protocol are similar in many respects to those of the 1993 Lugano Convention. Like that Convention, liability is channelled to the operator, who is required, following an industrial accident, to take all reasonable response measures to prevent, minimise or mitigate possible loss or damage or to arrange for environmental clean-up.⁵⁶⁷ The standard of liability is strict liability, subject to a number of exceptions, including a provision

⁵⁶¹ ECE, Report of the Joint Special Session, UN Doc. ECE/MP.WAT/7 or ECE/CP.TEIA/5 (2001), 6.

⁵⁶² 'Report and Guidelines on Responsibility and Liability Concerning Transboundary Water Pollution', ENVWA/R.45 (1990), as described in A. Rest, 'Ecological Damage in Public International Law', 22 *Environmental Policy and Law* 31 (1992); see also G. Handl, 'Balancing of Interests and International Liability for the Pollution of International Watercourses: Customary Principles of Law Revisited', 13 *Canadian Yearbook of International Law* 156 (1975); J. G. Polakiewicz, 'La Responsabilité de l'Etat en Matière de Pollution des Eaux Fluviales ou Souterraines Internationales', *Journal de Droit International* 283 (1991); A. Rest, 'New Tendencies in Environmental Responsibility/Liability Law: The Work of the UNECE Task Force on Responsibility and Liability Regarding Transboundary Water Pollution', 21 *Environmental Policy and Law* 135 (1991).

⁵⁶³ Art. 1. ⁵⁶⁴ Art. 2(2)(e). ⁵⁶⁵ Art. 2(2)(f). ⁵⁶⁶ Art. 3. ⁵⁶⁷ Art. 2(2)(h) and 6.

allowing compensation to be reduced in the event of contributory fault.⁵⁶⁸ The Protocol's provisions in respect of claims for compensation, limitation periods, *lis pendens* and the recognition and enforcement of judgments parallel those of the Lugano Convention. Unlike that treaty, however, the Protocol sets limits on operator liability that increase in stringency based on the toxicity of the substances involved.⁵⁶⁹ Accidents involving Category A hazardous activities have a limit of 10 million units of account; Category B and C hazardous activities have a limit of 40 million units of account.⁵⁷⁰ In addition, the Protocol sets out a requirement for the operator to maintain appropriate financial security.⁵⁷¹ The limits on liability and minimum financial security requirements were agreed by all actors in the negotiations, including the insurance sector, which should reduce the obstacles to ratification that have been encountered by the 1993 Lugano Convention. The Protocol is open for ratification by states parties to one or both of the Watercourses and Industrial Accidents Conventions, but countries outside the UNECE may accede to the Protocol upon approval by the Meeting of the Parties.⁵⁷²

CONCLUSIONS

With the exception of the oil pollution and nuclear regimes, the rules of international law governing liability for environmental damage remain in their early phases of development, particularly in relation to rules of state liability. States remain reluctant to put in place rules regarding state liability and seem to regard the ambiguities respecting the application of general international law principles of responsibility to environmental damage as a convenient buffer against state responsibility claims.⁵⁷³ States also appear unwilling to bring claims against other states for environmental and other damage even where there might be good legal grounds for doing so, as the practice following the Chernobyl accident indicated.

It is particularly in regard to state liability that the 'expeditious and more determined' co-operation called for by Principle 13 of the Rio Declaration remains to be addressed. Since the 1972 Stockholm Conference, developments have been limited. Although the ILC's 2001 draft Articles on State Responsibility introduced a codified framework, the ILC's ambition to develop principles of state liability for environmental damage which are of general application was overhauled in favour of a pragmatic approach that simply focuses on the allocation of loss. In view of the unwillingness of any state to bring a claim against the Soviet Union following the Chernobyl accident in 1986 for environmental or other damage, the principal developments have been: elaboration by ITLOS of the principles of state liability pertaining to sponsored activities in the deep seabed area pursuant to Article 139 of the 1982 UNCLOS; the clarification of state liability rules in Annex VI to the 1991 Antarctic Environmental Protocol; and the practice of the UN Compensation Commission in articulating standards for restoration and valuation of environmental damage. Indeed, the Panel reports of the UN Compensation Commission may well be seen to define an approach that may be applied more broadly. Few state

⁵⁶⁸ Art. 4.

⁵⁶⁹ Art. 9. There is no limit on liability in respect of reckless or intentional acts covered by Art. 5.

⁵⁷⁰ Annex II. ⁵⁷¹ Art. 11. ⁵⁷² Art. 28.

⁵⁷³ J. Brunnée, 'Of Sense and Sensibility: Reflections on International Liability Regimes as Tools for Environmental Protection', 53(2) *International and Comparative Law Quarterly* 351, 354 (2004).

claims have been made since 1972, notable exceptions being the successful Canadian claim against the Soviet Union following the crash of *Cosmos 954* in 1978, the Hungarian claim against Slovakia in relation to the consequences of the operation of the Gabčíkovo barrage (although the ICJ did not take up the opportunity to address the particularities of that claim) and the *Aerial Herbicide Spraying* case currently before the ICJ. The legal issues that need to be addressed in relation to state liability are broadly similar to those concerning civil liability, although the range of activities for which a state might be liable is extensive. Specific issues of particular concern include liability for damage to the environment in areas beyond national jurisdiction, the question of financial limits (if any) of a state's liability, and the distinction between liability for damage to the environment of a state and liability for damage to its property interests. While important clarifications of the operation of rules of state liability have been offered by recent case law, and the practice of the UN Compensation Commission, it seems unlikely that state responsibility principles will play an important role in addressing global environmental problems, especially those such as climate change which pose difficult issues around causation and attribution of liability.

In relation to civil liability, Principle 13 of the Rio Declaration recognised the importance of further development of national and international laws on liability and compensation. In recent years, states have shown greater willingness to impose constraints on the conduct of potentially hazardous activities through the adoption of civil liability regimes, although this is generally balanced by awareness of the significant costs to the private sector conducting hazardous but socially or economically necessary activities.

The body of international civil liability instruments in force is now impressive, and the case law under some, such as the oil pollution rules, has established useful precedents on the basis of which further developments and innovations can be based. Significant developments in the past decade include the adoption of a liability protocol to the 1989 Basel Convention, the conclusion of the Nagoya–Kuala Lumpur Supplementary Liability Protocol to the Biosafety Protocol, the finalisation of civil liability rules under the Antarctic Environmental Protocol and the adoption of regimes on hazardous and noxious substances and activities, as well as the entry into force of the 1997 Protocol to the Vienna Convention. These developments 'suggest slow but steady progress towards acceptance of environmental liability as an important international policy tool'.⁵⁷⁴ Gaps still need to be filled for activities that are not covered by liability rules, and the geographical coverage of existing instruments needs to be enhanced by bringing on board the large number of states who remain outside the liability regimes. The 'second generation' of civil liability rules also face a series of complex issues, including: the possibility of conflicting approaches to the definition of environmental damage; ensuring that permitted limitations on liability do not serve to subsidise potentially harmful activities; establishing effective procedures before courts and tribunals for dealing with mass claims in the event of catastrophic accidents or events; and developing schemes to provide for supplementary funding in the event that a liable person runs out of funds, or cannot be located, or the damage exceeds a permitted financial limit of liability.

⁵⁷⁴ *Ibid.*, 364.

PART IV

Linkage of international environmental law and other areas of international law

Human rights and armed conflict

INTERNATIONAL HUMAN RIGHTS¹

Introduction

International environmental law raises many issues that will be familiar to human rights lawyers. In the environmental context, questions related to minimum international standards and the role of individuals and other non-governmental organisations in the international legal process have raised analogous issues to those arising in international human rights law. The international legal issues are closely related, as is now reflected in the activities of human rights bodies.²

¹ C. Stone, *Should Trees Have Standing? Towards Legal Rights for Natural Objects* (1974); W. Gormley, *Human Rights and the Environment: The Need for International Co-operation* (1976); P. Kromarek (ed.), *Environnement et Droits de l'Homme* (1987); G. Alfredsson and A. Ovsioyk, 'Human Rights and the Environment', 60 *Nordic Journal of International Law* 19 (1991); I. Hodkova, 'Is There a Right to a Healthy Environment in the International Legal Order?', 7 *Connecticut Journal of International Law* 65 (1991); D. Shelton, 'Human Rights, Environmental Rights, and the Right to the Environment', 28 *Stanford Journal of International Law* 103 (1991); A. Trindade (ed.), *Human Rights, Sustainable Development and the Environment* (1992); R. Desgagne, 'Integrating Environmental Values into the European Convention on Human Rights', 89 *American Journal of International Law* 263 (1995); A. Boyle and M. Anderson (eds.), *Human Rights Approaches to Environmental Protection* (1996); Earthjustice Legal Defense Fund, *Human Rights and the Environment* (2001); D. Shelton, 'Human Rights, Health and Environmental Protection: Linkages in Law and Practice', 1 *Human Rights and International Legal Discourse* 9 (2007); S. Glazebrook, 'Human Rights and the Environment', 40 *Victoria University of Wellington Law Review* 293 (2009); F. Francioni, 'International Human Rights in an Environmental Horizon', 21 *European Journal of International Law* 41 (2010); L. Rajamani, 'The Increasing Currency and Relevance of Rights-Based Perspectives in the International Negotiations on Climate Change', 22 *Journal of Environmental Law* 391 (2010); L. Hajjar Leib, *Human Rights and the Environment: Philosophical, Theoretical, and Legal Perspectives* (2011); D. Hunter, J. Salzman and D. Zaelke, *International Environmental Law and Policy* (2011, 4th edn), Chapter 18. See also A. Boyle, 'Relationship Between International Environmental Law and Other Branches of International Law', in D. Bodansky, J. Brunnée and E. Hey (eds.), *The Oxford Handbook of International Environmental Law* (2007), Chapter 7.

² See e.g. the Conclusions of Experts (2002) following the joint seminar of the Office of the High Commissioner for Human Rights (OHCHR) and UNEP, pursuant to Decision 2001/111 of the UN Commission on Human Rights, on promoting and protecting human rights in relation to environmental questions. The Conclusions (together with six background papers) are available at www2.ohchr.org/english/issues/environment/environ/index.htm; see in particular D. Shelton, *Human Rights and Environment Issues in Multilateral Treaties Adopted Between 1991 and 2001* (2002); D. Shelton, *Human Rights and the Environment: Jurisprudence of Human Rights Bodies* (2002); A. Fabra, *The Intersection of Human Rights and Environmental Issues: A Review of Institutional Developments at the International Level* (2002). More recently, UNEP and the OHCHR held a High-Level Expert Meeting on the topic of 'The New Future of Human Rights and the Environment: Moving the Global Agenda Forward' in Nairobi from 30 November to 1 December 2010. Meeting documents are available at www.unep.org/environmentalgovernance/Events/HumanRightsandEnvironment/tabid/2046/language/en-US/Default.aspx. In addition, the UN Human Rights

Allegations of civil rights breaches continue to abound in the environmental field, and have focused on a range of issues, from the suppression of environmental discussion and debate and of environmental campaigners, to restrictions on the right of association and assembly, as well as restrictions on rights of access to environmental information. Human rights issues increasingly arise in relation to 'environmental refugees' forced to flee areas because of drought or desertification (or future climate change),³ and humanitarian issues involving the use of force and the environmental impacts of war, which are considered in the second part of this chapter. In the 1980s, human rights issues related to environmental protection became the subject of increasing attention following a number of well-known cases, including the 1988 murder of the Brazilian union organiser Chico Mendes, restrictions on the provision of information to citizens of the Soviet Union following the accident at the Chernobyl nuclear power plant, and the limited availability of remedies for breaches of environmental standards and obligations under national legal systems. Against this background, the linkages between human rights and the environment are now widely recognised, as reflected in an increase in case law before human rights bodies, and the interplay between environmental and human rights norms has also been raised in the *Aerial Herbicide Spraying* case filed at the ICJ by Ecuador against Colombia. Of equal note has been the 1998 Aarhus Convention, which establishes formal participation and informational rights and affirms, in its Preamble, that 'every person has the right to live in an environment adequate to his or her health or well-being'.⁴

The development of international human rights law pre-dates international environmental law and provides a rich source of comparative experience. Since the 1960s, the two subjects have developed in parallel, and they now frequently intersect, for example in relation to issues of climate justice. The extent to which international environmental law should adopt an anthropocentric approach, based on the view that environmental protection is primarily justified as a means of protecting humans, rather than as an end in itself, was an important issue at UNCED. The Rio Declaration adopts an anthropocentric approach, with Principle 1 stating that: 'Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature.'⁵ Legal developments in other fora and contexts, however, reflect a greater environmental consciousness and suggest that the protection of the environment is often recognised on its own terms, and not simply a means of protecting humans.⁶

Council has passed resolutions focusing specifically on human rights and climate change: UN HRC Res. 7/23, UN Doc. A/HRC/RES/7/23 (28 March 2008); UN HRC Res. 10/4, UN Doc. A/HRC/10/29 (20 March 2009). See Marcon Limon, 'Human Rights and Climate Change', 33 *Harvard Environmental Law Review* 339 (2009); D. Anton and D. Shelton, *Environmental Protection and Human Rights* (2011); D. Shelton, 'Developing Substantive Environmental Rights', 1(1) *Journal of Human Rights and the Environment* 89 (2010); F. Francioni, 'International Human Rights in an Environmental Horizon', 21(1) *European Journal of International Law* 41 (2010).

³ The term 'displaced persons' is generally used in place of 'refugees', given the restrictive notion of a 'refugee' under the 1951 Refugee Convention: J. McAdam, 'Environmental Migration', in A. Betts (ed.), *Global Migration Governance* (2011), 157. On the integration of environmental considerations into the work of the UN High Commissioner for Refugees, see UNHCR, *Environmental Guidelines* (2006).

⁴ See also Art. 1; Chapter 15, pp. 652–5, above; and J. Ebbeson, 'The Notion of Public Participation in International Environmental Law', 8 *Yearbook of International Environmental Law* 51 (1997). Upon signature, the United Kingdom declared that this right was merely 'aspirational' in character.

⁵ Principle 1. Cf. Principle 1 of the 1972 Stockholm Declaration; see p. 778, below.

⁶ See, in particular, regulations concerning the protection of biodiversity (Chapter 10, pp. 453–7, above); and the inclusion of a head of environmental damage in recent civil liability conventions (Chapter 17, e.g. p. 768, above).

Development of international human rights law

The UN Charter marked the beginnings of modern international human rights law; in the same way, it established the international framework within which the international community would, some twenty-five years later, address many international environmental issues. The Charter reaffirmed the faith of the 'Peoples of the United Nations' in fundamental human rights and provided that one of the UN's purposes was to promote and encourage 'respect for human rights and for fundamental freedoms for all without distinction as to race, sex, language or religion'.⁷ The UN Charter does not identify the human rights and fundamental freedoms that would contribute to the economic and social advancement of all peoples; nor does it provide any support for the idea that a clean or healthy environment should or did form a part of those rights and freedoms.

The first international instrument to elaborate detailed human rights standards applicable globally was the Universal Declaration of Human Rights (UDHR), adopted by the UN General Assembly in 1948.⁸ The Declaration was subsequently supplemented in 1966 by two treaties open to all states: the International Covenant on Economic, Social and Cultural Rights (ICESCR)⁹ and the International Covenant on Civil and Political Rights (ICCPR).¹⁰ These instruments have since been supplemented by four regional human rights treaties:¹¹ the 1950 European Convention for the Protection of Human Rights and Fundamental Freedoms (ECHR);¹² the 1961 European Social Charter (ESC);¹³ the 1969 American Convention on Human Rights (ACHR);¹⁴ and the 1981 African Charter of Human and Peoples' Rights (1981 African Charter).¹⁵ Three of these instruments (the ICESCR, the African Charter and the ACHR) recognise a link between the environment and human rights. None of the three identifies environmental rights as being subject to specific rules of protection, although they do allow a conceptual framework and approach for introducing environmental concerns and for the subsequent introduction of express environmental language.

Environmental protection and human rights

In 1968, the UN General Assembly first recognised the relationship between the quality of the human environment and the enjoyment of basic rights.¹⁶ The 1972 Stockholm Declaration proclaimed that man's natural and man-made environment 'are essential to his well-being and to the enjoyment of basic human rights – even the right to life itself',¹⁷ and declared in Principle 1 that:

⁷ Preamble and Arts. 1(3) and 55.

⁸ UNGA Res. 217 (III) (1948).

⁹ Annex to UNGA Res. 2200 (XXI) (1966), 993 UNTS 3, in force 3 January 1976.

¹⁰ Annex to UNGA Res. 2200 (XXI) (1966), 999 UNTS 717, in force 23 March 1976.

¹¹ See also the Draft Charter on Human and Peoples' Rights in the Arab World, 1987.

¹² Rome, 4 November 1950, in force 3 September 1953, 213 UNTS 222. The ECHR has been supplemented by fifteen Protocols. Protocol 11, which entered into force in November 1998, replaced the European Commission and Court with a single Court: see Chapter 5, pp. 180–1, above.

¹³ Turin, 18 October 1961, in force 26 February 1965, ETS No. 35.

¹⁴ San José, 22 November 1969, in force 18 July 1978, 9 ILM 673 (1970). The ACHR is supplemented by the San Salvador Additional Protocol on Economic, Social and Cultural Rights, 14 November 1988, in force 16 November 1999, 28 ILM 161 (1989).

¹⁵ Banjul, 27 June 1981, in force 21 October 1986, 21 ILM 59 (1982).

¹⁶ UNGA Res. 2398 (XXII) (1968). See also the Proclamation of Tehran, UN Doc. A/CONF.32/41, para. 18, recognising the dangers posed by scientific discoveries and technological advances for the rights and freedoms of individuals.

¹⁷ Preambular para. 1.

Man has the fundamental right to freedom, equality and adequate conditions of life, in an environment of a quality that permits a life of dignity and well-being, and he bears a solemn responsibility to protect and improve the environment for present and future generations.

The international community has not, however, defined in practical terms the threshold below which the level of environmental quality must fall before a breach of a person's human rights will have occurred. Nevertheless, some non-binding and widely accepted declarations supporting the individual's right to a clean environment have been adopted. The 1982 World Charter for Nature was one of the first instruments to recognise the right of individuals to participate in decision-making and have access to means of redress when their environment has suffered damage or degradation. The 1989 Declaration of the Hague on the Environment recognised 'the fundamental duty to preserve the ecosystem' and 'the right to live in dignity in a viable global environment, and the consequent duty of the community of nations *vis-à-vis* present and future generations to do all that can be done to preserve the quality of the environment'.¹⁸ In 1990 the UN General Assembly declared that 'all individuals are entitled to live in an environment adequate for their health and well-being',¹⁹ and the UN Commission on Human Rights (now the Human Rights Council) affirmed the relationship between the preservation of the environment and the promotion of human rights.²⁰ At that time, the then Sub-Commission on Prevention of Discrimination and Protection of Minorities began to consider the relationship between human rights and the movement and dumping of toxic and dangerous products and wastes²¹ and between the environment and human rights in the context of chemical weapons.²² The Sub-Commission also received reports on 'Human Rights and the Environment', which analysed many of the key concepts and provided information on decisions of international bodies,²³ and the then UN Commission on Human Rights declared that the movement and dumping of toxic and dangerous products endangers 'the right to the highest standard of health, including its environmental aspects'.²⁴ The Commission's successor, the Human Rights Council, has continued to emphasise these linkages.²⁵ Efforts to develop language on

¹⁸ Declaration of the Hague on the Environment, 11 March 1989, 28 ILM 1308 (1989).

¹⁹ UNGA Res. 45/94 (1990). ²⁰ See e.g. Res. 1990/41 (1990).

²¹ Res. 1988/26 (1988); see also Res. 1989/12 (1989) on the movement and dumping of toxic and dangerous products and waste, declaring in draft terms that 'the movement and dumping of toxic and dangerous products endanger basic human rights such as the right to life, the right to live in a sound and healthy environment and consequently the right to health'. See also note 25 below.

²² Sub-Commission on Prevention of Discrimination and Protection of Minorities, Res. 1989/39, UN Doc. E/CN.4/1990/2, 1 September 1989. This Sub-Commission has ceased to exist. The new expert advisory committee is the Human Rights Advisory Committee, which has also considered this relationship: see e.g. Doc. A/HRC/AC/6/CRP.3, 22 December 2010, Arts. V and VI.

²³ See Final Report by Special Rapporteur, Ms Fatma Zohra Ksentini, UN Doc. E/CN.4/Sub.2/1994/9 (including a Draft Declaration on Principles of Human Rights and the Environment). The Sub-Commission has ceased to exist (see www2.ohchr.org/english/bodies/subcom), replaced by the Human Rights Advisory Committee.

²⁴ Res. 1990/43, UN Doc. E/CN.4/1990/94, 104 (1990); see also the reports by the Special Rapporteur, UN Doc. E/CN.4/2001/55 (19 January 2001).

²⁵ See Res. 5/1, UN Doc. A/HRC/RES/5/1 (2007), Appendix I, and Res. 9/1, UN Doc. A/HRC/RES/9/1 (2008), which, *inter alia*, extend the mandate of the Special Rapporteur on the adverse effects of the illicit movement and dumping of toxic and dangerous products and wastes on the enjoyment of human rights, and the reports by the Special Rapporteur, UN Doc. A/HRC/5/5, 5 May 2007; UN Doc. A/HRC/7/21, 18 February 2008; and UN Doc. A/HRC/12/26, 15 July 2009.

environmental rights further continues under the auspices of several international institutions, including the Council of Europe and the UN Economic Commission for Europe.²⁶ Other efforts include the IUCN's draft International Covenant on Environment and Development prepared by the IUCN's Commission on Environmental Law, the fourth edition of which was published in 2010.²⁷ The 2007 UN Declaration on Indigenous and Peoples' Rights emphasises the close relationship of indigenous peoples with their environment, recognising rights over traditional lands and resources.²⁸

Many states have adopted national measures linking the environment and individual rights.²⁹ The constitutions of more than 100 states expressly recognise the right to a clean environment,³⁰ varying in their approach: they provide for a state duty to protect and preserve the environment;³¹ or declare the duty to be the responsibility of the state and citizens;³² or declare that the duty is imposed only upon citizens;³³ or declare that the individual has a substantive right in relation to the environment;³⁴ or provide for an individual right together with the individual or collective duty of citizens to safeguard the environment;³⁵ or provide for a combination of various state and citizen duties together with an individual right.³⁶

What are the practical consequences of recognising the link between international human rights law and the protection of the environment? The question may be addressed in the context of the distinction that has been drawn in international human rights law between economic and social rights, and civil and political rights. The nature and extent of economic and social rights

²⁶ Recommendation of the Parliamentary Assembly of the Council of Europe on Environment and Human Rights, Eur. Parl. Ass., 24th Sess. Recommendation 1614 (2003); Recommendation of the Parliamentary Assembly of the Council of Europe on the Formulation of a European Charter and a European Convention on Environmental Protection, Eur. Parl. Ass., 42nd Sess. Recommendation 1130 (1990); and the Draft UNECE Charter on Environmental Rights and Obligations, UN Doc. ENWA/R.38, December 1990.

²⁷ IUCN, *Draft International Covenant on Environment and Development* (2010, 4th edn); the Preamble recognises that 'respect for human rights and fundamental freedoms, including non-discriminatory access to basic services, is essential to the achievement of sustainable development'; see also Art. 4. The draft provided that all persons have the fundamental right 'to live in an ecologically sound environment adequate for their development, health, well-being and dignity' (Art. 14(1)), and that states have a 'duty to protect the environment' (Preamble and Art. 13(2)); and see e.g. Arts. 6 and 59.

²⁸ Declaration on the Rights of Indigenous Peoples, adopted by UNGA Res. 61/295 on 13 September 2007, in particular Arts. 25–27, 29 and 32.

²⁹ Note in this regard that the Charter of Fundamental Rights of the European Union, OJ C83/02, 30 March 2010, 389, does not frame environmental concerns in terms of rights ('A high level of environmental protection and the improvement of the quality of the environment must be integrated into the policies of the Union and ensured in accordance with the principle of sustainable development': Art. 37). Art. 6 of the Treaty on European Union, OJ C83, 30 March 2010, 1, now states that this Charter has 'the same legal value' as the EU Treaties. See also Art. 111 of the Treaty establishing the East African Community ('a clean and healthy environment is a prerequisite for sustainable development').

³⁰ See Earthjustice Legal Defense Fund, *Environmental Rights Report 2008: Human Rights and the Environment* (2008), available at <http://earthjustice.org/features/human-rights-and-the-environment>, Appendix: Constitutional Provisions Relating to Environmental Rights; 'Human Rights and the Environment: The Legal Basis for a Human Right to the Environment', Report to the UN Sub-Commission on the Prevention of Discrimination and the Protection of Minorities, Sierra Club Legal Defense Fund, April 1992; and Earthjustice Legal Defense Fund, 'Human Rights and the Environment' (Issue Paper) (December 2001).

³¹ *Ibid.*, 21, including China, Equatorial Guinea, Germany, Greece, Honduras, Mexico, Mozambique, Namibia, the Netherlands, Nigeria, Panama, Paraguay, the Philippines, Romania, Taiwan, Thailand and the United Arab Emirates.

³² *Ibid.*, including Albania, Bahrain, Bulgaria, Ethiopia, Guatemala, Guyana, India, Iran, Papua New Guinea, Sri Lanka, Sweden and Tanzania.

³³ *Ibid.*, including Algeria, Bolivia, Haiti, the Russian Federation and Vanuatu.

³⁴ *Ibid.*, including Burkina Faso and Hungary.

³⁵ *Ibid.*, including South Korea, Poland, Portugal, Spain and the former Yugoslavia.

³⁶ *Ibid.*, including Brazil, Chile, Colombia, Ecuador, Nicaragua, Peru, Turkey and Vietnam.

determines the substantive rights to which individuals are entitled, including in particular the level below which environmental standards (for example, in relation to pollution) must not fall if they are to be lawful. Civil and political rights, which are also substantive in nature and sometimes referred to as 'due process' rights, determine procedural and institutional rights (such as the right to information or access to judicial or administrative remedies). International environmental law has progressed considerably in building upon existing civil and political rights and developing important new obligations, most notably in the 1998 Aarhus Convention which provides for rights of access to information, to participation in decision-making, and to access to justice.³⁷ While economic and social rights have traditionally been less well developed in practice, recent judicial decisions indicate that international courts and tribunals are increasingly willing to find violations of substantive environmental rights.

Economic and social rights

Although the existence of economic and social rights under international law has been less widely accepted by elements of the international community, it is these rights which promise to allow human rights bodies to consider whether substantive environmental standards and conditions are being maintained at satisfactory levels. Translating general economic and social rights into specific environmental standards is not an easy task, although it is one that some international bodies are willing to take on. Each of the major human rights instruments identified above recognises the existence of at least some such rights. In the context of environmental issues, those which appear to be most relevant include: the entitlement to the realisation of economic, social and cultural rights indispensable for dignity;³⁸ the right to a standard of living adequate for health and well-being;³⁹ the right to the highest attainable standard of health (including improvement of all aspects of environmental and industrial hygiene);⁴⁰ the right of all peoples to freely dispose of their natural wealth and resources;⁴¹ safe and healthy working conditions;⁴² the protection of children against social exploitation;⁴³ the right to enjoy the benefits of scientific progress and its applications;⁴⁴ and the right of peoples to self-determination and the pursuit of economic and social development.⁴⁵

Environmental degradation could be linked to the violation of these and other rights. Lack of access to drinking water which is free from toxic or other contaminants, pollution of the atmosphere by heavy metals and radioactive materials, the dumping of hazardous and toxic wastes in the vicinity of people's homes can all be viewed and treated as violations of fundamental economic and social rights. This is now reflected, for example, in General Comment No. 15 (Right to Water) of the UN Committee on Economic, Social and Cultural Rights, affirming that everyone is entitled to safe and acceptable water for personal and domestic use.⁴⁶ In the United States, the environmental degradation in areas predominantly populated by poor communities and ethnic minorities has come to be known as 'environmental

³⁷ See Chapter 15, pp. 652–5, above; and Chapter 5, p. 140, above.

³⁸ 1948 UDHR, Art. 22; 1969 ACHR, Art. 26; 1981 African Charter, Art. 22.

³⁹ 1948 UDHR, Art. 25; 1966 ICESCR, Art. 11(1).

⁴⁰ 1966 ICESCR, Art. 12(1) and (2)(b); 1961 ESC, Art. 11; 1981 African Charter, Art. 16(1); on the activities of the ESC Committee of Independent Experts, see pp. 786–7, below.

⁴¹ 1966 ICESCR, Art. 1(2); 1966 ICCPR, Art. 1(2); 1981 African Charter, Art. 21.

⁴² 1966 ICESCR, Art. 7(b); 1961 ESC, Art. 3. ⁴³ 1966 ICESCR, Art. 10(3); 1961 ESC, Art. 17.

⁴⁴ 1966 ICESCR, Art. 15(1)(b). ⁴⁵ 1981 African Charter, Art. 20(1). ⁴⁶ E/C.12/2002/11, 26 November 2002.

discrimination' or 'environmental racism', terms emphasising the linkage between environmental rights and human rights. This theme is also reflected in the emerging issue of 'climate justice'.⁴⁷

Nevertheless, only two regional human rights treaties expressly recognise environmental rights. Under the 1981 African Charter, 'all peoples shall have the right to a general satisfactory environment favourable to their development'.⁴⁸ The 1988 San Salvador Protocol to the 1969 ACHR provides in its Article 11 that:

1. Everyone shall have the right to live in a healthy environment and to have access to basic public services.
2. The state parties shall promote the protection, preservation and improvement of the environment.

The San Salvador Protocol distinguishes between the *right* of individuals to 'live in a healthy environment' and the *positive obligation* of states to protect, preserve and improve the environment. The failure of a state to carry out that obligation can therefore give rise to an enforceable right of action. The efforts by the Council of Europe in the 1970s to draft a Protocol on environmental rights failed due to a lack of political support by states,⁴⁹ and Article 37 of the EU Charter of Fundamental Rights falls well short of declaring the existence of a substantive right.⁵⁰

⁴⁷ 'Climate justice' is used in a variety of different ways in the literature and in state practice. For instance, a common notion is that centred on the idea of the historical responsibility of developed countries for greenhouse gas emissions necessitating that they 'pay' for the pollution they have caused. Other notions are based on ensuring per capita equity, i.e. so everyone is given an equal slice of the greenhouse gas emissions pie. Further emerging ideas of climate change justice seek to extend beyond a focus on equity to consider the development and environmental conditions necessary to address climate change vulnerability. See David Schlosberg, 'Climate Justice, Vulnerability, and Adaptation: A Capabilities Approach', Paper Prepared for the 'Environmental Governance' conference organised by the Centre for Deliberative Democracy and Global Governance, Australian National University, Canberra, Australia, July 2011 (copy on file with the authors); and David Schlosberg, 'Justice, Ecological Integrity, and Climate Change', in A. Thompson and J. Bendik-Keymer (eds.), *Ethical Adaptation to Climate Change: Human Virtues of the Future* (2012). See also S. M. Gardiner, 'Climate Justice', in J. Dryzek, R. B. Norgaard and D. Schlosberg, *The Oxford Handbook of Climate Change and Society* (2011), Chapter 21.

⁴⁸ 1981 African Charter, Art. 24.

⁴⁹ The draft Protocol stated:

Article 1

1. No one should be exposed to intolerable damage or threats to his health or to intolerable impairment of his well-being as a result of adverse changes in the natural conditions of life.
2. An impairment of well-being may, however, be deemed to be tolerable if it is necessary for the maintenance and development of the economic conditions of the community and if there is no alternative way of making it possible to avoid this impairment.

Article 2

1. If adverse changes in the natural conditions are likely to occur in his vital sphere as a result of the actions of other parties, any individual is entitled to demand that the competent agencies examine the situation in all cases where Art. 1 applies.
2. Any individual acting under paragraph 1 shall, within a reasonable time, receive detailed information stating what measures – if any – have been taken to prevent those adverse changes.

Reprinted in A. Rosas and J. Helgesen (eds.), *Human Rights in a Changing East–West Perspective* (1990).

⁵⁰ See note 29 above.

The relationship between environmental protection and economic and social rights is recognised in other treaties. The 1989 Convention on the Rights of the Child, for example, requires education for '[t]he development of respect for the natural environment'.⁵¹ The 1989 Convention Concerning Indigenous and Tribal Peoples in Independent Countries requires governments to protect the human rights and fundamental freedoms of indigenous and tribal peoples and to guarantee respect for their integrity,⁵² including special measures to be adopted to protect and preserve the environment of indigenous and tribal peoples.⁵³ It also states that the rights of these peoples to the natural resources of their lands must be specially safeguarded.⁵⁴

The practical application of economic and social rights requires international and national courts and tribunals to determine the circumstances in which environmental standards have fallen below acceptable international levels. These standards are being developed, particularly at the regional level. They establish minimum standards of water and air quality, which might provide a basis for arguing that standards have fallen below minimum acceptable levels and that an individual right of action to enforce these minimum standards might arise. However, in the absence of specific, binding international standards, it may be more difficult for such claims to succeed, unless the environmental conditions are so poor that blatant abuses will be considered to have occurred. An emerging practice on appropriate standards is reflected in recent international decisions, indicating a growing willingness to identify violations of 'environmental' rights.

The change that is occurring is particularly apparent in respect of the 1950 ECHR, which does not include express provisions on the environment. A 1976 decision of the European Commission on Human Rights illustrated the difficulty in making environmental claims. In *X and Y v. Federal Republic of Germany*, the applicants were members of an environmental organisation that owned 2.5 acres of land for nature conservation. They complained on environmental grounds about the use of adjacent marshlands for military purposes. The Commission rejected the application as incompatible *rationae materiae* with the ECHR on the ground that 'no right to nature preservation is as such included among the rights and freedoms guaranteed by the Convention and in particular by Articles 2, 3 or 5 as invoked by the applicant'.⁵⁵

An alternative approach has emerged, in the absence of rights being granted in relation to the environment, whereby victims bring claims on the basis that personal or property rights have been violated. A series of judgments by the European Court of Human Rights illustrates how such a claim might now be made, although it is apparent that each case must be taken on its own merits. In *Arrondelle v. United Kingdom*, Article 8 of the 1950 ECHR and Article 1 of the First Protocol to the ECHR provided the basis for a 'friendly settlement' between the parties in a complaint alleging nuisance due to the development of an airport and construction of a motorway adjacent to the applicant's home.⁵⁶

In *Powell and Rayner v. United Kingdom*, the applicants alleged that the United Kingdom had violated the 1950 ECHR by allowing the operation of Heathrow Airport, under whose flight path they lived, to generate excessive levels of aircraft noise. The relevant parts of the case were

⁵¹ 28 November 1989, in force 2 September 1990, 29 ILM 1340 (1990), Art. 29(e); see M. Fitzmaurice and A. Fijalkowski (eds.), *Right of the Child to Clean Environment* (2000).

⁵² Geneva, 27 June 1989, in force 5 September 1991, 28 ILM 1382 (1989), Arts. 2 and 3; see also the UN Declaration on the Rights of Indigenous Peoples, note 28 above.

⁵³ Arts. 4(1) and 7(4). ⁵⁴ Arts. 4(1) and 7(4).

⁵⁵ Application No. 7407/76, Decision of 13 May 1976 on the admissibility of the application, 15 DR 161.

⁵⁶ Application No. 7889/77, Report of 13 May 1983, 26 DR 5.

based on Article 8 of the ECHR, which provides that, *inter alia*, ‘everyone has the right to respect for his private . . . life [and] his home . . . and there shall be no interference by a public authority with the exercise of this right except such as is in accordance with the law and is necessary in a democratic society in the interests of the economic well-being of the country’.⁵⁷ The Court rejected the applicant’s argument, noting that its task was to strike ‘a fair balance . . . between the competing interests of the individual and the community as a whole’. In this case, that balance had not been upset: while the quality of life of the applicants had been adversely affected, the Court recognised that large international airports were necessary in the interests of a country’s economic well-being. Heathrow was a major artery for international trade and the United Kingdom government had taken significant measures to abate noise pollution, taking account of international standards, had provided some compensation to nearby residents, and taken other regulatory measures. The Court ruled that it could not ‘substitute for the assessment of the national authorities any other assessment of what might be the best policy in this difficult social and technical sphere. This is an area where the contracting states are to be recognised as enjoying a wide margin of appreciation.’⁵⁸ The judgment reflects a reluctance to allow environmental concerns of a private person to take precedence over the broader economic concerns of the wider community, particularly where, as in this case, the government was able to point to its compliance with international standards concerning noise from aircraft.

Since *Powell and Rayner*, however, the European Court of Human Rights has shown a greater openness to environmental claims, particularly in cases involving Article 8 claims to the effect that a correct balance has not been struck between individual and community interests. The leading, early decision was *Lopez Ostra v. Spain*.⁵⁹ Mrs Lopez Ostra lived twelve metres from a plant treating liquid and solid wastes, which had been built on municipal land with the support of a state subsidy and had operated without a relevant licence. The plant gave off fumes that caused a nuisance to Mrs Lopez Ostra and her daughter and caused them to temporarily leave their home. Having failed in proceedings in Spain, she brought proceedings before the European Court of Human Rights on the grounds that she was the victim of a violation of the right to respect for her home that made her private and family life impossible (Article 8), and the victim also of degrading treatment. The Court found that the situation which resulted was the result of the inaction of the state, having been prolonged by the municipality’s and the relevant authorities’ failure to act.⁶⁰ The Court said:

Naturally, severe environmental pollution may affect individuals’ well-being and prevent them from enjoying their homes in such a way as to affect their private and family life adversely, without, however, seriously endangering their health. Whether the question is analysed in terms of a positive duty on the State – to take reasonable and appropriate measures to secure the applicant’s rights . . . – . . . or in terms of an ‘interference by a public authority’ to be justified . . . the applicable principles are broadly similar. In both contexts regard must be had to the fair balance that has to be struck between the competing interests of the individual and of the community as a whole, and in any case the State enjoys a certain margin of appreciation.⁶¹

⁵⁷ *Powell and Rayner v. United Kingdom* (1990) 12 EHRR 355, Judgment of 21 February 1990, para. 37.

⁵⁸ *Ibid.*, para. 44. ⁵⁹ *Lopez Ostra v. Spain* (1995) 20 EHRR 277, Judgment of 9 December 1994.

⁶⁰ *Ibid.*, para. 40. ⁶¹ *Ibid.*, para. 51.

The Court found that the plant caused nuisance and serious health problems and that Spain had not succeeded in striking a fair balance between the interest of the town's economic well-being – that of having a waste-treatment plant – and the applicant's effective enjoyment of her right to respect for her home and her private and family life.⁶²

The judgment opened the door to further cases. In *Guerra and others v. Italy*, the applicants were citizens living near to a factory that produced fertilisers, released large quantities of inflammable gas and other toxic substances into the atmosphere, and (in 1976) had been the source of an explosion releasing arsenic trioxide and causing 150 people to be hospitalised with acute arsenic poisoning. The applicants wanted information on the activities of the plant, and this was not made available to them until after production of fertilisers had ceased. The Court ruled that the 'direct effect of the toxic emissions on the applicants' right to respect for their private and family life made Article 8 applicable', that Article 8 imposed 'positive obligations' on the state to ensure 'effective respect for private or family life', and that, by allowing the applicants to wait for essential information that would have enabled them to assess the risks they and their families might run if they continued to live near the factory, Italy had not fulfilled its obligations under Article 8.⁶³

In *Hatton and Others v. United Kingdom*, the European Court of Human Rights revisited the issues raised in *Powell and Rayner*, although this time in the context of noise levels at Heathrow Airport arising from night flights between 4 am and 7 am. The Court concluded that there had been a violation of Article 8 because, in the absence of any serious attempt to evaluate the extent or impact of the interferences with the applicants' sleep patterns, and generally in the absence of a prior specific and complete study with the aim of finding the least onerous solution as regards human rights, the government had not struck the right balance in weighing the interferences of the rights of the individuals against the unquantified economic interest of the country.⁶⁴ The judgment suggests the need to carry out a prior assessment of the human rights impact of economically beneficial measures, where environmental interests are concerned.⁶⁵

The case was subsequently appealed to the Grand Chamber, which overturned the Chamber's decision and held that the authorities had not overstepped their margin of appreciation and Article 8 had not been violated.⁶⁶ The Grand Chamber considered that the government had struck a fair balance, noting: that the policy on night flights was in accordance with domestic law; the difficulty in establishing the effects of the policy; the contribution of the night flights to the general economy; the existence of measures to mitigate effects of the noise in general;

⁶² *Ibid.*, paras. 51–8. The Court awarded damages of 4 million pesetas plus costs.

⁶³ *Guerra and Others v. Italy* (1999) 26 EHRR 357, Judgment of 19 February 1998, at paras. 57–8 and 60. The Court awarded 10 million lire to each applicant in damages. The Court found, however, that there was no violation of Art. 10.

⁶⁴ *Hatton and Others v. United Kingdom*, Judgment of 8 July 2003, ECHR Grand Chamber, (2003) 37 EHRR 28 (overturning Chamber judgment (2002) 34 EHRR 1), para. 106. See also the Separate Opinion of Judge Costa: '[H]aving regard to the Court's case law on the right to a healthy environment . . . maintaining night flights at that level meant that the applicants had to pay too high a price for an economic well-being, of which the real benefit, moreover, is not apparent from the facts of the case. Unless, of course, it is felt that the case law goes too far and overprotects a person's right to a sound environment. I do not think so. Since the beginning of the 1970s, the world has become increasingly aware of the importance of environmental issues and of their influence on people's lives. Our Court's case law has, moreover, not been alone in developing along those lines. For example, Article 37 of the Charter of Fundamental Rights of the European Union of 18 December 2000 is devoted to the protection of the environment. I would find it regrettable if the constructive efforts made by our Court were to suffer a setback.'

⁶⁵ On the need to conduct environmental impact assessments, see pp. 786, 788, below.

⁶⁶ *Hatton and Others v. United Kingdom*, Grand Chamber, Judgment of 8 July 2003, ECHR Grand Chamber, (2003) 37 EHRR 28, para. 129–30.

and the fact that the limited number of people affected could move away from the area without financial loss.⁶⁷ It emphasised that Article 8 allows for restrictions on economic grounds, but that in assessing the action of states within their margin of appreciation it 'would not be appropriate for the Court to adopt a special approach in this respect by reference to a special status of environmental human rights'.⁶⁸

The Court has also been willing to recognise the need for environmental protection measures even where they might limit the enjoyment of private property rights.⁶⁹ In *Fredin v. Sweden*, the Court recognised 'that in today's society the protection of the environment is an increasingly important consideration', and held that on the facts the interference with a private property right to achieve environmental objectives was not inappropriate or disproportionate in the context of Article 1 of the First Protocol to the ECHR.⁷⁰ In *Pine Valley Development Ltd and Others v. Ireland*, the Court recognised that an interference with the right to peaceful enjoyment of property, which was in conformity with planning legislation and was 'designed to protect the environment', was clearly a legitimate aim 'in accordance with the general interest' for the purposes of the second paragraph of Article 1 of the First Protocol to the ECHR.⁷¹ Moreover, the interference, in the form of a decision by the Irish Supreme Court, which was intended to prevent building in an area zoned for further agricultural development so as to preserve a green belt, had to be regarded as 'a proper way – if not the only way – of achieving that aim' and could not be considered as a disproportionate measure giving rise to a violation of Article 1 of the First Protocol.⁷² In *Hamer v. Belgium*, the Court ruled that national authorities that have put environmental protection measures in place have an obligation not to deprive them of useful effect. It emphasised that economic considerations and even certain fundamental rights must not have primacy over considerations of environmental protection, which in that case concerned the regulation of forests.⁷³ In the context of criminal law, the *Mangouras v. Spain* case – related to the criminal proceedings against the Master of the *Prestige* in the aftermath of the oil spill incident – reflected the Court's environmental concerns. The Court found that, when establishing bail, the 'disastrous environmental consequences' of the *Prestige* accident was one of the factors to be taken into account in the context of the seriousness of the offence.⁷⁴

⁶⁷ *Ibid.*, paras. 102–27.

⁶⁸ *Ibid.*, paras. 121–2. Of interest also is the Joint Dissenting Opinion of Judges Costa, Ress, Türmen, Zupanec and Steiner, who advance the argument that the Court protects a right to a healthy environment within Art. 8. This stands in contrast to the Court's assertion that, although the Convention may offer protection in specific cases where an individual is directly and seriously affected, '[t]here is no explicit right in the Convention to a clean and quiet environment' (para. 96 of the Judgment).

⁶⁹ Cf. the approach taken by various ICSID and NAFTA arbitral tribunals in relation to expropriation cases: Chapter 20, pp. 876–83, below.

⁷⁰ Judgment of 18 February 1991, ECHR Ser. A No. 192, 14, para. 48; see also *Oerlemans v. Netherlands*, Judgment of 27 November 1991, ECHR Ser. A No. 219.

⁷¹ (1991) 14 EHRR 319, Judgment of 29 November 1991 (or ECHR Ser. A No. 222), paras. 54 and 57. Cf. *Matos e Silva v. Portugal*, Judgment of 16 September 1996 (finding a violation of Art. 1 of Protocol 1 where there had been no formal or *de facto* expropriation, since the measures to create a nature reserve for animals had serious and harmful effects that hindered the applicants' enjoyment of their property right for more than thirteen years, creating uncertainty as to what would become of the possessions and as to the question of compensation, and upsetting the balance between the requirements of the general interest and the protection of property rights).

⁷² *Ibid.*, para. 59.

⁷³ *Hamer v. Belgium*, Judgment of 27 November 2007, ECHR Application No. 21861/03, para. 79; see also *Turgut and Others v. Turkey*, Judgment of 8 July 2008, ECHR Application No. 1411/03, para. 90.

⁷⁴ *Mangouras v. Spain*, ECHR Application No. 12050/04, Grand Chamber, Judgment of 28 September 2010, para. 92. The bail in question was set at €3 million.

The Inter-American Commission on Human Rights has shown itself equally willing to find a violation of 'environmental' rights, but pre-dating the European Court in its approach. In the *Yanomami* case, the Commission concluded that the ecological destruction of Yanomami lands in Brazil had caused violations of the right to life, health and food under the American Declaration of the Rights and Duties of Man.⁷⁵ In *San Mateo de Huanchor v. Peru*, relating to pollution from a field of toxic waste sludge, the Commission adopted precautionary measures requiring an environmental impact assessment for the removal of the sludge, its transfer in light of the outcome of the assessment, and the establishment of medical care for the local community.⁷⁶

In *Mayagna (Sumo) Awas Tingni Community v. Nicaragua*, the Inter-American Court of Human Rights found that the grant of a logging concession violated property rights (Article 21 of the ACHR) of an indigenous community, adopting an approach analogous to that taken by the European Court.⁷⁷ In *Saramaka People v. Suriname*, which also concerned the rights of indigenous peoples, the Court emphasised the importance of participation, consultation, environmental impact assessments, access to information and prior informed consent in the context of restrictions of their rights to property.⁷⁸

The Committee of Independent Experts established under the 1961 European Social Charter (ESC), which considers national reports under the Charter, has also recognised the relationship between the state of the environment and the safeguarding of rights guaranteed under the Charter. The Committee has taken into account national measures to prevent, limit or control pollution in considering compliance with the obligation to ensure the right to the highest attainable standard of health under Article 11 of the ESC.⁷⁹ Examples of Committee actions include:

- noting the intention of the French authorities to achieve a 50 per cent reduction in atmospheric sulphur dioxide emissions in the period 1980–90;⁸⁰
- noting measures taken by Denmark to reduce air pollution, including reductions of nitrogen oxide emissions by 50 per cent before 2005 and sulphur dioxide emissions by 40 per cent before 1995;⁸¹
- expressing the desire that national reports should contain information on measures taken to reduce atmospheric releases of sulphur dioxide and other acid gases;⁸²

⁷⁵ Case No. 7615 of 5 March 1985, Annual Report of the Inter-American Commission on Human Rights, OAS Doc. OEA/Ser.L/V/II.66, Doc. 10 rev.1, 24 (1985), cited in Earthjustice Legal Defense Fund, 'Human Rights and the Environment' (Issue Paper) (December 2001).

⁷⁶ Case 12.471, Admissibility Decision of 15 October 2004, para. 12; see further p. 788, below, for the requirement relating to environmental impact assessments and other procedural obligations.

⁷⁷ *Mayagna (Sumo) Awas Tingni Community v. Nicaragua*, Inter-American Court of Human Rights, Judgment of 31 August 2001, Series C No. 79 (2001).

⁷⁸ *Saramaka People v. Suriname*, Judgment of 28 November 2007, Series C No. 172, paras. 129, 133 and 134. See also the African Commission on Human and Peoples' Rights, *Centre for Minority Rights Development (Kenya) and Minority Rights Group International on behalf of Endorois Welfare Council v. Kenya*, Communication 276/2003, May 2009, paras. 226–8.

⁷⁹ 'Human Rights and the Environment: Progress Report', UN Doc. E/CN.4/Sub.2/1992, 2 July 1992, paras. 73 and 74. See also R. J. Dupuy (ed.), *The Right to Health as Human Right* (1979).

⁸⁰ 'Human Rights and the Environment: Progress Report', UN Doc. E/CN.4/Sub.2/1992, 2 July 1992, paras. 73 and 74, citing Council of Europe/ESC, Committee of Independent Experts – Conclusions IX-2 (1986), 71–2.

⁸¹ *Ibid.*, citing Conclusions XI-I (1989), 118.

⁸² *Ibid.*, citing Council of Europe/ESC, *Case Law on the European Social Charter*, Supp. (1986), 37.

- calling for broader measures to control environmental pollution;⁸³ and
- expressing the view that states should be considered as fulfilling their obligations under Article 11 of the ESC if they provide evidence of the existence of a medical and health system comprising 'general measures aimed in particular at the prevention of air and water pollution, protection from radioactive substances, noise abatement . . . [and] environmental hygiene'.⁸⁴

A similar approach has been taken by the Committee on the Elimination of Discrimination Against Women⁸⁵ and by the Committee on the Rights of the Child.⁸⁶

Civil and political rights

Civil and political rights are equally capable of creating practical and enforceable obligations in relation to environmental and related matters. Civil and political rights and obligations are established by several environmental treaties and other international instruments at the global and regional levels. Civil and political rights which are relevant to environmental protection include: the right to life;⁸⁷ the prohibition of cruel, inhuman or degrading treatment;⁸⁸ the right to equal protection against discrimination;⁸⁹ the right to an effective remedy by competent national tribunals for acts violating fundamental rights;⁹⁰ freedom of expression⁹¹ and the right to receive information;⁹² the right to a fair and public hearing by an independent and impartial tribunal in the determination of rights and obligations;⁹³ the right to protection against arbitrary interference with privacy and the home;⁹⁴ the prohibition of arbitrary deprivation of property;⁹⁵ the right to take part in the conduct of public affairs;⁹⁶

⁸³ 'Human Rights and the Environment: Progress Report', UN Doc. E/CN.4/Sub.2/1992, 2 July 1992, paras. 73 and 74, citing Council of Europe/ESC, *Case Law on the European Social Charter* (1982), 105.

⁸⁴ *Ibid.*, 104.

⁸⁵ See e.g. Concluding Observations on Romania, UN Doc. CEDAW/C/2000/II/Add.7, para. 38 (2000) ('[t]he Committee expresses its concern about the situation of the environment, including industrial accidents, and their impact on women's health').

⁸⁶ See e.g. Concluding Observations on South Africa, UN Doc. CRC/C/15/Add.122, para. 30 (2000) ('Le Comité fait part de son inquiétude devant l'aggravation de la dégradation écologique, en particulier en ce qui concerne la pollution atmosphérique. Le Comité recommande à l'Etat partie d'intensifier ses efforts pour favoriser la mise en oeuvre de programmes de développement durable afin de prévenir la dégradation écologique, en particulier la pollution atmosphérique.').

⁸⁷ 1966 ICCPR, Art. 6(1); 1950 ECHR, Art. 2(1); 1969 ACHR, Art. 4(1); 1981 African Charter, Art. 4.

⁸⁸ 1966 ICCPR, Art. 7; 1950 ECHR, Art. 3; 1969 ACHR, Art. 5(2); 1981 African Charter, Art. 5.

⁸⁹ 1948 UDHR, Art. 7; 1966 ICCPR, Art. 3; 1969 ACHR, Art. 24; 1981 African Charter, Art. 3(2); see H. Smets, 'Le Principe de Non Discrimination en Matière de Protection de l'Environnement', 2 *Revue Européenne de Droit de l'Environnement* 1 (2000).

⁹⁰ 1948 UDHR, Art. 8; 1950 ECHR, Art. 13; 1969 ACHR, Art. 25; 1981 African Charter, Arts. 7(1) and 26.

⁹¹ See e.g. *Bladet Tromsø and Stensaas v. Norway* (2000) 29 EHRR 125 (newspapers' freedom under Art. 10 of the ECHR to publish environmental information (regarding the consequences of seal-hunting) of local, national and international interest).

⁹² 1981 African Charter, Art. 9(1); see further Chapter 15 above, especially pp. 648 *et seq.* Note that, in *Guerra and Others v. Italy*, the European Court did not find a violation of Art. 10 of the ECHR: see note 63 above and the accompanying text.

⁹³ 1948 UDHR, Art. 10; 1966 ICCPR, Art. 14(1); 1950 ECHR, Art. 6(1); see further Chapter 6 above.

⁹⁴ 1948 UDHR, Art. 12; 1966 ICCPR, Art. 17; 1950 ECHR, Art. 8(1) (see *Powell and Rayner*, ECHR (1990) Ser. A No. 172); 1969 ACHR, Art. 11.

⁹⁵ 1948 UDHR, Art. 17; 1950 ECHR, First Protocol, Art. 1; 1969 ACHR, Art. 21; 1981 African Charter, Art. 14.

⁹⁶ 1966 ICCPR, Art. 25; 1969 ACHR, Art. 23; 1981 African Charter, Art. 13.

and the right of members of ethnic minorities to enjoy their own culture in community with other members of their group.⁹⁷

The case law of the European Court readily illustrates the breadth of issues that potentially fall under these provisions, invariably in relation to 'procedural rights'. The Court has identified rights to participation, information and access to justice under both Article 2 (right to life)⁹⁸ and Article 8 (right to privacy)⁹⁹ of the Convention.¹⁰⁰ The issue of environmental impact assessments (EIAs) has also featured. The Court has held, for example, that 'appropriate studies and investigations' must be carried out to assess harmful effects on the environment and infringement of individual rights, to enable decision-makers to strike the right balance between interests at stake.¹⁰¹ Additionally, in *Tătar v. Romania*, the Court invoked the precautionary principle to justify its finding that Article 8 of the ECHR had been violated.¹⁰²

The Inter-American Court of Human Rights has similarly developed the notion of procedural rights in its case law. In *San Mateo de Huanchor v. Peru* it required an environmental impact assessment to be carried out.¹⁰³ The Inter-American Court has also considered environmental information to be within the scope of Article 13 of the ACHR.¹⁰⁴ In relation to indigenous rights, in *Samaraka v. Suriname*, the Court upheld rights of participation, consultation and information, as well as an obligation to carry out an environmental impact assessment.¹⁰⁵

The 1989 Indigenous Peoples Convention illustrates the relationship between civil and political rights and environmental issues in that context,¹⁰⁶ and is in issue in the *Aerial Herbicide Spraying* case pending between Ecuador and Colombia at the ICJ. Among the numerous obligations established or recognised by the Convention for indigenous and tribal peoples are environmental and other impact assessment and the right of such peoples to determine their own economic, social and cultural development, the right to be consulted and to participate in decision-making and to take legal proceedings to safeguard against the abuse of their rights.¹⁰⁷ The 1989 Indigenous Peoples Convention illustrates the limitations of the traditional approach of other instruments such as the European Convention on Human

⁹⁷ 1966 ICCPR, Art. 27. See *Bernard Ominayak and the Lubicon Band v. Canada*, Communication No. 167/1984, Decisions of the Human Rights Committee, UN Doc. CCPR/C/38/D/167/1984 (1990); Communication No. 511/1992, *Ilmari Lansman et al. v. Finland*, Human Rights Committee, Final Decisions, 74, CCPR/C/57/1 (1996).

⁹⁸ See e.g. *Oneryıldız v. Turkey* (2005) 41 EHRR 325, Grand Chamber, Judgment of 30 November 2004, para. 94 (in the context of a gas explosion at a waste tip) and *Budayeva v. Russia* [2008] ECHR 15339/02, Judgment of 20 March 2008, para. 132 (in the context of mudslides).

⁹⁹ See e.g. *Taşkın and Others v. Turkey* (2006) 42 EHRR 50, Judgment of 10 November 2004, paras. 118–19; *Giacomelli v. Italy* (2006) 45 EHRR 871, Judgment of 2 November 2006, paras. 83–4; and *Tătar v. Romania*, ECHR 67021/01, Judgment of 27 January 2009, paras. 98 and 101.

¹⁰⁰ The Court also makes express reference to the Aarhus Convention, for instance in *Tătar v. Romania*, ECHR 67021/01, Judgment of 27 January 2009, para. 118.

¹⁰¹ See *Taşkın and Others v. Turkey*, para. 118; *Öçkan and Others v. Turkey* [2006] ECHR 46771/99, Judgment of 28 March 2006, para. 43; and *Brândușe v. Romania* [2009] ECHR 6586/03, Judgment of 7 April 2009, para. 63.

¹⁰² Judgment of 27 January 2009, para. 109.

¹⁰³ See note 76 above.

¹⁰⁴ *Claude-Reyes et al. v. Chile*, 2006 Inter-American Court of Human Rights (Ser. C) No. 151, Judgment of 19 September 2006, para. 76–7, 99 and 103.

¹⁰⁵ See note 78 above.

¹⁰⁶ See generally W. Shutkin, 'International Human Rights Law and the Earth: The Protection of Indigenous Peoples and the Environment', 31 *Virginia Journal of International Law* 479 (1991); A. Meyer, 'International Environmental Law and Human Rights: Towards the Explicit Recognition of Traditional Knowledge', 10 *Review of European Community and International Environmental Law* 37 (2001).

¹⁰⁷ Arts. 6, 7 and 11.

Rights. In *X v. Federal Republic of Germany*, the European Commission on Human Rights rejected as ‘manifestly ill-founded’ a claim by an environmental association that Article 11 of the ECHR entitled it to have *locus standi* in administrative court actions to challenge a decision to construct a nuclear power plant; the Commission held that the ECHR does not require that associations be granted the right to institute legal proceedings pursuant to their statutory aims without having to show a legal interest of their own in the matter.¹⁰⁸ Many of the principles set out in the 1992 Rio Declaration and the 1972 Stockholm Declaration, which reflect state practice at the global and regional levels, will be familiar to human rights lawyers who have worked on civil and political rights. One of the central themes at UNCED was the recognition that individuals will need to participate fully to ensure the implementation of UNCED and Agenda 21. In supporting the participation of all concerned citizens at the relevant level, the Rio Declaration calls for: the right of access to environmental information;¹⁰⁹ the right to participate in decisions which affect their environment;¹¹⁰ the right of effective access to judicial and administrative proceedings, including redress and remedy;¹¹¹ a right to development to meet environmental needs;¹¹² and the rights flowing from the recognition of the need to ensure the full participation of women, youth and indigenous peoples and other communities.¹¹³ The case law of the European Court and the adoption of instruments such as the 1998 Aarhus Convention indicate that this approach is likely to become increasingly important in the coming years, particularly as efforts to focus on the enforcement of environmental standards are stepped up.¹¹⁴

WAR AND ARMED CONFLICT¹¹⁵

Introduction

Military activities may have significant impacts upon the environment. Preparations, including the testing, development, production and maintenance of conventional, chemical, biological

¹⁰⁸ Application No. 9234/81, Decisions of 14 July 1981, 26 DR 270. See also *Balmer-Schafroth v. Switzerland* (1998) 25 EHRR 598 and *Caron and Others v. France*, Decision of 29 June 2010 [2010] ECHR 48629/08 (where the Court emphasised that the Convention does not provide for an *actio popularis*).

¹⁰⁹ Principle 10; Chapter 15, p. 657, above. ¹¹⁰ Principle 10, see generally Chapter 15, pp. 648 *et seq.*, above.

¹¹¹ *Ibid.*, Chapter 5, pp. 140 *et seq.*, above. ¹¹² Principle 3.

¹¹³ Principles 20, 21 and 22; on participation of women, under UNGA Res. 47/191 (1992), representation on the High-Level Advisory Board requires that ‘due account should . . . be given to gender balance’ (para. 29).

¹¹⁴ On the 1998 Aarhus Convention, see Chapter 5, pp. 140–1, above (access to justice), and Chapter 15, pp. 652–5, above (environmental information and participation in decision-making).

¹¹⁵ J. Goldblat, *The Prohibition of Environmental Warfare* (1975); L. Juda, ‘Negotiating a Treaty on Environmental Modification Warfare: The Convention on Environmental Warfare and Its Impact on the Arms Control Negotiations’, 32 *International Organization* 975 (1978); D. Momtaz, ‘Les Règles Relatives à la Protection de l’Environnement au Cours des Conflits Armés à l’Epreuve du Conflict entre l’Irak et le Koweït’, 37 *Annuaire Français de Droit International* 203 (1991); G. Plant (ed.), *Environmental Protection and the Law of War* (1992); R. Tarasofsky, ‘Legal Protection of the Environment During International Armed Conflict’, 24 *Netherlands Yearbook of International Law* 17 (1993); R. Grunawalt, J. King and R. McClain (eds.), *Protection of the Environment During Armed Conflict* (1996); D. Momtaz, ‘The Use of Nuclear Weapons and the Protection of the Environment: The Contribution of the ICJ’, in P. Sands and L. Boisson de Chazournes, *International Law, the ICJ and Nuclear Weapons* (1999), 354; Symposium on Armed Conflict, Security and Environment, 9 *Review of European Community and International Environmental Law* 1 (2000); A. Bunker, ‘Protection of the Environment During Armed Conflict: One Gulf, Two Wars’, 13 *Review of European Community and International Environmental Law* 201 (2004); E. Koppe, *The Use of Nuclear Weapons and the Protection of the Environment During International Armed Conflict* (2008);

and nuclear weapons, have generated large quantities of hazardous, toxic and radioactive substances. These, together with their wastes, have contributed on a large scale to the depletion of natural resources and degradation of the environment.¹¹⁶ The environmental impacts of military activities are well documented, and conflicts in Vietnam, Afghanistan, the Persian Gulf and the Balkans have refocused attention on the need to limit these adverse consequences. In another sense, the protection of the environment has even been used as a justification for the use of force: in August 2000, the UN Interim Administration Mission in Kosovo (UNMIK) (assisted by the NATO-led Kosovo Force (KFOR)) took over control of the Zvečan smelter plant in Kosovo 'until air pollution control mechanisms are installed and the affected population tested'.¹¹⁷

International law recognises and aims to address the link between military activities and environmental protection. Treaties to protect humans and their property from the effects of military activities also aim to protect the environment, albeit indirectly. More recently, treaties have addressed environmental protection as an end in itself. Three separate, but related, questions are worth considering. First, do the rules of international environmental law operate during times of war and armed conflict? Second, what indirect protection for the environment is afforded by the rules of international law governing war and armed conflict? And, third, to what extent does the international law of war and armed conflict address environmental protection as an end in itself?

International environmental law during war and armed conflict

The first issue that arises concerns the applicability of the various rules of international environmental law to military activities, including preparatory activities. The general rules of public international law provide little guidance as to the legal validity and consequences of those treaties following the outbreak of military hostilities.¹¹⁸ The validity and effect of a particular treaty during war and/or armed conflict will often turn on the terms of the treaty itself. The general instruments of international environmental law and policy also fail to provide any guidance on this question. The 1972 Stockholm Declaration focuses exclusively on nuclear weapons. Principle 26 provides that:

C. Voigt, 'Sustainable Security', 19 *Yearbook of International Environmental Law* 163 (2008); I. Peterson, 'The Natural Environment in Times of Armed Conflict: A Concern for International War Crimes Law?', 22 *Leiden Journal of International Law* 325 (2009); M. Bothe, C. Bruch, J. Diamond and D. Jensen, 'International Law Protecting the Environment During Armed Conflict: Gaps and Opportunities', 92 *International Review of the Red Cross* 569 (2010); J. Wyatt, 'Law-Making at the Intersection of International Environmental, Humanitarian and Criminal Law: The Issue of Damage to the Environment in International Armed Conflict', 92 *International Review of the Red Cross* 593 (2010); K. Hulme, 'Environmental Protection in Armed Conflict', in M. Fitzmaurice, D. M. Ong and P. Merkouris (eds.), *Research Handbook on International Environmental Law* (2010), Chapter 27.

¹¹⁶ A. H. Westing, *Warfare in a Fragile World: Military Impact on the Human Environment* (1980); J. P. Robinson, *The Effects of Weapons on Ecosystems* (1991). See also A. Westing (ed.), *Environmental Warfare: A Technical, Legal and Policy Appraisal* (1984); A. Westing (ed.), *Cultural Norms, War and the Environment* (1988); M. Richardson, *Effects of War on the Environment: Croatia* (1995); K. Hulme, *War Torn Environment: Interpreting the Legal Threshold* (2004).

¹¹⁷ UNMIK Press Release, 14 August 2000, UNMIK/PR/312 ('[r]ecent tests indicate that current levels of lead exposure are approaching the most extreme in decades. Levels of atmospheric lead measured last month were around 200 times the World Health Organization's acceptable standards'). See also NATO/KFOR Press Release, 14 August 2000.

¹¹⁸ E.g. Art. 73 of the 1969 Vienna Convention: '[T]he present Convention shall not prejudice any question that may arise in regard to a treaty from . . . the outbreak of hostilities between States.'

Man and his environment must be spared the effects of nuclear weapons and all other means of mass destruction. States must strive to reach prompt agreement, in the relevant international organs, on the elimination and complete destruction of such weapons.

The 1982 World Charter for Nature adopted a more general approach, stating the 'general principle' that '[n]ature shall be secured against degradation caused by warfare or other hostile activities', and declaring that 'military activities damaging to nature shall be avoided'.¹¹⁹ The wording of the 1992 Rio Declaration gets closer to the point, but is still ambiguous, stating in Principle 24 that:

Warfare is inherently destructive of sustainable development. States shall therefore respect international law providing protection for the environment in time of armed conflict and co-operate in its further development, as necessary.

Although not legally binding, the wording of Principle 24 could either be interpreted as requiring states to respect those rules of international law which provide protection for the environment in times of armed conflict, or as requiring states to respect international law by protecting the environment in times of armed conflict.

Most environmental treaties are silent on the issue of their applicability following the outbreak of military hostilities. Some, including those on civil liability for damage, include provisions excluding their applicability when damage occurs as a result of war and armed conflict.¹²⁰ Others include provisions allowing for total or partial suspension at the instigation of one of the parties,¹²¹ while yet others require the consequences of hostilities to influence decision-making in the application of the treaty by its institutions.¹²² Some treaties do not apply to military activities even during peacetime operations,¹²³ while others are specifically applicable to certain activities that may be associated with hostilities.¹²⁴ Finally, the terms and overall purpose of some treaties make it abundantly clear that they are designed to ensure

¹¹⁹ Paras. 5 and 20.

¹²⁰ 1960 Paris Convention, Art. 9; 1963 Vienna Convention, Art. IV(3)(a); 1992 CLC, Art. III(2)(a); 1992 Oil Pollution Fund Convention, Art. 4(2)(a) (no liability attached to the Fund for damage from oil from warships used on non-commercial service); 1977 Civil Liability Convention, Art. 3(3); 1988 CARAMRA, Art. 8(4)(b) (if no reasonable precautionary measures could have been taken); 1999 Basel Liability Protocol, Art. 4(5)(a); 2003 Liability Protocol to the Industrial Accidents and Watercourses Conventions, Art. 4(2)(a); 2010 Nagoya-Kuala Lumpur Supplementary Liability Protocol to the Biosafety Protocol, Art. 6(1).

¹²¹ 1954 Oil Pollution Convention, Art. XIX(1), allowing parties to suspend operation of whole or part of the Convention in case of war or other hostilities if they consider themselves affected as a belligerent or as a neutral, upon notification to the Convention's Bureau.

¹²² 1952 North Pacific Fisheries Convention, which provides that Commission decisions should make allowance for, *inter alia*, wars which may introduce temporary declines in fish stocks (Art. IV(2)).

¹²³ 1996 London Protocol, Art. 10(4) (non-applicability of the Convention to vessels and aircraft entitled to sovereign immunity under international law).

¹²⁴ 1976 Barcelona Protocol, which generally prohibits the dumping of materials produced for biological and chemical warfare (Annex 1, Section A, para. 9); and 1986 Noumea Protocol, which prohibits special dumping permits from being granted in respect of materials produced for biological and chemical warfare (Art. 10(1) and (2) and Annex I, Section A, para. 6).

environmental protection at all times.¹²⁵ The 1997 Watercourses Convention adopts a different approach, making a *renvoi* to international humanitarian law: its Article 29 provides that: 'International watercourses and related installations, facilities and other works shall enjoy the protection accorded by the principles and rules of international law applicable in international and non-international armed conflict and shall not be used in violation of those principles and rules.'

The relevance of customary and conventional rules of international environmental law during armed conflict was addressed in the proceedings relating to the ICJ's Advisory Opinion on *The Legality of the Threat or Use of Nuclear Weapons*. A number of non-nuclear-weapons states argued that multilateral environmental agreements and the rule reflected in Principle 21 of the Stockholm Declaration and Principle 2 of the Rio Declaration applied in times of armed conflict and governed the use of nuclear weapons.¹²⁶ Without addressing the general question of the applicability of multilateral environmental agreements during conflict, some nuclear weapons states argued that such agreements (as well as Principle 21/Principle 2) could not be construed as prohibiting the threat or use of nuclear weapons because they did not address nuclear weapons *per se* and could not be construed as containing an implied prohibition on their use.¹²⁷ With regard to treaties, the ICJ side-stepped the differences of view, stating that the issue was not whether they 'are or are not applicable during armed conflict, but rather whether the obligations stemming from these treaties were intended to be obligations of total restraint during military conflict', and concluding that the treaties in question could not have been 'intended to deprive a State of the exercise of its right of self-defence under international law because of its obligations to protect the environment'.¹²⁸ With regard to the customary norm relating to the protection of the environment, the ICJ indicated that the environmental obligations it referred to in the second New Zealand *Nuclear Tests* case 'also appl[y] to the actual use of nuclear weapons in armed conflict'.¹²⁹ In this way, the ICJ concluded that, although 'existing international law relating to the protection and safeguarding of the environment does not specifically prohibit the use of nuclear weapons, it indicates important environmental factors that are properly to be taken into account in the context of the implementation of the principles and rules of the law applicable in armed conflict'.¹³⁰

International law of war and armed conflict: general rules of environmental protection

The international law of war and armed conflict limits the methods and means of warfare available to states. These rules of treaty and customary law were developed to protect humans

¹²⁵ 1959 Antarctic Treaty, Art. I(1); 1988 CRAMRA, Art. 2.

¹²⁶ See 5 *Yearbook of International Environmental Law* 540–2 (1995) (Solomon Islands, Mexico, North Korea, Egypt, Iran and Qatar).

¹²⁷ *Ibid.* (United Kingdom, United States and France).

¹²⁸ (1996) ICJ Reports 242, para. 30. It is to be noted that the Court, perhaps deliberately, conflates the distinct concepts of the *jus in bello* and the *jus ad bellum*.

¹²⁹ *Ibid.*, 243, para. 32.

¹³⁰ *Ibid.*, para. 33. See also para. 30 ('States must take environmental considerations into account when assessing what is necessary and proportionate in the pursuit of legitimate military objectives. Respect for the environment is one of the elements that go to assessing whether an action is in conformity with the principles of necessity and proportionality.').

and their property, and may only be indirectly protective of an environment that is not intended to be the direct beneficiary of these acts. The 'Martens Clause' provides that, until the adoption of specific regulations, inhabitants and belligerents are 'under the protection and the rule of the principles of the law of nations as they result from the usages established among civilised peoples, from the laws of humanity, and the dictates of public conscience'.¹³¹ In modern international law, there is no reason why these should not encompass environmental protection.

It is now a well-accepted general rule of international law that the methods and means of warfare are not unlimited. Methods and means are limited to activities necessary to achieve military objectives, which prevent unnecessary suffering and superfluous injury, which are proportionate and which respect the rules of international law on neutrality. As early as 1899, states accepted that the 'right of the belligerent to adopt means of injuring the enemy is not unlimited'.¹³² The 1977 Additional Protocol I to the 1949 Geneva Conventions provides that: 'In any armed conflict, the right of the parties to the conflict to choose methods or means of warfare is not unlimited.'¹³³ As a general rule, the destruction of property is prohibited unless it is rendered absolutely necessary by military operations,¹³⁴ as is the use of mines causing long-lasting threats.¹³⁵

These general obligations limiting the methods and means of warfare have been supplemented by specific treaty obligations prohibiting certain forms of weaponry and warfare that are particularly harmful to the environment. Although these rules are invariably designed to protect people, rather than the environment, their application could also provide protection to the environment. Under the 1977 Additional Protocol I, parties must assess new weapons and means or methods of warfare to determine whether, in their employment, they would be prohibited by the Protocol or by any other applicable rule of international law.¹³⁶ Other treaties prohibit the use of conventional weapons causing excessive injuries or indiscriminate effects,¹³⁷ including incendiary weapons,¹³⁸ chemical and biological weapons,¹³⁹ and nuclear weapons.¹⁴⁰ Cultural property is also subject to a regime of special protection.¹⁴¹ The limited

¹³¹ 1907 Hague Convention IV Respecting the Laws and Customs of War on Land, 3 Martens (3rd) 461, Preamble. The 'Martens Clause' may be helpful in extending customary international law obligations to environmental protection objectives, particularly in the context of current efforts to establish the environment as a civilian objective.

¹³² 1899 Hague Regulations to the International Convention with Respect to the Laws and Customs of War by Land (Hague II), 26 Martens (2nd) 949; and 1907 Hague Convention IV Respecting the Laws and Customs of War on Land, 3 Martens (3rd) 461.

¹³³ Protocol I (Additional to the 1949 Geneva Conventions), Geneva, 8 June 1977, in force 7 December 1978, 16 ILM 1391 (1977).

¹³⁴ 1899 Hague Regulations to the International Convention with Respect to the Laws and Customs of War by Land (Hague II), 26 Martens (2nd) 949, Arts. 23(g) and 55; 1949 Geneva Convention IV, Art. 53.

¹³⁵ 1907 Hague Convention VIII on the Laying of Automatic Contact Mines; 19 ILM 1529 (1980); UNGA Res. 37/215 (1982).

¹³⁶ Art. 36.

¹³⁷ 1980 Inhumane Weapons Convention; the Preamble identifies one of the aims as environmental protection.

¹³⁸ See Protocol III (Incendiary Weapons) to the 1980 Inhumane Weapons Convention, which prohibits making forest or other plant cover the object of attack unless used to cover, conceal or camouflage military objectives: Art. 2(4).

¹³⁹ 1925 Geneva Protocol; 1972 Biological and Toxic Weapons Convention. See also the Convention on the Prohibition of the Development, Production and Stockpiling and Use of Chemical Weapons and on Their Destruction, Paris, 13 January 1993, in force 29 April 1997, GAOR Supp. 47th Sess., Supp. No. 27 (A/47/27), Appendix I.

¹⁴⁰ Chapter 17, pp. 543–6, above.

¹⁴¹ Hague Convention for the Protection of Cultural Property in the Event of Armed Conflict, 14 May 1954, 249 UNTS 215.

role which such instruments or equivalent rules of customary international law might be able to play was illustrated by the graphic images of the bombardment of Dubrovnik in 1992, which were broadcast around the world.¹⁴²

More specific to environmental protection is the prohibition of attacks on works and installations containing dangerous forces, even when they are military objects, if such attacks might cause the release of dangerous forces and consequent severe losses among the civilian population.¹⁴³ Dams, dykes and nuclear power plants are specifically identified, although the effectiveness of this provision is limited by the exceptions provided if these types of works and installations are used in regular, significant and direct support of military operations, and if such an attack is the only feasible way to terminate such support.¹⁴⁴ Attacks against such works or installations launched in the knowledge that they will cause excessive loss of life, injury to civilians or damage to civilian objects are regarded as war crimes.¹⁴⁵ The IAEA has called for a prohibition of attacks on nuclear facilities, since they 'could result in radioactive releases with grave consequences',¹⁴⁶ and the International Law Association has declared that international law prohibits the destruction of water installations which 'may involve . . . substantial damage to the basic ecological balance'.¹⁴⁷ The increased importance attached by the international community to the protection of the environment in times of armed conflict has also been reflected in the work of the International Law Commission. The draft Code of Crimes Against the Peace and Security of Mankind, adopted on second reading in 1996, defined an 'exceptionally serious war crime' as, *inter alia*, 'employing methods or means of warfare which are intended or may be expected to cause widespread, long-term and severe damage to the natural environment'.¹⁴⁸ Any lingering doubts about the status of certain acts against the environment were laid to rest by the Statute of the International Criminal Court, which expressly characterises as a war crime an attack which is launched 'in the knowledge that [it] will cause . . . widespread, long-term and severe damage to the natural environment which would be clearly excessive in relation to the concrete and direct overall military advantage anticipated'.¹⁴⁹

International law of war and armed conflict: special rules of environmental protection

The first treaty to establish rules specifically protecting the environment from the consequences of military activities was the 1977 Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques (1977 ENMOD Convention). It prohibits parties from

¹⁴² The Old City of Dubrovnik is listed under the 1972 World Heritage Convention as a World Heritage Site.

¹⁴³ 1977 Additional Protocol I, Art. 56(1); 1977 Additional Protocol II, Art. 15.

¹⁴⁴ 1977 Additional Protocol I, Art. 56(2).

¹⁴⁵ 1977 Additional Protocol I, Art. 85(3) and (5); 1998 Statute of the International Criminal Court, Art. 8(2).

¹⁴⁶ See resolutions of the General Conference of the IAEA, GC(XXVII)/Res. 407 (1983), GC(XXVIII)/Res. 425 (1984), GC(XXIX)/Res. 444 (1985), GC(XXXI)/Res. 475 (1987) and GC(XXXIV)/Res. 533 (1990).

¹⁴⁷ 1976 ILA Madrid Resolution on the Protection of Water Resources and Water Installations in Times of Armed Conflict, resolution of 4 September 1976, Report of the Fifty-Seventh Conference of the International Law Association (1976), 234.

¹⁴⁸ Report of the ILC on the Work of Its Forty-Eighth Session, 6 May to 26 July 1996, 51 GAOR Supp. No. 10 (A/51/10), Chapter IV.D.1, *Yearbook of the International Law Commission* (1996-II), Part 2, 17, Art. 22(2)(d). See also Art. 26 of the draft Code: an individual who 'wilfully causes or orders the causing of widespread long-term and severe damage to the natural environment' is liable to be convicted of a crime against the peace and security of mankind.

¹⁴⁹ Art. 8(2)(b)(iv).

engaging in 'military or any other hostile use of environmental modification techniques having widespread, long-lasting or severe effects as the means of destruction, damage or injury' to any other party.¹⁵⁰ The Convention defines 'environmental modification techniques' as 'any technique for changing – through the deliberate manipulation of natural processes – the dynamics, composition or structure of the Earth, including its biota, lithosphere, hydrosphere and atmosphere, or of outer space'.¹⁵¹ No definitions are provided of the terms 'widespread', 'long-lasting' and 'severe', although the Conference of the Committee on Disarmament, under whose auspices the Convention was negotiated, did attach 'Understandings' to the text of the Convention which were submitted to the General Assembly.¹⁵² The terms of Article II are sufficiently opaque to leave open the question of whether the act must be deliberately intended to manipulate natural processes, or whether it is sufficient to show that natural processes have been manipulated as the result of an act which was intended to manipulate non-natural processes, as may have been the case with the destruction by Iraq of Kuwaiti oil fields. The former, and far narrower, approach would undoubtedly limit the scope of the Convention's application and its effectiveness.¹⁵³

Several months after the ENMOD Convention was concluded, the 1977 Additional Protocol I to the 1949 Geneva Conventions was adopted. The 1977 Additional Protocol I contains two explicit obligations designed to protect the environment which, given the large number of parties and views expressed by states, may now reflect a rule of customary international law.¹⁵⁴ Under Article 35, it is 'prohibited to employ methods and means of warfare which are intended, or may be expected, to cause widespread, long-term and severe damage to the natural environment'.¹⁵⁵ Article 55, entitled 'Protection of the Natural Environment', provides that:

Care shall be taken in warfare to protect the natural environment against widespread, long-term and severe damage. This protection includes a prohibition of the use of methods or means of warfare that are intended or may be expected to cause such damage to the natural environment and thereby to prejudice the health or survival of the population.¹⁵⁶

¹⁵⁰ New York, 10 December 1976, in force 5 October 1978, 1108 UNTS 151. The Convention is not intended to hinder environmental modification techniques for peaceful purposes and is stated to be 'without prejudice to the generally recognised principles and applicable rules of international law concerning such use': Art. III(1).

¹⁵¹ Art. II.

¹⁵² The Understanding on Art. I provides that the terms should be interpreted in the following way:

1. 'widespread': encompassing an area on the scale of several hundred square kilometres;
2. 'long-lasting': lasting for a period of months, or approximately a season;
3. 'severe': involving serious or significant disruption or harm to human life, natural and economic resources or other assets.

See Understanding Relating to Article I of ENMOD, 31 GAOR Supp. No. 27 (A/31/27), Annex I.

¹⁵³ In the ICJ proceedings on the Advisory Opinion on nuclear weapons, some states argued that its provisions reflected customary law, whereas some nuclear weapon states argued that it would not be applicable to most cases in which nuclear weapons might be used because the effect on the environment would be a side effect and not a result of deliberate manipulation: 6 *Yearbook of International Environmental Law* 540 (1995).

¹⁵⁴ Although the United States is not a party to the Protocol, it has expressed support for the protection of the environment in similar terms. The International Committee for the Red Cross, in its study on customary international humanitarian law, identifies customary rules with a similar content to Arts. 35(3) and 55(1) of the Protocol. See ICRC, 'Study on Customary International Humanitarian Law', 87(857) *International Review of the Red Cross* (2005), Annex, Rules 43–45 and 76(e); J.-M. Henckaerts and L. Doswald-Beck, *Customary International Humanitarian Law* (2006) (see www.icrc.org/eng/resources/documents/publication/pcustom.htm).

¹⁵⁵ Art. 35(3). ¹⁵⁶ Art. 55(1).

The Protocol also prohibits attacks against the natural environment by way of reprisals.¹⁵⁷ In its Advisory Opinion on nuclear weapons, the ICJ noted that these provisions of Additional Protocol I provide additional protection for the environment, and impose ‘powerful constraints for all the States having subscribed to these provisions’.¹⁵⁸ The implication that the ‘powerful constraints’ of the Protocol did not – at least in 1996 – reflect customary law, may no longer hold true with the adoption of the 1998 Statute of the International Criminal Court and France’s accession, on 11 April 2001, to the Protocol.¹⁵⁹

Iraq’s invasion of Kuwait in August 1990 led the Security Council to consider, for the first time, the responsibility of states for the adverse environmental consequences of unlawful military acts. Security Council Resolution 687 reaffirmed that Iraq was liable under international law for, *inter alia*, ‘environmental damage and the depletion of natural resources’ resulting from the unlawful invasion and occupation of Kuwait.¹⁶⁰ The Iraqi invasion of Kuwait led to further consideration of the environmental effects of war and armed conflict, including an examination of the adequacy of the existing and rather limited treaty rules. Agenda 21 reflected limited progress. It called on the international community to consider measures in accordance with international law ‘to address, in times of armed conflict, large-scale destruction of the environment that cannot be justified under international law’, and identified the General Assembly and its Sixth Committee as the appropriate fora to deal with the issue, taking into account the competence and role of the International Committee of the Red Cross.¹⁶¹ In December 1992, the General Assembly adopted a resolution stressing that destruction of the environment not justified by military necessity and carried out wantonly was ‘clearly contrary to international law’, and noted that existing provisions of international law prohibited the destruction of oil well heads and the release and waste of crude oil into the sea.¹⁶² The General Assembly urged states to ‘take all measures to ensure compliance with the existing international law applicable to the protection of the environment in times of armed conflict’. Since then, however, no new treaties have been negotiated or adopted, and it has been left to the ICJ (in its Advisory Opinion on nuclear weapons and in *Armed Activities on the Territory of the Congo*¹⁶³) and the Statute of the International Criminal Court (with its classification

¹⁵⁷ Art. 55(2).

¹⁵⁸ (1996) ICJ Reports 242, para. 31. On the arguments presented by states, see 6 *Yearbook of International Environmental Law* 538–40 (1995). Only France expressed the view that these Articles of the Protocol did not reflect customary law (CR 95/24, at 23 and 25–6).

¹⁵⁹ See also the application by the Federal Republic of Yugoslavia instituting proceedings against the United Kingdom, 28 April 1999 (‘by taking part in the bombing of oil refineries and chemical plants, the United Kingdom of Great Britain and Northern Ireland has acted against the Federal Republic of Yugoslavia in breach of its obligation not to cause considerable environmental damage’) and Request for Provisional Measures, 28 April 1999. Similar claims were made in the applications against nine other NATO members. Similarly, see the application of the Democratic Republic of the Congo instituting proceedings against Rwanda, available at www.icj-cij.org/docket/files/126/7070.pdf (French only), 28 May 2002, 16.

¹⁶⁰ Security Council Res. 687/1991, 30 ILM 847 (1991). On the Iraq Compensation Commission and the assessment of ‘environmental damage’, see Chapter 17, pp. 720–5, above. On the arguments of states as to the implications of Res. 687 for environmental protection in times of armed conflict, see 6 *Yearbook of International Environmental Law* 539–40 (1995).

¹⁶¹ Agenda 21, para. 39.6(a). ¹⁶² UNGA Res. 47/591 (1992).

¹⁶³ In its judgment in the case of *Armed Activities on the Territory of the Congo (Democratic Republic of the Congo v. Uganda)*, the ICJ held that Uganda had violated international law by the looting, plundering and exploitation of the natural resources of the Democratic Republic of the Congo by its armed forces and by its failure to prevent such acts: *Armed Activities on the Territory of the Congo (New Application: 2002) (Democratic Republic of the Congo v. Rwanda)*, Judgment of 3 February 2006, (2006) ICJ Reports 6, paras. 245, 250 and 345.

of certain attacks causing severe environmental damage as a war crime¹⁶⁴) to mark the modest developments which have occurred.¹⁶⁵

CONCLUSIONS

Over the past decades, environmental considerations have been integrated into human rights discourse and, to a lesser extent, into the definition and application of international humanitarian rules governing methods and means of armed conflict.

In relation to human rights, notwithstanding the fact that most human rights treaties do not expressly refer to environmental considerations, practice under those conventions recognises that a failure to protect the environment adequately may give rise to individual human rights violations, particularly in relation to rights associated with the enjoyment of a person's home and property. Equally, practice recognises that the collective interest of a community in taking steps to protect the environment may justify reasonable interference with property or other rights. In both aspects, the principal need is to ensure that a balance is found between individual and collective rights. In the very recent past, human rights procedures may also have begun to define the content of participatory rights in the environmental domain: the non-compliance mechanism established under the 1998 Aarhus Convention represents an innovative step,¹⁶⁶ as does case law in the European and Inter-American jurisdictions regarding rights of access to information and the need for environmental impact assessment.

In relation to armed conflict, it is ironic that proceedings before the ICJ concerning the legality of the use of nuclear weapons catalysed an important debate on the relationship between methods and means of warfare and the protection of the environment. The Court's advisory opinion recognised, for the first time, the existence of norms of international environmental law as custom, and that they are applicable equally in times of armed conflict. It is to be hoped that, with the recognition by the Statute of the International Criminal Court of certain forms of environmental damage as constituting evidence of a war crime, issues regarding the protections afforded the environment during armed conflict will receive greater attention in coming years.

Another question looming on the horizon that highlights the growing intersection between environmental law and human rights (and potentially also between environmental law and the laws of armed conflict)¹⁶⁷ is what protection human rights law offers to people displaced by the adverse effects of climate change. This is a topic that is only just beginning to engage policy-makers and scholars.¹⁶⁸ Perhaps more than any other issue,

¹⁶⁴ See Art. 8(2)(b)(iv) of the Rome Statute of the International Criminal Court, Rome, 17 July 1998, in force 1 July 2002, 2187 UNTS 3; and note 149 above.

¹⁶⁵ See also 'Adverse Effects of the Illicit Movement and Dumping of Toxic and Dangerous Products and Wastes on the Enjoyment of Human Rights: Report of the Special Rapporteur, Okechukwu Ibeanu', UN Doc. A/HRC/5/5, 5 May 2007.

¹⁶⁶ Chapter 5, pp. 166–7, above.

¹⁶⁷ Large movements of people in response to climatic change, coupled with problems like increasing water scarcity, pose the potential for greater conflict and cast climate change displacement as an issue of human security as well as human rights. On 17 April 2007, the Security Council undertook its first debate on the linkages between security and climate change: S/PV.5663 (Resumption 1); and see SC/9000.

¹⁶⁸ O. Cordes-Holland, 'The Sinking of the Strait: The Implications of Climate Change for Torres Strait Islanders' Human Rights Protected by the ICCPR', 9(2) *Melbourne Journal of International Law* 405 (2008); S. Atapattu, 'Climate Change, Human Rights, and Forced Migration: Implications for International Law', 27(3) *Wisconsin*

however, the problem of climate-change-displaced people challenges international environmental law, human rights and humanitarian law to find ways to integrate environmental concerns into human rights frameworks, and human rights concerns into the laws regarding climate change.

International Law Journal 607 (2009); E. Burleson, 'Climate Change Displacement to Refugee', 25(19) *Journal of Environmental Law and Litigation* 19 (2010); B. Burson (ed.), *Climate Change and Migration* (2010); B. Docherty and T. Giannini, 'Confronting a Rising Tide: A Proposal for a Convention on Climate Change Refugees', 33 *Harvard Environmental Law Review* 349 (2009); T. T. V. Duong, 'When Islands Drown: The Plight of "Climate Change Refugee" and Recourse to International Human Rights Law', 31(4) *University of Pennsylvania Journal of International Law* 1239 (2010); V. Kolmannskog and L. Trebbi, 'Climate Change, Natural Disasters and Displacement: A Multi-Track Approach to Filling the Protection Gaps', 92(879) *International Review of the Red Cross* 713 (2010); M. Limon, 'Human Rights and Climate Change: Constructing a Case for Political Action', 33 *Harvard Environmental Law Review* 439 (2009); J. McAdam, 'Climate Change "Refugees" and International Law', *Bar News*, Winter 2008, 27; A. Williams, 'Turning the Tide: Recognizing Climate Change Refugees in International Law', 30(4) *Law and Policy* 502 (2008).

International trade and competition

INTRODUCTION¹

The integration of economic and environmental aspects of international law has been an important aspect of international environmental law particularly since UNCED. Such integration was prompted in part by considerations of the relationship between differing environmental standards and economic competitiveness.² Principle 4 of the Rio Declaration reflects

¹ S. J. Rubin and T. Graham, *Environment and Trade: The Relation of International Trade and Environmental Policy* (1982); E. Brown Weiss, 'Environment and Trade as Partners in Sustainable Development: A Commentary', 86 *American Journal of International Law* 700 (1992); J. Jackson, 'World Trade Rules and Environmental Policies: Congruence or Conflict?', 49 *Washington and Lee Law Review* 1219 (1992); R. B. Stewart, 'International Trade and Environment: Lessons from the Federal Experience', 49 *Washington and Lee Law Review* 1219 (1992); P. Callas, D. Esty and D. Van Hoogstraten, 'Environmental Protection and International Trade: Toward Mutually Supportive Rules and Policies', 16 *Harvard Environmental Law Review* 271 (1992); S. Charnovitz, 'The Environment vs. Trade Rules: Defogging the Debate', 23 *Environmental Law* 475 (1993); D. Esty, 'Beyond Rio: Trade and the Environment', 23 *Environmental Law* 387 (1993); OECD, *Trade and Environment: Processes and Production Methods* (1994); J. Cameron, P. Demaret and D. Geradin (eds.), *Trade and Environment: The Search for Balance* (1994); E.-U. Petersmann, *International and European Trade and Environmental Law After the Uruguay Round* (1995); D. Geradin, *Trade and the Environment: A Comparative Study of EC and US Law* (1997); A. Batabyal and H. Beladi (eds.), *The Economics of International Trade and the Environment* (2001); C. Robb (ed.), *International Environmental Law Reports*, vol. 2, *Trade and Environment* (2001); G. P. Sampson and W. B. Chambers (eds.), *Trade, Environment, and the Millennium* (2002); special issue on 'International Trade and the Environment', 11(3) *Review of European Community and International Environmental Law* (2002); O. Perez, *Ecological Sensitivity and Global Legal Pluralism: Rethinking the Trade and Environment Debate* (2004); N. Bernasconi-Osterwalder, *Environment and Trade: A Guide to WTO Jurisprudence* (2006); A. Goyal, *The WTO and International Environmental Law* (2006); K. Gallagher, *Handbook on Trade and the Environment* (2008); A. Lindroos and M. Mehling, 'From Autonomy to Integration? International Law, Free Trade and the Environment', 77 *Nordic Journal of International Law* 253 (2008); T. Cottier, O. Nartova and S. Bigdeli (eds.), *International Trade Regulation and the Mitigation of Climate Change: World Trade Forum* (2009); E. Vranes, *Trade and the Environment: Fundamental Issues in International Law, WTO Law and Legal Theory* (2009); T. Epps and A. Green, *Reconciling Trade and Climate: How the WTO Can Help Address Climate Change* (2010); B. J. Richardson, Y. le Bouthillier, H. McLeod-Kilmurray and S. Wood, *Climate Law and Developing Countries: Legal and Policy Challenges for the World Economy* (2010). See also D. Hunter, J. Salzman and D. Zaelke, *International Environmental Law and Policy* (2011, 4th edn), Chapter 17; L. Krämer, 'Regional Economic Integration Organizations', in D. Bodansky, J. Brunnée and E. Hey (eds.), *The Oxford Handbook of International Environmental Law* (2007), Chapter 37; P. Birnie, A. Boyle and C. Redgwell, *International Law and the Environment* (2009, 3rd edn), Chapter 14.

² R. Stewart, 'Environmental Regulation and International Competitiveness', 102 *Yale Law Journal* 2039 (1993); R. Hudec, 'Differences in International Environmental Standards: The Level Playing-Field Dimension', 5 *Minnesota Journal of Global Trade* 1 (1995); R. Hudec and J. Bhagwati (eds.), *Fair Trade and Harmonization* (1996); D. Esty and D. Geradin, 'Environmental Competitiveness and International Trade: A Conceptual Framework', 32 *Journal of World Trade* 5 (1998); O. Fauchald, *Environmental Taxes and Trade Discrimination* (1998); R. B. Stewart, 'Environmental Regulation and International Competitiveness', in R. R. W. Brooks, N. O. Keohane and D. A. Kysar (eds.), *Economics of*

this interdependence, providing that ‘in order to achieve sustainable development environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it’. The theme of integration was central to the preparations for UNCED. Agenda 21 recognised that the international economy should provide a ‘supportive international climate for achieving environment and development goals’,³ and identified the following as objectives for the international community:

- making trade and the environment mutually supportive;⁴
- encouraging macroeconomic policies conducive to environment and development; and
- providing adequate financial resources to developing countries and dealing with international debt.⁵

This chapter considers the international legal aspects of the first two of these issues: the relationship between international trade and environmental protection, and the application of international rules of competition law to environmental issues. In Chapter 20, other aspects of the relationship between international economic law and environmental protection are addressed, namely, the relationship between rules of international law for the promotion of foreign investments and the protection of the environment.

One of the consequences of an emphasis on greater integration of economics and the environment has been to bring together two very different groups of international legal practitioners who have traditionally had very little to do with one another. International trade law in the past had been seen as a separate, self-contained field, dominated by the principles and ideology of free trade. Over time, environmentalists and others have challenged the dominance of free trade ideals and particularly their utility to achieve other international goals such as environmental protection.⁶

Greater integration between economics and the environment has manifested itself in many other ways than simply as a clash of intellectual cultures. A number of international legal issues relating to trade, competition and the environment have been controversial in the past two decades. Three principal issues concern the use in environmental treaties of international trade measures, the circumstances in which one or more states may lawfully adopt ‘unilateral’ environmental protection measures (measures taken outside the context of an international agreement) which limit international trade and may conflict with obligations under global and regional free trade agreements, such as the GATT, the EU Treaties, the 1988 United States–Canada Free Trade Agreement, the 1992 North

Environmental Law, vol. 2, *Issues and Applications* (2009); F. Iraldo, F. Testa, M. Melis and M. Frey, ‘A Literature Review on the Links Between Environmental Regulation and Competitiveness’, 21(3) *Environmental Policy and Governance* 210 (2011).

³ Agenda 21, para. 2.3.

⁴ This language of ‘mutual supportiveness’ remains at the heart of trade and environment policy: see Hong Kong Ministerial Declaration of the Sixth Ministerial Conference, Hong Kong, 18 December 2005, WT/MIN(05)/DEC, available at www.wto.org/english/thewto_e/minist_e/min05_e/final_text_e.htm, para. 30; Doha Ministerial Declaration of the Fourth Ministerial Conference, Doha, Qatar, 14 November 2001, WT/MIN(01)/DEC/1, paras. 6 and 31. The most recent seventh ministerial conference at Geneva in 2009 was not a negotiating round and did not culminate in a ministerial declaration: see instead Report of the Committee on Trade and Environment, 30 October 2009, WT/CTE/16, 4. See also R. Pavoni, ‘Mutual Supportiveness as a Principle of Interpretation and Law-Making: A Watershed for the “WTO-and-Competing-Regimes” Debate?’, 21(3) *European Journal of International Law* 649 (2010).

⁵ *Ibid.* See also Chapter 16 discussing financial resources, transfer of technology, and intellectual property rights as important techniques for the implementation of international environmental legal obligations.

⁶ See generally D. Esty, *Greening the GATT* (1994).

American Free Trade Agreement (NAFTA) and the African Economic Community Treaty, and the requirements for states to adopt trade measures in furtherance of national goals of human, animal or plant health and safety protection. The chapter also addresses the emerging relationship between competition law and environmental protection. Measures taken or contemplated as a response to climate change illustrate the inter-relationship between these three aspects. In relation to the first issue – the use in environmental treaties of international trade measures – the 1997 Kyoto Protocol provides an example, with its provision for trading in emissions units and non-compliance penalties, including the potential for trading rights of non-complying states to be suspended.⁷ In respect of unilateral trade measures, measures along these lines are being contemplated by some states as part of domestic emissions trading arrangements to prevent ‘carbon leakage’ and ease the competitive impacts of carbon pricing on domestic industries.⁸ And the possible anti-competitive effects of domestic laws and policies promoting renewable energy uptake are at the centre of a current dispute before the WTO dispute settlement system brought by Japan in respect of Canadian renewable energy measures.⁹

TRADE MEASURES IN INTERNATIONAL ENVIRONMENTAL AGREEMENTS¹⁰

The use of trade measures in international environmental agreements has a long history. The 1933 London Convention controlled and regulated the import, export and traffic in certain trophies.¹¹ Other agreements establish quantitative restrictions on international trade to achieve environmental protection objectives.¹² Three types of environmental objectives have

⁷ Decision 27/CMP.1, ‘Procedures and Mechanisms Relating to Compliance under the Kyoto Protocol’, Report of the Conference of the Parties serving as the Meeting of the Parties on its first session, Montreal, 28 November–10 December 2005, FCCC/KP/CMP/2005/8/Add.3, Art. XV.

⁸ UNEP and WTO, *Trade and Climate Change: WTO-UNEP Report* (2009), 98–101.

⁹ *Canada – Certain Measures Affecting the Renewable Energy Generation Sector*, Request for the Establishment of a Panel by Japan, WTO Doc. WT/DS412/5, 7 June 2011. Japan’s request for the establishment of a Panel was accepted by the WTO Dispute Settlement Body in July 2011. See also *China – Measures Concerning Wind Power Equipment*, Request for Consultations by the United States, WT/DS419/1 (6 January 2011). China has now withdrawn its disputed fund for wind power manufacturing.

¹⁰ J. Cameron and J. Robinson, ‘The Use of Trade Provisions in International Environmental Agreements and Their Compatibility with GATT’, 2 *Yearbook of International Environmental Law* 3 (1991); J. Cameron and J. Robinson, *The Use of Trade Provisions in International Environmental Agreements: A Report for the OECD* (1991); I. Cheyne, ‘Environmental Treaties and the GATT’, 1 *Review of European Community and International Environmental Law* 14 (1992); T. Swanson, ‘The Evolving Trade Mechanism in CITES’, 1 *Review of European Community and International Environmental Law* 52 (1992); J. Werksman, ‘Trade Sanctions under the Montreal Protocol’, 1 *Review of European Community and International Environmental Law* 69 (1992); J. Dunoff, ‘Reconciling International Trade with Preservation of the Global Commons: Can We Prosper and Protect?’, 49 *Washington and Lee Law Review* 1407 (1992); R. Tarasofsky, ‘Ensuring Compatibility Between Multilateral Environmental Agreements and GATT/WTO’, 7 *Yearbook of International Environmental Law* 52 (1996); A. Qureshi, ‘The Cartagena Protocol on Biosafety and the WTO – Coexistence or Incoherence?’, 49 *International and Comparative Law Quarterly* 835 (2000); A. Bianchi, ‘The Impact of International Trade Law on Environmental Law and Process’, in F. Francioni (ed.), *Environment, Human Rights and International Trade* 105 (2001); C. Henckels, ‘GMOs in the WTO: A Critique of the Panel’s Legal Reasoning in EC – Biotech’, 7 *Melbourne Journal of International Law* 278 (2006); S. Alam, ‘Trade Restrictions Pursuant to Multilateral Environmental Agreements: Developmental Implications for Developing Countries’, 41 *Journal of World Trade* 983 (2007); A. Ansari, ‘GATT/WTO and MEAs: Resolving the Competing Paradigm’, 6(2) *Journal of International Trade and Policy* 2 (2007); G. R. Milner-White, ‘Kyoto v. WTO: Carbon Tariffs: Addressing Conflicts Between the Kyoto Protocol and International Trade Rules’, *New Zealand Journal of Environmental Law* 37 (2009).

¹¹ Art. 9; Chapter 10, p. 480, above.

¹² 1940 Western Hemisphere Convention, Art. IX; 1950 Birds Convention, Arts. 3, 4 and 9; 2003 Revised African Nature Convention, Art. IX(2)(h); 1973 CITES, Arts. III–V and VII; 1987 Montreal Protocol, Art. 4 (as amended); 1998

been addressed by trade regulations: agreements to protect wildlife, agreements to protect the environment of the importing state from harmful organisms and products, and agreements to protect the global commons.

Agreements for the protection of wildlife usually make use of restrictions on export or import between parties,¹³ often based on a permit system, as well as on transit through the territory of parties,¹⁴ and restrictions on trade with non-parties.¹⁵ Agreements to protect the environment of the importing state from harmful organisms or products, which have generally been concerned with plant pests, hazardous wastes, toxic chemicals and pesticides, but which have more recently been extended to include genetically modified organisms, rely primarily on import restrictions,¹⁶ although restrictions on transit through the territory of parties and on trade with non-parties are also used. Agreements to restrict exports and imports either establish a complete ban,¹⁷ or make imports conditional upon the grant of a permit,¹⁸ or the prior informed consent of the relevant authorities of the importing state,¹⁹ or a combination of techniques.²⁰ The 2000 Biosafety Protocol combines a prior informed consent procedure and risk assessment, while also allowing importing parties to restrict imports where there is a '[l]ack of scientific certainty due to insufficient relevant scientific information and knowledge regarding the extent of the potential adverse effects of a living modified organism on the conservation and sustainable use of biological diversity in the Party of import, taking also into account risks to human health'.²¹ For hazardous waste, export restrictions supplement the import restrictions.²²

To date, the only international agreement that has used trade measures to protect the global commons is the 1987 Montreal Protocol. Article 4 controls the import and export of certain ozone-depleting substances from and to non-parties, whereas Article 4B requires parties which are unable to phase out production of controlled substances by the required phase-out dates to ban the export of used, recycled and reclaimed quantities of the substances, other than for the purpose of destruction. The 1992 Climate Change Convention and the 1992 Biodiversity Convention do not use trade provisions as an international enforcement measure, although the 1997 Kyoto Protocol makes use of such measures under its compliance

Chemicals Convention, Arts. 10 and 11 and Annex II, para. (c)(i); 2000 Biosafety Protocol, Arts. 10 and 11; 2001 POPs Convention, Art. 3. As alluded to above, the 1997 Kyoto Protocol to the 1992 Climate Change Convention also contemplates the use of trade measures to achieve the environmental objective of stabilising levels of greenhouse gases in the atmosphere. However, in the case of the Kyoto Protocol, trade is not restricted but instead facilitated, with Art. 17 permitting Annex B parties to participate in emissions trading for the purpose of fulfilling their emission reduction commitments under the Protocol.

¹³ 1973 CITES, Arts. III, IV and V. ¹⁴ 1940 Western Hemisphere Convention, Art. IX.

¹⁵ 1973 CITES, Art. X.

¹⁶ 1951 International Plant Protection Convention, Art. 1; 1954 African Phyto-Sanitary Convention, Preamble; 1956 Plant Protection Agreement for the South East Asia and Pacific Region, Preamble; 1976 North American Plant Protection Agreement; 2000 Biosafety Protocol, Arts. 10 and 11; 2001 POPs Convention, Art. 3.

¹⁷ 1991 Bamako Convention, Art. 4; 1956 Plant Protection Agreement for the South East Asia and Pacific Region, Art. IV and Appendix B; 2001 POPs Convention, Art. 3.

¹⁸ 1989 Basel Convention, Art. 4(1); 1951 International Plant Protection Convention, Art. VI(I).

¹⁹ 1998 Chemicals Convention, Arts. 10 and 11 and Annex II, para. (c)(i); 2000 Biosafety Protocol, Arts. 8–12 ('Advance Informed Agreement Procedure').

²⁰ Council Regulation (EC) No. 1013/2006, OJ L190, 12 July 2007, 1, as amended by Council Regulations (EC) Nos. 302/2009, OJ L97, 15 April 2009, and 1379/2007 OJ L309, 26 November 2007.

²¹ 2000 Biosafety Protocol, Arts. 10(6) and 11(8).

²² 1989 Basel Convention, Art. 4; 1991 Bamako Convention, Art. 4; 2001 POPs Convention, Art. 3.

mechanism.²³ As discussed below, both the climate change and biodiversity regimes address the permissibility of unilateral measures adopted by parties.

The use of trade sanctions to implement international environmental obligations raises possible conflicts between obligations under environmental agreements and those under free trade agreements. Such conflicts would be subject to the general rules of international law, as reflected in the 1969 Vienna Convention on the Law of Treaties.²⁴ Applying these rules would suggest that the trade restrictions established under post-1994 agreements, such as the 2000 Biosafety Protocol and the 2001 POPs Convention, prevail over inconsistent obligations established under the 1994 GATT (to the extent that they are inconsistent) as between parties to both, but that the free trade obligations of the GATT might prevail where a state was not a party to the relevant multilateral agreement (to the extent that GATT obligations were inconsistent). The situation is slightly more complex in the case of pre-1994 multilateral environmental agreements, such as the 1987 Montreal Protocol and the 1989 Basel Convention. With GATT 1947 being re-adopted as GATT 1994 at the Uruguay Round of trade negotiations, the trade agreement is (at least technically) the *lex posterior*.²⁵ However, the ruling of the WTO Appellate Body in the *Shrimp/Turtle* dispute (discussed below) suggests that trade restrictions in multilateral environmental agreements like the 1987 Montreal Protocol and the 1989 Basel Convention are unlikely to fall foul of GATT 1994 requirements.

Even for international environmental agreements concluded after 1994, the relationship between the trade measures used in environmental agreements and the requirements of trade treaties is sometimes unclear.²⁶ Despite the prominence of the issue of the relationship between trade and environmental commitments during the negotiations for the 2000 Biosafety Protocol, the only clue as to the appropriate relationship is given by opaque language in the Protocol's Preamble.²⁷ Ten years on, the Nagoya Protocol on Access to Genetic Resources and Benefit-Sharing, which raises issues of potential conflict with requirements under the WTO Trade-Related Aspects of Intellectual Property (TRIPs) Agreement, also does not manage to avoid ambiguity on this question. Article 4 of the Protocol provides:

1. The provisions of this Protocol shall not affect the rights and obligations of any Party deriving from any existing international agreement, except where the exercise of those rights and obligations would cause a serious damage or threat to biological diversity. This paragraph is not intended to create a hierarchy between this Protocol and other international instruments.

...

²³ Under the compliance regime for the Kyoto Protocol, the Enforcement Branch of the Compliance Committee has the authority to impose trade restrictions on parties as a sanction for non-compliance. In the case of non-compliance with emissions targets, Annex I parties may be subject to a penalty of 30 per cent in the second commitment period and a bar on selling emission reductions: Decision 27/CMP.1, 'Procedures and Mechanisms Relating to Compliance under the Kyoto Protocol', Report of the Conference of the Parties serving as the Meeting of the Parties on its first session, Montreal, 28 November–10 December 2005, FCCC/KP/CMP/2005/8/Add.3, Art. XV(5)(a) and (b) and (8).

²⁴ Chapter 4, pp. 100–2, above.

²⁵ See C. Wold, 'Multilateral Environmental Agreements and the GATT: Conflict and Resolution?', 26 *Environmental Law* 841 (1996).

²⁶ See A. H. Qureshi, 'The Cartagena Protocol on Biosafety and the WTO: Coexistence or Incoherence?', 49 *International and Comparative Law Quarterly* 835 (2000).

²⁷ Chapter 10, p. 467, above.

3. This Protocol shall be implemented in a mutually supportive manner with other international instruments relevant to this Protocol. Due regard should be paid to useful and relevant ongoing work or practices under such international instruments and relevant international organizations, provided that they are supportive of and do not run counter to the objectives of the Convention and this Protocol.

Further clarification may be forthcoming if current negotiations on the relationship between trade rules and environmental agreements, being conducted as part of the Doha Round, are successful (see below), although after ten years of negotiation, a final resolution of this question does not appear likely.²⁸

The GATT envisages certain exceptions to the prohibition on import restrictions, and support has been expressed for the view that import restrictions could be justified under the Article XX exceptions when they are based on measures adopted pursuant to a multilateral environmental agreement, such as the 1987 Montreal Protocol. In 1992, the EU suggested that, for an exception to be so justified, the multilateral environmental agreement should fulfil certain conditions, including:

1. the agreement should have been negotiated under the aegis of the UN and the procedures for negotiation should have been open to the participation of all GATT members; and
2. the agreement should be open for accession by any GATT members on terms which are equitable in relation to those which apply to original members.²⁹

The EU also recognised that the same criteria should apply to regional agreements, but that in no circumstances could such agreements provide justification for applying extra-jurisdictional trade measures *vis-à-vis* countries outside the region.³⁰ The requirement for multilaterality in order to justify trade action for environmental purposes was stressed by the WTO Appellate Body in the *Shrimp/Turtle* dispute.³¹

The 1987 Montreal Protocol raises further legal issues by requiring parties to ban the import and export of controlled substances from non-parties and, following amendments adopted in 1991, 1992 and 1995, to ban the import from non-parties of certain products that contain controlled substances.³² Here, the question arises as to whether these bans can be enforced, under international law, against states which are not parties to later amendments to the Montreal Protocol (the Protocol itself enjoys universal participation) but which are parties to the GATT. The dispute settlement bodies of the WTO have not yet been called upon to consider the question;³³ at first

²⁸ See K. C. Kennedy, 'Status of the Trade-Environment-Sustainability Triad in the Doha Round Negotiations and Recent US Trade Policy', 19 *Indiana International and Comparative Law Review* 529 at 530-9 (2009). For a summary of what progress has been made, see WTO Committee on Trade and Environment, Report by the Chairman to the Trade Negotiations Committee, 21 April 2011, TN/TE/20. See also WTO Trade Negotiations Committee, Cover Note by the Chair, 21 April 2011, TN/C/13, which notes that the collection of reports, including the foregoing, is 'realistic in what it reveals about the issues that still divide negotiators and put the successful conclusion of the Round at serious risk': *ibid.*, 1.

²⁹ GATT Doc. TRE/W/5, 17 November 1992, 9.

³⁰ *Ibid.* The 1991 Bamako Convention, negotiated under the auspices of the OAU, might have difficulty in meeting this test.

³¹ *United States - Import Prohibition of Certain Shrimp and Shrimp Products*, Report of the Appellate Body, WT/DS58/AB/R, 38 ILM 118 (1999), para. 168.

³² 1987 Montreal Protocol, Art. 4(1)-(4); see further Chapter 7, p. 271, above.

³³ There was potential for this issue to be considered in the *EC - Biotech* dispute concerning the EU's measures regulating genetically modified organisms and foods. However, the dispute was decided by a WTO Panel on the basis of the SPS

sight, such restrictions might appear to be incompatible with Article XI of the GATT (elimination of quantitative restrictions) but might be brought within the exceptions established under Article XX.³⁴ A WTO Panel or the Appellate Body would undoubtedly find difficult to hold that an import ban imposed pursuant to an international treaty that now enjoys universal participation was not ‘necessary to protect human, animal or plant life or health’, although the result would not be certain. Under the NAFTA, Mexico, Canada and the United States have adopted a different approach, expressly providing that trade sanctions in the 1973 CITES, the 1987 Montreal Protocol (and the 1990 amendments thereto) and the 1989 Basel Convention will prevail over the NAFTA.³⁵

Similar proposals have been put forward in the context of the Doha Round negotiations on trade and environment.³⁶ The 2001 Doha Declaration authorising a new round of trade negotiations in paragraph 31 records the agreement, ‘[w]ith a view to enhancing the mutual supportiveness of trade and environment’ and ‘without prejudging their outcome’, to conduct negotiations on ‘the relationship between existing WTO rules and specific trade obligations set out in multilateral environmental agreements (MEAs)’.³⁷ The negotiations are to be limited in scope ‘to the applicability of such existing WTO rules as among parties to the MEA in question’ and ‘shall not prejudice the WTO rights of any Member that is not a party to the MEA in question’. This negotiating agenda excludes the important question of the WTO-compatibility of trade measures applied under an MEA in respect of non-parties and also raises questions as to the meaning of the phrase ‘specific trade obligations’.³⁸ Other areas for negotiation identified by the Doha Declaration include information exchange between MEA secretariats and relevant WTO committees and the granting of observer status at their respective meetings,³⁹ and the reduction or elimination of tariffs on environmental goods and services.⁴⁰ In addition, there is a separate authorisation given in the Doha Declaration relating to negotiations on fisheries subsidies.⁴¹

Agreement alone and the Panel’s decision was not appealed to the Appellate Body: see pp. 844–6, below. The complexity of the relationship between MEAs and trade obligations was also an issue considered in the *Chile – Swordfish* dispute, which involved a challenge by the EU to the conservation measures taken by Chile in respect of swordfish fishing in the South Pacific. The EU argued that the measures violated Arts. V and XI of the GATT. Chile also brought a challenge before ITLOS, arguing that the EU had violated Arts. 64 and 116–119 of UNCLOS. The dispute was ultimately settled by mutual agreement between the parties; however, in both the WTO and the ITLOS proceedings, both parties have reserved the right to revive the proceedings at any time: *Chile – Measures Affecting the Transit and Importing of Swordfish*, Request for Consultations by the EC, 26 April 2000, WT/DS193/1, G/L/367; *Chile – Measures Affecting the Transit and Importing of Swordfish*, Arrangement between the EC and Chile – Communication from the EC, 6 April 2001, WT/DS193/3; *Case Concerning the Conservation and Sustainable Exploitation of Swordfish Stocks in the South-Eastern Pacific Ocean (Chile/European Community)*, ITLOS Case No. 7, Order 2007/3, 30 November 2007.

³⁴ See further below. ³⁵ See p. 854, below.

³⁶ These negotiations are taking place in special sessions of the WTO’s Committee on Trade and Environment. For details of this Committee’s establishment and work, see pp. 811–12, below.

³⁷ Doha Ministerial Declaration of the Fourth Ministerial Conference, Doha, Qatar, 14 November 2001, WT/MIN(01)/DEC/1, para. 31.

³⁸ Some WTO members advocate identifying individual ‘specific trade obligations’ for examination by the WTO, whereas others prefer a more general approach looking at the principles governing the relationship between the WTO and MEAs, and how MEA trade measures might be accommodated under WTO rules.

³⁹ Para. 31(ii).

⁴⁰ Para. 31(iii). This head of negotiation has generated debates over what constitutes an environmental good or service: A. Vikhlyaev, ‘Environmental Goods and Services: Defining Negotiations or Negotiating Definitions?’, 38(1) *J. World Trade* 93 (2004).

⁴¹ Doha Declaration, para. 28. On the progress achieved with respect to the application of WTO rules to fisheries subsidies, see pp. 864–5, below.

To date, little progress has been made in the Doha Round trade and environment negotiations,⁴² with the exception of negotiations on fisheries subsidies.⁴³

UNILATERAL ENVIRONMENTAL MEASURES AND INTERNATIONAL TRADE

Unilateral environmental measures are national environmental protection measures adopted by states which include an international trade limitation or prohibition and which are adopted in the absence of agreed international standards or rules, or go beyond agreed international standards. Examples of such measures include national laws establishing product-labelling requirements, import bans or quotas, and other environmentally related measures which can have the effect, directly or indirectly, of limiting international trade. The main international trade agreements of relevance to the adoption of environmental measures of this type are the 1994 GATT, the EU Treaty (replacing the EC Treaty, as amended), the 1988 United States–Canada Free Trade Agreement and the 1992 NAFTA between Mexico, Canada and the United States. The 1991 Treaty establishing the African Economic Community is also likely to be important.

Trade and the environment was one of the most controversial legal issues at UNCED. Four of the five instruments there adopted contain provisions on the permissibility of unilateral environmental measures. The most detailed is the consensus language adopted by 176 states in Agenda 21, which has served as an important point of reference in ‘trade and environment’ disputes. It committed states:

To promote, through the gradual development of universally and multilaterally negotiated agreements or instruments, international standards for the protection of the environment that take into account the different situations and capabilities of countries. States recognise that environmental policies should deal with the root causes of environmental degradation, thus preventing environmental measures from resulting in unnecessary restrictions to trade. Trade policy measures for environmental purposes should not constitute a means of arbitrary or unjustifiable discrimination or a disguised restriction on international trade. Unilateral actions to deal with environmental challenges outside the jurisdiction of the importing country should be avoided. Environmental measures addressing international environment problems should, as far as possible, be based on an international consensus. Domestic measures targeted to achieve certain environmental objectives may need trade measures to render them effective. Should trade policy measures be found necessary for the enforcement of environmental policies, certain principles and rules should apply. These could include, *inter alia*, the principle of non-discrimination; the principle that the trade measure chosen should be the least trade-restrictive necessary to achieve the

⁴² See note 28 above.

⁴³ Recently, progress in this area has stalled: see ICTSD, ‘WTO Fisheries Chair Pauses for Reflection on Draft Text’, 15 (12) *Bridges Weekly Trade News Digest*, 6 April 2011. For an overview of the progress and challenges of the Doha negotiations in relation to fisheries, see U. R. Sumaila, A. Khana, R. Watson *et al.*, ‘The World Trade Organization and Global Fisheries Sustainability’, 88 *Fisheries Research* 1 (2007). See also UNEP and WWF, *The WTO Fisheries Subsidies Negotiations: Update and Introductory Briefing for New Delegates: Summary Report* (2009), available at www.unep.ch/etb/events/WTO%20FS%20workshop%201%20Apr%202009/Meeting%20Report%20UNEP-WWF%20Briefing%201April09.pdf.

objectives; an obligation to ensure transparency in the use of trade measures related to the environment and to provide adequate notification of national regulations, and the need to give consideration to the special conditions and development requirements of developing countries as they move towards internationally agreed environmental objectives.⁴⁴

Principle 12 of the Rio Declaration is compatible with the text of Agenda 21, but shorter, incorporating the central elements, but excluding reference to the principles. The text was drawn from Agenda 21, with one exception: 'international environmental problems' in the Agenda 21 text is replaced by 'transboundary or global environmental problems' in the Rio Declaration. Principle 12 and the Agenda 21 language were adopted by consensus, subject to the written statement of the United States that trade measures may provide an effective and appropriate means of addressing environmental concerns, including those 'outside national jurisdiction, subject to certain disciplines'.⁴⁵ While establishing a presumption in favour of free trade obligations and against national environmental measures, these formulations nevertheless leave open the possibility that unilateral measures may be adopted, even where they may have 'extra-jurisdictional effect'.

The other instruments adopted at UNCED were less specific. The 1992 Climate Change Convention provides that measures to combat climate change 'should not constitute a means of arbitrary or unjustifiable discrimination or a disguised restriction on international trade', which also suggests that trade measures are permissible in certain circumstances.⁴⁶ The Forest Principles also addressed trade issues, calling for international trade in forest products to be facilitated on the basis of non-discriminatory and multilaterally agreed rules and procedures consistent with international trade law and practices,⁴⁷ and providing that '[u]nilateral measures, incompatible with international obligations or agreements, to restrict and/or ban the international trade in timber or other forest products, should be removed or avoided'.⁴⁸ Taken together, the UNCED instruments suggest the emergence of a consensus, reinforced in the subsequent WTO/GATT jurisprudence, that unilateral measures should be avoided but that they are not, *per se*, prohibited. The WSSD Plan of Implementation restated the language of Agenda 21 and the Rio Declaration,⁴⁹ suggesting that states did not feel the need to revisit their approach in the light of WTO case law since 1992.

Over the course of the 1990s, the rapid development of national environmental legislation limiting imports and trade, usually adopted outside the context of agreed international standards, led to more trade-related disputes between states. This trend is likely to continue in the face of increased disparities between countries' environmental protection standards and the failure to adopt binding international standards, particularly on issues of climate change. As a result, international courts, tribunals and other bodies find themselves increasingly called upon

⁴⁴ Agenda 21, para. 39.3(d). The WSSD Plan of Implementation calls for continued efforts to 'enhance the mutual supportiveness of trade, environment and development with a view to achieving sustainable development' (para. 91), and to promote 'mutual supportiveness between the multilateral trading system and the multilateral environmental agreements, consistent with sustainable development goals ... while recognizing the importance of maintaining the integrity of both sets of systems' (para. 92).

⁴⁵ UNCED Report, A/CONF.151/26/Rev.1/Vol. II (June 1993), 18. ⁴⁶ Art. 3(5).

⁴⁷ Principle 13(a) and (d); see also Principle 13(b). ⁴⁸ Principle 14. ⁴⁹ Para. 95.

to determine the compatibility of national environmental protection measures with international legal obligations which prohibit restrictions or barriers to international trade.

WTO/GATT⁵⁰

The GATT was originally adopted in 1947 as the main international arrangement to encourage trade between states.⁵¹ In December 1993, after seven years of negotiation, the Trade Negotiations Committee of the Uruguay Round adopted by consensus the Final Act. The Final Act includes the Agreement Establishing the World Trade Organization (WTO)⁵² and annexed agreements on, *inter alia*: the General Agreement on Tariffs and Trade 1994 (GATT 1994),⁵³ the General Agreement on Trade in Services (GATS),⁵⁴ the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPs)⁵⁵ and the Understanding on Rules and Procedures Governing the Settlement of Disputes (Dispute Settlement Understanding, or DSU).⁵⁶ These and related agreements were opened for signature at Marrakesh, Morocco, on 15 April 1994 and entered into force on 1 January 1995.

The entire package established a permanent organisation, the WTO, which, with a current membership of 153 states and the EU, has become an important forum for the development of international law on matters relating to trade and the environment. The WTO replaced the former GATT Council as ‘the common institutional framework for the conduct of trade relations among its Members in matters related to the agreements and associated legal instruments included in the Annexes [to the WTO Agreement]’.⁵⁷ As a permanent multilateral institution, the WTO takes its place alongside the World Bank and the IMF. Although it does not have

⁵⁰ K. W. Dam, *The GATT Law and International Economic Organizations* (1970); F. Kirgis, ‘Effective Pollution Control in Industrialised Countries: International Economic Disincentives, Policy Responses and the GATT’, 70 *Michigan Law Review* 860 (1972); O. Long, *Law and its Limitations in the GATT Multilateral Trade System* (1985); E.-U. Petersmann, ‘Trade Policy, Environmental Policy and the GATT: Why Trade Rules and Environmental Rules Should Be Mutually Consistent’, 46 *Aussenwirtschaft* 197 (1991); S. Charnovitz, ‘Exploring the Environmental Exceptions in GATT Article XX’, 25 *Journal of World Trade* 37 (1991); P. Sorsa, ‘Environment – A New Challenge to GATT?’ (World Bank, 1991); E.-U. Petersmann, ‘International Trade Law and International Environmental Law – Prevention and Settlement of International Disputes in GATT’, 27 *Journal of World Trade* 43 (1993); J. Cameron, ‘The GATT and the Environment’, in P. Sands (ed.), *Greening International Law* (1993), 100; D. Esty, *Greening the GATT: Trade, Environment, and the Future* (1994); S. Charnovitz, ‘The World Trade Organization and the Environment’, 8 *Yearbook of International Environmental Law* 98 (1997); D. McRae, ‘Trade and Environment: The Development of WTO Law’, 9 *Otago Law Review* 221 (1998); WTO Secretariat, *Guide to the Uruguay Round Agreements* (1999); M. Blakeney and F. MacMillan, *The WTO and the Environment* (2001); O. Perez, *Ecological Sensitivity and Global Legal Pluralism: Rethinking the Trade and Environment Debate* (2004); A. Goyal, *The WTO and International Environmental Law* (2006); K. Gallagher, *Handbook on Trade and the Environment* (2008); E. Vranes, *Trade and the Environment: Fundamental Issues in International Law, WTO Law and Legal Theory* (2009).

⁵¹ 30 October 1947, 55 UNTS 194; the GATT 1947 was brought into force on a provisional basis by the Protocol of Provisional Application, 30 October 1947, in force 1 January 1948, 55 UNTS 308. Eight multilateral trading rounds took place under the auspices of the GATT: 1947 (Geneva); 1949 (Annecy); 1951 (Torquay); 1956 (Geneva); 1960–1 (Geneva); 1964–7 (‘Kennedy’); 1973–7 (Tokyo); and 1986–93 (Uruguay).

⁵² 33 ILM 13 (1994).

⁵³ Annex 1A, 33 ILM 28 (1994). This Annex also includes Agreements on, *inter alia*, Agriculture, Sanitary and Phytosanitary Measures, Technical Barriers to Trade, Trade-Related Investment Measures, and Subsidies and Countervailing Measures.

⁵⁴ Annex 1B, 33 ILM 44 (1994). The text makes no reference to sustainable development or environmental protection requirements, although a Decision on Trade in Services and the Environment was adopted.

⁵⁵ Annex 1C, 33 ILM 81 (1994). The text makes no reference to sustainable development or environmental protection requirements.

⁵⁶ Annex 2, 33 ILM 136 (1994). ⁵⁷ Note 52 above, Art. II(1).

express environmental objectives, the Preamble recognises that the WTO must allow ‘the optimal use of the world’s resources in accordance with the objective of sustainable development’ and seek ‘both to protect and preserve the environment and enhance the means for doing so in a manner consistent with’ the respective needs and concerns of the parties at different levels of economic development. The WTO’s tasks are: to implement the WTO Agreement and the multilateral trade agreements; to provide the framework for the implementation of the plurilateral trade agreements; to administer the DSU and the Trade Policy Review Mechanism; to provide a forum for the negotiations among members; and to co-operate with the World Bank and the IMF.⁵⁸ Despite the new institutional overlay, the GATT 1994 remains the central substantive agreement under the WTO umbrella, which is designed to encourage trade between WTO members by reducing tariffs and preventing trade barriers.

Article III(1) of the GATT 1994 prohibits the application to imported or domestic products of internal taxes and other internal charges, laws, regulations and requirements so as to afford protection to domestic products. Article III(2) prohibits the application, directly or indirectly, of internal taxes or other internal charges of any kind in excess of those applied, directly or indirectly, to like domestic products or in a manner contrary to Article III(1). Under Article XI, prohibitions or restrictions, including quotas, import or export licences or other measures, on the import or export of any product from or to another contracting party are prohibited. Article XX permits exceptions to these limitations. It provides, *inter alia*:

Subject to the requirement that such measures are not applied in a manner which would constitute a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail, or a disguised restriction on international trade, nothing in this Agreement shall be construed to prevent the adoption or enforcement by any contracting party of measures:⁵⁹

- ...
- (b) necessary to protect human, animal or plant life or health;

...

 - (g) relating to the conservation of exhaustible natural resources if such measures are made effective in conjunction with restrictions on domestic production or consumption.

The GATT 1994 does not include a reference to environmental protection.⁶⁰ Efforts during the Uruguay Round to strengthen provisions on environmental protection, in particular by amending Articles XX(b) and (g), failed, although pursuant to Article 2.2 of the Agreement on Technical Barriers to Trade (discussed below) the contracting parties did identify ‘environmental protection’ as a ‘legitimate objective’ to be considered in evaluating the GATT-compatibility of environmental regulations.

⁵⁸ *Ibid.*, Art. III. The institutional arrangements comprise a ministerial conference, a general council (with authority to establish a dispute settlement body), a secretariat and a number of specialist subsidiary councils and committees.

⁵⁹ This introductory paragraph is generally referred to as the Art. XX *chapeau*.

⁶⁰ But cf. the understanding of an ‘environmental’ interpretation of GATT Art. XX(b) and (g) of Canada, Mexico and the United States in the context of the NAFTA, pp. 854–60, below.

Technical barriers to trade

During the 1973–9 Tokyo Round, an Agreement on Technical Barriers to Trade (1979 TBT Agreement) was negotiated and adopted to deal with the growing problem of trade barriers resulting from disparate national regulations.⁶¹ It established basic guidelines which governed, among other matters, the acceptability of national environmental regulations. The 1979 TBT Agreement did not attract widespread ratification by GATT contracting parties, and during the Uruguay Round it was renegotiated. The result of the Uruguay Round negotiations was two new agreements dealing with national regulatory standards: the Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement),⁶² which deals with measures designed to protect human, animal and plant life or health, and the Agreement on Technical Barriers to Trade (TBT Agreement),⁶³ which covers other technical standards not regulated by the SPS Agreement.⁶⁴ The main objective of the TBT Agreement is to ensure that technical regulations and standards, including packaging, labelling and marking requirements and methods of certifying conformity with technical regulations and standards, are not adopted or applied so as to create unnecessary obstacles to trade. Environmental regulations may be technical barriers to trade. The TBT Agreement adopts the principles of national treatment and non-discrimination by stating that, in relation to such technical regulations or standards, imported products are not to receive less favourable treatment ‘than that accorded to like products of national origin and to like products originating in any other country’.⁶⁵ WTO members must also ensure that technical regulations ‘are not prepared, adopted or applied with a view to or with the effect of creating unnecessary obstacles to international trade’. Accordingly, technical regulations must not be ‘more trade-restrictive than necessary to fulfil a legitimate objective, taking account of the risks non-fulfilment would create’.⁶⁶ The list of ‘legitimate objectives’ in Article 2.2 includes ‘the protection of human health or safety, animal or plant life or health, or the environment’. In assessing the risks to health or the environment, the relevant factors for consideration include ‘available scientific and technical information, related processing technology or intended end-uses of products’.⁶⁷ This formulation suggests that both characteristics of the product itself, and the process by which it is produced, are relevant in assessing the health or environmental risks posed by a product.

The main distinction between technical regulations and standards, which lay down technical specifications relating to the characteristics of a product, is that in the case of the former compliance is mandatory while in the case of the latter it is not. All products are subject to the provisions of the TBT Agreement, which recognises that technical regulations and standards would not pose problems to international trade if the parties used international standards as the basis for their adoption. The TBT Agreement obliges parties, where ‘relevant international standards exist or their completion is imminent’, to use them as a basis for their technical regulations, except when they are an inappropriate means for the fulfilment of the legitimate objective pursued, for example ‘because of fundamental climatic or geographical factors or fundamental technological problems’.⁶⁸ The TBT Agreement thus explicitly recognises that environmental protection could allow deviation from international standards. Such a deviation

⁶¹ In force 1 January 1980, Misc. 20 (1979), Cmnd 7657, 31 UST 405, TIAS 9616.

⁶² 1867 UNTS 493, 15 April 1994, in force 1 January 1995.

⁶³ 1868 UNTS 120, 15 April 1994, in force 1 January 1995.

⁶⁵ Art. 2.1.

⁶⁶ Art. 2.2.

⁶⁷ *Ibid.*

⁶⁸ Art. 2.4.

⁶⁴ TBT Agreement, Art. 1.

would, however, be subject to the basic obligation of the TBT Agreement to ensure that technical regulations should not create unnecessary obstacles to international trade. The TBT Agreement also imposes certain procedural requirements. The members must publish technical regulations in draft form where they are not based on international standards, or where such standards do not exist, and where the technical regulation or standard that is being adopted is likely to have a significant effect on trade.⁶⁹ To ensure that exporting countries, particularly developing countries, have time to adapt their products or methods of production to the requirements of the importing country, the Agreement requires that there should be a reasonable interval between the publication of technical regulations and their entry into force.⁷⁰ However, where 'urgent problems of safety, health, environmental protection or national security arise or threaten to arise for a Member', the member may fast-track the introduction of a technical regulation, provided that other members are notified immediately through the WTO Secretariat and given an opportunity to present their comments in writing, discuss these comments upon request, and have their written comments and the results of discussions taken into account.⁷¹ The TBT Agreement requires each party to set up enquiry points from which relevant information about technical regulations, standards and conformity assessment procedures can be obtained.⁷²

The TBT Agreement also recognises that developing countries are entitled to special treatment and that technical assistance should be made available to them.⁷³ Such special treatment could include, *inter alia*, taking into account their trade and financial needs in the preparation of technical regulations, standards, test methods and certification systems, and ensuring that the adoption of technical regulations does not create unnecessary obstacles to exports from developing countries.⁷⁴ Additionally, the technical regulations and standards adopted should be based on scientific considerations and, to that end, in the event of a dispute arising, a WTO panel may establish a technical expert group to assist it with questions of a technical nature.⁷⁵ This assists the panel by advising whether the measure is necessary for the protection of human, animal or plant life or health and whether it was based on a legitimate scientific judgment.

Committee on Trade and the Environment

At Marrakesh, in April 1994, ministers adopted a Decision on Trade and the Environment to coordinate policies in the fields of trade and the environment within the competence of the multilateral trading system.⁷⁶ The Decision called for the establishment of a Committee on Trade and the Environment (CTE) to take over the role of the previous GATT Group on Environmental Measures and International Trade,⁷⁷ which, despite being established in 1971, was not activated until October 1991, in preparation for UNCED. The terms of reference of the CTE are to identify the relationship between trade and environmental measures to promote sustainable development, and to recommend whether there is a need for modifications to the multilateral trading system to (a) enhance positive interaction between trade and environment, (b) avoid protectionist trade measures while ensuring responsiveness to the environmental

⁶⁹ Art. 2.9. ⁷⁰ Art. 2.12. ⁷¹ Art. 2.10. ⁷² Art. 10. ⁷³ Art. 12. ⁷⁴ Art. 12.3.

⁷⁵ Art. 14.2 and Annex II.

⁷⁶ Communication from the Chairman of the GATT Trade Negotiations Committee, 'Decision on Trade and Environment', GATT Doc. MTN.TNC/W/141, 29 March 1994.

⁷⁷ GATT Doc. L/3622/Rev.1 and C/M/74.

objectives of Agenda 21 and the Rio Declaration, and (c) provide for surveillance of trade measures for environmental purposes, of trade-related aspects of environmental measures, and of effective implementation of 'multilateral disciplines' governing such measures. The Decision identified seven matters to be initially addressed by the CTE.⁷⁸ Intergovernmental deliberations produced little progress on substantive issues.⁷⁹ The role of the CTE has been somewhat revitalised by the Doha negotiations taking place under its auspices on trade and environment.⁸⁰ Since Doha, the CTE has held a number of 'special sessions' on the issues raised by paragraph 31 of the Doha negotiating agenda. 'Regular' meetings of the CTE have addressed the matters raised in paragraph 32 of the Doha Declaration, which instructs the CTE in pursuing work on all items on its agenda within its current terms of reference, to give particular attention to three items: environmental measures and their effect on market access, especially in relation to developing countries; the relevant provisions of the TRIPs Agreement; and eco-labelling requirements.⁸¹

WTO/GATT dispute settlement⁸²

In the event of a dispute between WTO members concerning environmental measures and agreements and trade obligations, the matter may be referred to dispute settlement in accordance with the procedures of the DSU.⁸³ The DSU introduced significant changes to the dispute settlement procedures formerly employed under the GATT. The Dispute Settlement Body (DSB) established under the WTO is responsible for administering the rules and procedures governing dispute settlement. The traditional approaches used under GATT 1947 (consultation, good offices, conciliation and mediation) remain in place,⁸⁴ with amended rules for the Dispute Settlement Panels and additional provisions on appellate review and arbitration. Panels assist

⁷⁸ These issues were: (1) the relationship between the provisions of the multilateral trading system and trade measures for environmental purposes, including those in environmental agreements; (2) the relationship between certain environmental policies and measures and the multilateral trading system; (3) the relationship between the multilateral trading system and environmental charges and taxes and requirements for environmental purposes relating to products (including standards and technical regulations, packaging, labelling and recycling); (4) the transparency of trade measures for environmental purposes and environmental measures and requirements with significant trade effects; (5) the relationship between dispute settlement mechanisms in the multilateral trading system and those in environmental agreements; (6) the effect of environmental measures on market access; and (7) the issue of exports of domestically prohibited goods.

⁷⁹ See S. Charnovitz, 'A Critical Guide to the WTO's Report on Trade and Environment', 14 *Arizona Journal of International and Comparative Law* 341 (1997); G. Van Calster, 'The World Trade Organization Committee on Trade and Environment: Exploring the Challenges of the Greening of Free Trade', 5(2) *European Energy and Environmental Law Review* 44 (2011).

⁸⁰ Declaration of the Fourth Ministerial Conference, Doha, Qatar, WT/MIN(01)/DEC/1, 20 November 2001, paras. 31–3.

⁸¹ WTO CTE, Report (2010) of the Committee on Trade and Environment, 30 November 2010, para. 2. See also WTO CTE, Report by the Chairman to the Trade Negotiations Committee, 21 April 2011, TN/TE/20.

⁸² R. E. Hudec, 'The New WTO Dispute Settlement Procedure: An Overview of the First Three Years', 9 *Minnesota Journal of Global Trade* 1 (1999); J. Jackson, *The Jurisprudence of GATT and the WTO* (2000); P. K. Rao, *World Trade Organization and the Environment* (2000); G. Triggs, 'World Trade Organization: Dispute Resolution and the Environment', 7(3/4) *Asia Pacific Journal of Environmental Law* 43 (2002); M. Harris, 'Beyond Doha: Clarifying the Role of the WTO in Determining Trade-Environment Disputes', 21(1) *Law in Context* 307 (2004); J. H. Knox, 'The Judicial Resolution of Conflicts Between Trade and the Environment', 28 *Harvard Environmental Law Review* 1 (2004); J. H. Jackson, 'The WTO Dispute Settlement System after Ten Years: The First Decade's Promises and Challenges', in Y. Taniguchi, A. Yanovich and J. Bohanes (eds.), *The WTO in the Twenty-First Century: Dispute Settlement, Negotiations, and Regionalism in Asia* (2007), 23; E.-U. Petersmann, 'WTO Dispute Settlement Practice 1995–2005: Lessons from the Past and Future Challenges', in Y. Taniguchi, A. Yanovich and J. Bohanes (eds.), *The WTO in the Twenty-First Century: Dispute Settlement, Negotiations, and Regionalism in Asia* (2007), 38.

⁸³ Chapter 5, pp. 177–8, above. ⁸⁴ DSU, paras. 4 and 5.

the DSB in making recommendations or in giving the rulings provided for in the relevant agreements.⁸⁵ Third parties having a substantial interest in a matter before a Panel are entitled to participate in Panel proceedings.⁸⁶ Most significantly, Panel reports become binding unless one of the parties to the dispute decides to appeal or the DSB decides by consensus not to adopt the report.⁸⁷ Appeal is permitted only on points of law related to a Panel ruling. The appeal is made to a standing Appellate Body, which is composed of seven independent persons, three of whom serve on any one case.⁸⁸ Appellate Body reports must be adopted by the DSB and unconditionally accepted by the parties to the dispute unless the DSB decides by consensus not to adopt the report within thirty days of its issuance.⁸⁹ The DSU also provides for rules on surveillance of implementation of recommendations and rulings of the DSB, compensation and suspension of concessions, and binding arbitration by mutual agreement of the parties as an alternative means of dispute settlement.⁹⁰

Prior to the entry into force of the DSU in January 1995, six GATT Panels had been established for disputes relating – directly or indirectly – to international environmental issues,⁹¹ and many other Panel decisions provided guidance on interpretation of relevant provisions of the GATT.⁹² The most important of these decisions were two Panel reports issued in 1991 and 1994⁹³ concerning the dispute between Mexico and the United States over the latter's ban of imports of yellow-fin tuna from Mexico and 'intermediary nations', which had been caught in a manner that harmed dolphins.⁹⁴ The dispute was controversial and, unlike

⁸⁵ *Ibid.*, para. 11. ⁸⁶ *Ibid.*, para. 10. ⁸⁷ *Ibid.*, para. 16.3. ⁸⁸ *Ibid.*, para. 17. ⁸⁹ *Ibid.*, para. 17.14.

⁹⁰ *Ibid.*, paras. 21, 22 and 25.

⁹¹ See *Canadian Tuna Case*, Report of the Panel adopted on 22 February 1982, BISD/29S/91; *US Chemicals Tax Case*, Report of the Panel adopted on 17 June 1987, BSD/34S/160; *US Processed Herring Case (Canada – Measures Affecting Exports of Unprocessed Herring and Salmon)*, Report of the Panel adopted on 22 March 1988, BISD/35S/98; *Thai Cigarette Case (Thailand – Restriction on Importation of and Internal Taxes on Cigarettes)*, Report of the Panel adopted on 7 November 1990, BISD/37S/200; *Tuna/Dolphin I*, 30 ILM 1594 (1991); *Tuna/Dolphin II*, 33 ILM, 839 (1994).

⁹² *US – Section 337 of the Tariff Act of 1930*, Panel Report, 7 November 1989, BISD/36S/345; *EEC – Regulation on Imports of Parts and Components*, Panel Report, 16 May 1990, BISD/37S/132.

⁹³ *Tuna/Dolphin I*, 30 ILM 1594 (1991); *Tuna/Dolphin II*, 33 ILM 839 (1994). A detailed discussion of these cases is included in the second edition of this book, at pp. 953–61. See also M. Hurlock, 'The GATT, US Law and the Environment: A Proposal to Amend the GATT in Light of the Tuna/Dolphin Decision', 92 *Columbia Law Review* 2098 (1992); B. Kingsbury, 'The Tuna-Dolphin Controversy, the World Trade Organization and the Liberal Project to Reconceptualize International Law', 5 *Yearbook of International Environmental Law* 1 (1994); A. Ferrante, 'The Dolphin-Tuna Controversy and Environmental Issues', 5 *Journal of Transnational Law and Policy* 279 (1996).

⁹⁴ The dispute concerned regulations adopted under the US 1972 Marine Mammal Protection Act (MMPA), regarding the harvesting of tuna by US fishermen and others subject to the jurisdiction of the United States. Under the MMPA, US authorities granted licences for the fishing of yellow-fin tuna by US vessels in the Eastern Tropical Pacific Ocean (ETPO), on condition that the domestic fleet did not exceed an incidental taking of a total of 20,500 dolphins per year in the ETPO. The MMPA also required the US Secretary of State 'to ban the importation of commercial fish or products from fish which have been caught with commercial fishing technology which results in the incidental kill or incidental serious injury of ocean mammals in excess of United States standards': MMPA, section 101(a)(2). As a condition of access to the US market for the yellow-fin tuna or yellow-fin tuna products caught by its fleet, each country of registry of vessels fishing yellow-fin tuna in the ETPO was required to prove to the satisfaction of the US authorities that its overall regulatory regime regarding the taking of marine mammals was comparable to that of the United States. To meet this requirement, the country in question needed to prove that the average rate of incidental taking of marine mammals by its tuna fleet operating in the ETPO was not in excess of 1.25 times the average incidental taking rate of US vessels operating in the ETPO during the same period. The MMPA additionally provided that ninety days after imports of yellow-fin tuna and yellow-fin tuna products from a country had been prohibited in accordance with the rules set out above, the import of such tuna and tuna products from any 'intermediary nation' would also be prohibited, unless the intermediary nation could prove that it too had acted to ban imports of such tuna and tuna products from the country of origin subject to the direct import embargo. Finally, certification by the

previous GATT panel decisions, subject to intense public scrutiny. The panel rulings in the *Tuna/Dolphin* cases were never formally adopted by the GATT Council,⁹⁵ and have now largely been overtaken by developments in subsequent WTO jurisprudence. In particular, the ruling of the 1991 Panel refuting the use of unilateral trade measures for environmental purposes on the basis that such measures jeopardise the multilateral framework for trade among parties and have an impermissible extra-jurisdictional scope,⁹⁶ together with the finding of the 1994 Panel that trade measures designed to force other parties to change their domestic environmental and health policies do not fall within the scope of Article XX,⁹⁷ can no longer be regarded as good law. Nonetheless, the *Tuna/Dolphin* Panel decisions continue to raise uncertainties in areas where WTO law remains unsettled. For instance, there is the infamous ruling of the 1991 Panel that US import prohibitions were discriminatory and did not meet the requirements of Article III(4) which:

calls for a comparison of the treatment of imported tuna as a product with that of domestic tuna *as a product*. Regulations governing the taking of dolphins incidental to the taking of tuna could not possibly affect tuna as a product.⁹⁸

This finding continues to cast a shadow over the WTO-compatibility of trade measures that distinguish between products based on the environmental consequences of their process and production methods (PPMs).⁹⁹ On a more positive note, the 1991 Panel upheld labelling requirements under the US 1990 Dolphin Protection Consumer Information Act (DPCIA) restricting the use of the label 'Dolphin Safe',¹⁰⁰ paving the way for the acceptance of some forms of eco-labelling under international trade law.¹⁰¹ Equally, the 1994 Panel, although

US Secretary of State to the President, which took place six months after the effective date of an embargo, triggered the operation of section 8(a) of the 1967 Fishermen's Protective Act (the 'Pelly Amendment'). This provided a discretionary authority for the US President to order a prohibition of imports of fish products 'for such duration as the President determines appropriate and to the extent that such prohibition is sanctioned by the [GATT]'. Under the MMPA, the United States prohibited the import into its customs territory of yellow-fin tuna and yellow-fin tuna products from Mexico, which were caught with purse-seine nets in the ETPO. An earlier embargo had been imposed on such tuna and tuna products in August 1990; a new embargo was put in place in March 1991, and from 24 May 1991 the United States implemented an 'intermediary nations' embargo on products from several other countries, including those from the European Community.

⁹⁵ Under previous GATT dispute settlement rules, a consensus for adoption was required in order for a Panel report to be adopted. This permitted the losing party to block adoption of a report with which it did not agree.

⁹⁶ *Tuna/Dolphin I* (1991), paras. 5.26 and 5.32.

⁹⁷ *Tuna/Dolphin II* (1994), paras. 5.26 (on Art. XX(g)) and 5.39 (on Art. XX(b)). This interpretation, which has no apparent basis in the text of the GATT, created a test which could make it 'impossible for any nation to meet in the international trade arena': C. Wofford, 'A Greener Future at the WTO: The Refinement of WTO Jurisprudence on Environmental Exceptions to GATT', 24 *Harvard Environmental Law Review* 563 at 579 (2000).

⁹⁸ *Tuna/Dolphin I* (1991), para. 5.15 (emphasis added).

⁹⁹ *Ibid.*, paras. 5.19, 5.34, 5.40.

¹⁰⁰ *Ibid.*, para. 5.44. The DPCIA provided that, when a tuna product exported from or offered for sale in the US bears the optional label 'Dolphin Safe' or any similar label indicating it was fished in a manner not harmful to dolphins, this tuna product must not contain tuna harvested on the high seas by a vessel engaged in driftnet fishing, or harvested in the ETPO by a vessel using a purse-seine net, unless it is accompanied by documentary evidence showing that the purse-seine net was not intentionally deployed to encircle dolphins. The labelling provisions of the DPCIA took effect on 28 May 1991.

¹⁰¹ More difficult issues are raised by negative eco-labelling, for example a requirement for a food to be labelled as 'containing GMOs': see D. Morgan and G. Goh, 'Genetically Modified Food Labelling and the WTO Agreements',

rejecting the objective of unilateral environmental trade measures as GATT-inconsistent, nevertheless affirmed that a living species could constitute an ‘exhaustible natural resource’ for the purpose of Article XX(g),¹⁰² and that the exceptions to Article XX did ‘not spell out any limitation on the location of the living things to be protected’.¹⁰³

While the GATT Panel decisions in the *Tuna/Dolphin* dispute placed significant limitations on the use of unilateral trade measures by states to achieve environmental goals, their findings must now be read in the context of the subsequent jurisprudence of the WTO Appellate Body, described below, which render both decisions of historical – rather than practical – interest.

Reformulated Gasoline case (1996)

The *Reformulated Gasoline* case¹⁰⁴ provided the new WTO Appellate Body with its first case, and its first opportunity to consider trade measures purporting to pursue environmental goals. The dispute arose out of a complaint brought by Brazil and Venezuela against regulations promulgated under the US Clean Air Act (CAA) dealing with the standards for reformulated and conventional gasoline. The function of the regulations, known as the ‘Gasoline Rule’, was to establish ‘cleanliness’ standards for gasoline sold throughout the US, based on 1990 pollution levels. The Gasoline Rule made provision for the establishment of 1990 baselines for refiners, blenders and importers as an integral part of the process of compliance assessment for the programme. Domestic entities were permitted to establish individual baselines; no provision was made, however, to allow foreign refiners to establish individual baselines. Instead, all foreign refiners were required to use statutorily determined baselines as a basis for determining whether their gasoline met the requirements of the Gasoline Rule. The US argued that statutory baselines for foreign refiners were necessary because of the overwhelming administrative difficulties its Environmental Protection Agency (EPA) would face if required to verify compliance of foreign refiners with individual baselines.¹⁰⁵ The US also claimed that the measures were justified under the ‘environmental exceptions’ of Article XX as measures necessary for the protection of human health and relating to the conservation of an exhaustible natural resource (clean air).¹⁰⁶

The WTO Panel, at first instance, concluded that the Gasoline Rule was inconsistent with the national treatment obligation of Article III(4) and was not justified under Article XX(b)

13(3) *Review of European Community and International Environmental Law* 306 (2004). However, see the September 2011 ruling of a WTO panel finding against the legality of US ‘dolphin-safe’ product labelling: *United States – Measures Concerning the Importation, Marketing and Sale of Tuna and Tuna Products*, Report of the Panel, WTO/DS381/R, 15 September 2011. It is likely the United States will appeal this decision to the WTO Appellate Body. Difficult issues are also raised by negative eco-labelling, for example a requirement for a food to be labelled as ‘containing GMOs’: see D. Morgan and G. Goh, ‘Genetically Modified Food Labelling and the WTO Agreements’, 13(3) *Review of European Community and International Environmental Law* 306 (2004).

¹⁰² *Tuna/Dolphin II* (1994), para. 5.13.

¹⁰³ *Ibid.*, paras. 5.15–5.17 (Art. XX(g)) and 5.31 (Art. XX(b)).

¹⁰⁴ *United States – Standards for Reformulated and Conventional Gasoline*, Report of the Panel, 29 January 1996, WT/DS2/R (‘*Reformulated Gasoline*, Panel Report’); *United States – Standards for Reformulated and Conventional Gasoline*, Report of the Appellate Body, 29 April 1996, WT/DS2/AB/R (‘*Reformulated Gasoline*, Appellate Body Report’), 35 ILM 603 (1996).

¹⁰⁵ *Reformulated Gasoline*, Panel Report, paras. 3.19 and 6.23.

¹⁰⁶ *Ibid.*, para. 3.37. The United States also sought to justify its measures under Art. XX(d), but this argument was rejected by the Panel and its finding was not appealed by the United States.

or (g).¹⁰⁷ In reaching its conclusion in respect of Article XX(b), the Panel ruled that statutory baselines for foreign refiners were not ‘necessary’ because other GATT-consistent or less inconsistent measures, such as applying statutory baselines to domestic as well as foreign refiners or permitting foreign refiners to use individual baselines, were reasonably available to the US to achieve its policy goal.¹⁰⁸ The Panel considered that the US had not discharged its burden of proving that reasons of administrative complexity precluded the effective use of individual baselines for foreign refiners, noting particularly that the US had not shown that a determination of origin of the gasoline could not be achieved by standard means of documentary evidence and third party verification.¹⁰⁹ In respect of Article XX(g), the Panel concluded that clean air was a ‘natural resource’ that could be ‘depleted’, and hence a policy to reduce the depletion of clean air was a policy to conserve an exhaustible natural resource within the meaning of Article XX(g).¹¹⁰ However, the Panel held that, as there was no direct connection between the less favourable treatment of imported gasoline and the US objective of improving air quality, the baseline establishment rules could not be ‘primarily aimed at’ the conservation of a natural resource.¹¹¹ In reaching this conclusion, the Panel appeared to rely on its earlier conclusion in respect of Article XX(b), namely, that the baseline establishment rules were not necessary for the protection of human, animal or plant life or health. The Panel thus read into Article XX(g) a ‘least restrictive means’ test.

The appeal to the Appellate Body was limited to the Panel’s rulings in respect of the application of Article XX(g). The Appellate Body found a number of legal errors in the Panel’s approach to Article XX(g). First, the Appellate Body noted that the Panel should have examined whether it was the *measure*, rather than the *less favourable treatment*, which aimed at the conservation of resources.¹¹² Second, the Panel had erred in applying a least restrictive means test (i.e. effectively whether the measure was ‘necessary’) rather than interpreting the actual words of the exception which simply required that the measure ‘relate to’ conservation. While the Appellate Body did not expressly overrule the interpretation of ‘relating to’ as equivalent to ‘primarily aimed at’ advanced in previous GATT Panel decisions including the *Tuna/Dolphin* cases, it noted that the phrase ‘primarily aimed at’ was not itself treaty language and ‘was not designed as a simple litmus test for inclusion or exclusion from Article XX(g)’.¹¹³ In this regard, the Appellate Body concluded that the GATT ‘is not to be read in clinical isolation from public international law’, opening up the possibility of its reaching out to other rules of international law arising outside the WTO, including those in the environmental field.¹¹⁴

Overtaking the Panel, the Appellate Body ruled that the Gasoline Rule was ‘primarily aimed at’ conservation as the baseline rules were necessary to allow scrutiny and monitoring of the level of compliance by refiners and others with the non-degradation requirements, which in turn were necessary to reach the objective of stabilising and preventing further deterioration of air quality.¹¹⁵ The Appellate Body noted that the requirement in Article XX(g) for the measures to be made effective in conjunction with restrictions on domestic production and consumption

¹⁰⁷ The complainants also argued that the US measure amounted to a ‘technical regulation’ under the TBT Agreement, but the Panel concluded that, in view of its findings under the GATT, it was not necessary to decide on the issues raised under the TBT Agreement: *ibid.*, para. 6.43.

¹⁰⁸ *Ibid.*, para. 6.25. ¹⁰⁹ *Ibid.*, para. 6.26. ¹¹⁰ *Ibid.*, para. 6.37. ¹¹¹ *Ibid.*, para. 6.40.

¹¹² *Reformulated Gasoline*, Appellate Body Report, 617–18.

¹¹³ *Ibid.*, 623.

¹¹⁴ *Ibid.*, 621; J. Cameron and K. R. Gray, ‘Principles of International Law in the WTO Dispute Settlement Body’, 50 *International and Comparative Law Quarterly* 248 (2001).

¹¹⁵ *Reformulated Gasoline*, Appellate Body Report, 621.

amounted to a requirement of even-handedness that was satisfied in respect of the US measure.¹¹⁶

The Appellate Body then went on to analyse the US measure under the *chapeau* to Article XX. In doing so, it made the following general observations about the interpretation of the *chapeau*:

- It addresses not so much the questioned measure or its content but the manner in which the measure is applied.
- Its purpose and object are the prevention of abuse of the Article XX exceptions.
- It is animated by the principle that, while the exceptions of Article XX may be invoked as a matter of legal right, they should not be so applied as to frustrate or defeat the legal obligations of the holder of rights under the substantive rules of the GATT.
- Measures falling within the particular exceptions must be applied with due regard to the legal duties of the party claiming the exception and the legal rights of the other parties concerned.
- The burden of proof to justify the measure under the *chapeau* rests with the party advancing the measure.¹¹⁷

The Appellate Body noted that the US had alternative courses open to it to achieve its policy goal, namely:

- (1) setting statutory baselines for domestic refiners; or
- (2) allowing foreign refiners to use individual baselines.¹¹⁸

The Appellate Body did not accept that the use of individual baselines for foreign refiners was precluded by the administrative difficulties that would face the EPA. The Appellate Body noted that there are ‘established techniques for checking, verification, assessment and enforcement of data relating to imported goods, techniques which in many contexts are accepted as adequate to permit international trade’, and concluded that the US must have been aware that for these established techniques to work ‘co-operative arrangements with both foreign refiners and the foreign governments concerned would have been necessary and appropriate’.¹¹⁹ It appeared to the Appellate Body that the US had not pursued the possibility of entering into co-operative arrangements with foreign governments, or, if it had, then it had not reached ‘the point where it encountered governments that were unwilling to co-operate’.¹²⁰

In respect of the application of statutory baselines to domestic refiners, the US had argued that this would have been physically and financially impossible because of the magnitude of the changes required in almost all US refineries, causing substantial delay in implementing the programme. The Appellate Body noted, however, that similar considerations did not appear to have been taken into account *vis-à-vis* foreign refiners.¹²¹

There had been two omissions on the part of the US, namely:

- (1) the failure to explore adequately the means (including, in particular, co-operation with the governments of Venezuela and Brazil) of mitigating the administrative problems relied on as justification by the US for rejecting individual baselines for foreign refiners; and

¹¹⁶ *Ibid.*, 625–6.

¹¹⁷ *Ibid.*, 626–9.

¹¹⁸ *Ibid.*, 629.

¹¹⁹ *Ibid.*, 631.

¹²⁰ *Ibid.*

¹²¹ *Ibid.*, 632.

- (2) the failure to count the costs for foreign refiners that would result from the imposition of statutory baselines.

According to the Appellate Body, these resulted in the US measure giving rise to unjustifiable discrimination and amounting to a disguised restriction on international trade. The US measure thus could not be validated under Article XX(g).¹²² The Appellate Body went out of its way, however, to note that:

It is of some importance that the Appellate Body point out what this does not mean. It does not mean, or imply, that the ability of any WTO Member to take measures to control air pollution or, more generally, to protect the environment, is at issue. That would be to ignore the fact that Article XX of [GATT] contains provisions designed to permit important state interests – including the protection of human health, as well as the conservation of exhaustible natural resources – to find expression. The provisions of Article XX were not changed as a result of the Uruguay Round of Multilateral Trade Negotiations. Indeed, in the preamble to the WTO Agreement and in the Decision on Trade and Environment, there is specific acknowledgment to be found about the importance of co-ordinating policies on trade and the environment. WTO Members have a large measure of autonomy to determine their own policies on the environment (including its relationship with trade), their environmental objectives and the environmental legislation they enact and implement. So far as concerns the WTO, that autonomy is circumscribed only by the need to respect the requirements of the [GATT] and the other covered agreements.¹²³

Shrimp/Turtle cases (1998 and 2001)

The second 'environmental' case to come before the dispute resolution bodies of the WTO raised similar legal issues to those considered by GATT Panels in the *Tuna/Dolphin* dispute.¹²⁴ The case concerned an import prohibition imposed by the United States on certain shrimp and shrimp products from India, Malaysia, Pakistan and Thailand, on the ground that they were harvested in a manner that adversely affected endangered sea turtles.¹²⁵ In 1987, the United States had issued regulations (pursuant to its 1973 Endangered Species Act) requiring all US-registered shrimp trawl vessels to use approved turtle excluder devices (TEDs) in specified areas where there was a significant mortality of sea turtles in shrimp harvesting. TEDs allowed for shrimp to be harvested without harming other species, including sea turtles. The US regulations became fully effective in 1990, and were subsequently modified to require the general use of approved TEDs at all times and in all areas where there was a likelihood that shrimp trawling would interact with sea turtles. In 1989, the United States enacted section 609 of Public Law

¹²² *Ibid.*, 633. ¹²³ *Ibid.*, 634.

¹²⁴ D. Brack, 'The Shrimp-Turtle Case: Implications for the Multilateral Environmental Agreement-World Trade Organization Debate', 9 *Yearbook of International Environmental Law* 13 (1998); H. Mann, 'Of Revolution and Results: Trade and Environmental Law in the Afterglow of the Shrimp Turtle Case', 9 *Yearbook of International Environmental Law* 28 (1998); D. Wirth, 'Some Reflections on Turtles, Tuna, Dolphin and Shrimp', 9 *Yearbook of International Environmental Law* 40 (1998); R. Howse, 'The Appellate Body Rulings in the Shrimp/Turtle Case: A New Legal Baseline for the Trade and Environmental Debate', 27 *Columbia Journal of Environmental Law* 491 (2002); J. H. Knox, 'The Judicial Resolution of Conflicts Between Trade and the Environment', 28 *Harvard Environmental Law Review* 1 (2004).

¹²⁵ AB-1998-4, 12 October 1998, 33 ILM 118 (1999).

101-162, which addressed the importation of certain shrimp and shrimp products. Section 609 required the US Secretary of State to negotiate bilateral or multilateral agreements with other nations for the protection and conservation of sea turtles. Section 609(b)(1) imposed (not later than 1 May 1991) an import ban on shrimp harvested with commercial fishing technology that might adversely affect sea turtles. Further regulatory guidelines were adopted in 1991, 1992 and 1996, governing, *inter alia*, annual certifications to be provided by harvesting nations. In broad terms, certification was to be granted only to those harvesting nations that provided documentary evidence of the adoption of a regulatory programme to protect sea turtles in the course of shrimp trawling. Such a regulatory programme had to be comparable to the programme of the US, with an average rate of incidental taking of sea turtles by their vessels comparable to that of US vessels. The 1996 guidelines further required that all shrimp imported into the United States had to be accompanied by a shrimp exporter's declaration attesting that the shrimp were harvested either in the waters of the nation certified under section 609, or under conditions that did not adversely affect sea turtles, including through the use of TEDs. Section 609 also included a provision calling upon the US Secretary of State, in consultation with the Secretary of Commerce, 'to initiate negotiations as soon as possible for the development of bilateral or multilateral agreements with other nations for the protection and conservation of ... sea turtles'. Acting under this provision, the United States negotiated and concluded an Inter-American Convention for the Protection and Conservation of Sea Turtles with nations fishing for shrimp in the Western Atlantic. However, the United States made no attempt to negotiate a similar agreement with the complainants prior to the imposition of the import ban.

From a WTO perspective, the difficulty with the approach taken by the United States was that it was, in effect, applying its conservation laws extra-territorially to activities carried out within – or subject to the jurisdiction of – third states. This raises an issue of broader international legal interest, namely, the circumstances (if any) in which a state may apply its conservation measures to activities taking place outside its territory or jurisdiction, including by non-nationals. The United States sought to justify its actions on the ground that the sea turtles it was seeking to protect were recognised in international law as being endangered.

The US legislation was challenged by India, Malaysia, Pakistan and Thailand. At first instance, a WTO Panel concluded that the import ban applied on the basis of section 609 was not consistent with Article XI(1) of GATT 1994 and could not be justified under any of the exceptions in Article XX of GATT 1994.¹²⁶ The US appealed to the WTO Appellate Body, invoking in particular Article XX(g) to justify the legality of its measures. In appraising section 609 under Article XX of GATT 1994, the Appellate Body followed a three-step analysis. First, the Appellate Body asked whether the Panel's approach to the interpretation of Article XX was appropriate; it concluded that the Panel's reasoning was flawed and 'abhorrent to the principles of interpretation we are bound to apply'.¹²⁷ Second, the Appellate Body asked whether section 609 was 'provisionally justified' under Article XX(g). Invoking the concept of 'sustainable development', it found that it was so justified.¹²⁸ Third, it asked whether section 609 met the requirements of the *chapeau* to Article XX, and concluded that it did not because the US actions

¹²⁶ *United States – Import Prohibition of Certain Shrimp and Shrimp Products*, Report of the Panel, WT/DS58/R, 15 May 1998.

¹²⁷ Paras. 112–24. ¹²⁸ Paras. 125–45.

imposed an ‘unjustifiable discrimination’ and an ‘arbitrary discrimination’ against shrimp to be imported from India, Malaysia, Pakistan and Thailand. In relation to the second and third steps, the Appellate Body invoked the principle of ‘sustainable development’, as an aid to interpretation.

The Appellate Body’s approach was premised upon an application of the ‘customary rules of interpretation of public international law’, as required by Article 3(2) of the DSU, which rules ‘call for an examination of the ordinary meaning of the words of a treaty, read in their context, and in the light of the object and purpose of the treaty involved’.¹²⁹ It was these customary rules that the Panel had failed to apply, leading to the conclusion at step one that the Panel’s approach was flawed. In relation to step two, the Appellate Body invoked the principle of sustainable development in determining whether the measures taken by the United States were ‘provisionally justified’. As a threshold question, the Appellate Body had to decide whether section 609 was a measure *concerned with* the conservation of ‘exhaustible natural resources’, in the face of the argument that the term refers only to finite resources such as minerals, and not biological or renewable resources such as sea turtles (which, it was argued, fall to be covered by Article XX(b)). The Appellate Body rejected the argument, ruling that Article XX(g) extended to measures taken to conserve exhaustible natural resources, whether living or non-living, and that the sea turtles involved here ‘constituted “exhaustible natural resources” for the purpose of Article XX(g)’.¹³⁰ In reaching that conclusion, the Appellate Body stated that Article XX(g) had to be read by a treaty interpreter ‘in the light of contemporary concerns of the community of nations about the protection and conservation of the environment’.¹³¹

Referring to the Preamble to the 1994 WTO Agreement, the Appellate Body noted that its signatories were ‘fully aware of the importance and legitimacy of environmental protection as a goal of national and international policy’ and that the Preamble ‘explicitly acknowledges “the objective of *sustainable development*”’.¹³² This, said the Appellate Body, was a concept that ‘has been generally accepted as integrating economic and social development and environmental protection’.¹³³ According to the Appellate Body, this conclusion was supported by modern international conventions and declarations, including the UN Convention on the Law of the Sea.¹³⁴ It followed that the sea turtles at issue were an ‘exhaustible natural resource’ and highly migratory animals, passing in and out of the waters subject to the rights of jurisdiction of various coastal states on the high seas.¹³⁵ The Appellate Body observed:

Of course, it is not claimed that all populations of these species migrate to, or traverse, at one time or another, waters subject to United States jurisdiction. Neither the appellant nor any of the appellees claims any rights of exclusive ownership over the sea turtles, at least not while they are swimming freely in their natural habitat – the oceans. We do not pass upon the question of whether there is an implied

¹²⁹ Para. 114. ¹³⁰ *Ibid.*, paras. 131 and 134. ¹³¹ *Ibid.*, para. 129. ¹³² *Ibid.*

¹³³ *Ibid.*, para. 129, at note 107 and the accompanying text. The Preamble to the WTO Agreements provides, *inter alia*, that ‘the Parties to this Agreement, recognising that their relations in the field of trade and economic endeavour should be conducted with a view to raising standards of living, ensuring full employment and a large and steadily growing volume of real income and effective demand, and expanding the production of and trade in goods and services, while allowing for the optimal use of the world’s resources in accordance with the objective of sustainable development, seeking both to protect and preserve the environment and to enhance the means of doing so in a manner consistent with their respective needs and concerns at different levels of economic development . . .’.

¹³⁴ *Ibid.*, para. 130, citing Art. 56(1)(a) of the 1982 UNCLOS. ¹³⁵ *Ibid.*, paras. 132 and 133.

jurisdictional limitation in Article XX(g), and if so, the nature or extent of that limitation. We note only that in the specific circumstances of the case before us, there is a sufficient nexus between the migratory and endangered marine populations involved and the United States for the purpose of Article XX(g).¹³⁶

The concept of ‘sustainable development’ was not expressly invoked to justify this potentially far-reaching conclusion as to the nexus between the sea turtles and the United States. Nevertheless, the concept appeared to inform that conclusion, apparently establishing the necessary link between the interest of the United States in the proper conservation of a distant natural resource located from time to time outside its jurisdiction, and the finding that section 609 was ‘provisionally justified’ under Article XX(g). Although the Appellate Body claimed that it did ‘not pass upon the question of whether there is an implied jurisdictional limitation in Article XX(g)’, its conclusion appears hardly consistent with such a limitation. The concept of ‘sustainable development’ (and the need to integrate economic and social development and environmental protection) appears to have been implicitly invoked to extend (by interpretation) the jurisdictional scope of Article XX(g). This marked a significant move away from the approach of the earlier *Tuna/Dolphin* panels.

The third step of the Appellate Body’s analysis addressed the issue of whether section 609 was consistent with the requirements of the *chapeau* to Article XX. Again, the Appellate Body invoked ‘sustainable development’, this time in the context of its conclusion that section 609 was an ‘unjustifiable’ discrimination.¹³⁷ The Appellate Body revisited the Preamble to the WTO Agreement, noting that it demonstrated that WTO negotiators recognised ‘that optimal use of the world’s resources should be made in accordance with the objective of sustainable development’, and that the preambular language, including the reference to sustainable development

must add colour, texture and shading to our interpretation of the agreements annexed to the WTO Agreement, in this case the GATT 1994. We have already observed that Article XX(g) of the GATT 1994 is appropriately read with the perspective embodied in the above preamble.¹³⁸

In support of the relevance of ‘sustainable development’ to the process of interpretation of the WTO Agreements, the Appellate Body invoked the Decision by ministers at Marrakesh to establish a permanent Committee on Trade and the Environment. That Decision refers, in part, to the consideration that ‘there should not be . . . any policy contradiction between . . . an open, non-discriminatory and equitable multilateral trading system on the one hand, and acting for the protection of the environment, and the promotion of sustainable development on the other’.¹³⁹ The Appellate Body noted that the terms of reference for the establishment by this Decision of the Committee on Trade and the Environment (which made further reference to the

¹³⁶ *Ibid.*, para. 133.

¹³⁷ Sustainable development is not invoked or referred to to justify the conclusion that section 609 constitutes an ‘arbitrary discrimination’.

¹³⁸ *Ibid.*, para. 153. ¹³⁹ *Ibid.*, para. 154.

concept of sustainable development) specifically referred to Principles 3 and 4 of the Rio Declaration on Environment and Development.¹⁴⁰

It appears that 'sustainable development' informed the conclusion that the US measures constituted an unjustifiable discrimination: according to the Appellate Body, section 609 established a rigid standard by which US officials determined whether or not countries would be certified, and it was not acceptable 'for one WTO Member to use an economic embargo to require other Members to adopt essentially the same comprehensive regulatory programme, to achieve a certain policy goal, as that in force within that Member's territory, without taking into consideration different conditions which may occur in the territories of those other Members'.¹⁴¹ Shrimp caught using identical methods to those employed in the United States had been excluded from the US market solely because they had been caught in waters of countries that had not been certified by the United States, and the resulting situation was 'difficult to reconcile with the declared [and provisionally justified] policy objective of protecting and conserving sea turtles'.¹⁴² This suggested that the United States was more concerned with effectively influencing WTO members to adopt essentially the same comprehensive regulatory regime as that applied by the United States to its domestic shrimp trawlers. Moreover, the United States had not engaged the appellees 'in serious, across-the-board negotiations with the objective of concluding bilateral or multilateral agreements for the protection and conservation of sea turtles, before enforcing the import prohibition'.¹⁴³ The failure to have *a priori* consistent recourse to diplomacy as an instrument of environmental protection policy produced 'discriminatory impacts on countries exporting shrimp to the US with which no international agreements [were] reached or even seriously attempted'.¹⁴⁴ The fact that the United States negotiated seriously with some but not other WTO members that exported shrimp to the United States had an effect that was 'plainly discriminatory and unjustifiable'. Further, different treatment of different countries' certification was observable in the differences in the levels of efforts made by the United States in transferring the required TED technology to specific countries.¹⁴⁵ Moreover, the protection and conservation of highly migratory species of sea turtles demanded 'concerted and co-operative efforts on the part of the many countries whose waters [were] traversed in the course of recurrent turtle migrations'.¹⁴⁶ Such 'concerted and co-operative efforts' were required by, *inter alia*, the Rio Declaration (Principle 12), Agenda 21 (para. 2.22 (i)), the 1992 Biodiversity Convention (Article 5) and the 1979 Berne Convention. Further, the 1996 Inter-American Convention for the Protection and Conservation of Sea Turtles provided a 'convincing demonstration' that alternative action was reasonably open to the United States other than the unilateral and non-consensual procedures established by section 609.¹⁴⁷ And, finally, while the United States was a party to the 1973 CITES, it had not attempted to raise the issue of sea turtle mortality in relevant CITES committees,

¹⁴⁰ Principle 3 of the Rio Declaration provides: '[T]he right to development must be fulfilled so as to equitably meet developmental and environmental needs of present and future generations.' Principle 4 states: 'In order to achieve sustainable development, environmental protection shall constitute an integral part of the development process, and cannot be considered in isolation from it.'

¹⁴¹ *Ibid.*, para. 164. ¹⁴² *Ibid.*, para. 165. ¹⁴³ *Ibid.*, para. 166. ¹⁴⁴ *Ibid.*, para. 167. ¹⁴⁵ *Ibid.*

¹⁴⁶ *Ibid.*, para. 168.

¹⁴⁷ *Ibid.*, para. 170. The 1996 Convention established obligations to reduce harm to sea turtles and encouraged the appropriate use of TEDs (Art. IV(2)(h)). It also provided expressly that in implementing the Convention the parties should act in accordance with the WTO Agreement, including in particular the TBT Agreement and Art. XI of GATT 1994 (Art. XV).

and had not signed the 1979 Berne Convention or the 1982 UNCLOS, or ratified the 1992 Biodiversity Convention.¹⁴⁸

Shrimp/Turtle case Phase II (2001)

The Appellate Body report in the *Shrimp/Turtle* dispute was adopted by the WTO's DSB on 6 November 1998, together with a recommendation that the United States bring the import prohibition into conformity with its obligations under the WTO Agreement. In implementing the recommendations and rulings of the DSB, the United States did not amend section 609, leaving its import prohibition on shrimp from uncertified states in effect. However, the US Department of State issued 'Revised Guidelines for the Implementation of Section 609 of Public Law 101-162 Relating to the Protection of Sea Turtles in Shrimp Trawl Fishing Operation'. Under the Revised Guidelines, a country may apply for certification even if it does not require the use of TEDs, provided it demonstrates that it has implemented, and is enforcing, a 'comparably effective' regulatory programme to protect sea turtles without the use of TEDs.¹⁴⁹ Malaysia challenged the Revised Guidelines before another WTO Panel, which found them to be in violation of Article XI but justified under Article XX as long as the conditions stated in the findings of the Panel's report, and in particular 'the ongoing serious good faith efforts to reach a multilateral agreement' remained satisfied.¹⁵⁰

Malaysia subsequently appealed the Panel's ruling to the Appellate Body, on two principal grounds: first, the duty of the United States to pursue international co-operation in protecting and conserving endangered sea turtles prior to implementing unilateral trade measures, and, second, whether the Revised Guidelines were sufficiently 'flexible' to meet the requirements of the Article XX *chapeau*. In its rulings on these issues, the Appellate Body clarified its approach to unilateral trade measures taken to achieve environmental goals. In relation to the duty to pursue international co-operation, Malaysia asserted that the United States should have negotiated *and concluded* an international agreement on the protection and conservation of sea turtles before imposing a unilateral import prohibition.¹⁵¹ In response, the United States countered that it had made serious, good faith efforts to secure a multilateral sea turtle conservation agreement among Indian Ocean and Southeast Asian states.¹⁵² The Appellate Body confirmed that the requirement for 'serious

¹⁴⁸ *Ibid.*, para. 171 and note 174 (and the accompanying text).

¹⁴⁹ *United States – Import Prohibition on Certain Shrimp and Shrimp Products*, Recourse to Article 21.5 of the DSU by Malaysia, Report of the Appellate Body, 22 October 2001, WT/DS58/AB/RW (*Shrimp/Turtle*, Appellate Body Recourse Report), para. 6 (requiring the US Department of State 'to take fully into account any demonstrated differences between the shrimp fishing conditions in the United States and those in other nations, as well as information available from other sources'). Under the Revised Guidelines, an exporting country may also be certified if its shrimp fishing environment does not pose a threat of incidental capture of sea turtles.

¹⁵⁰ *United States – Import Prohibition on Certain Shrimp and Shrimp Products*, Recourse to Article 21.5 of the DSU by Malaysia, Report of the Panel, 15 June 2001, WT/DS58/RW, para. 6.1 (*Shrimp/Turtle*, Panel Recourse Report).

¹⁵¹ *Shrimp/Turtle*, Appellate Body Recourse Report, note 149 above, para. 115.

¹⁵² *Ibid.* These efforts included the following activities: (a) a document communicated on 14 October 1998 by the US Department of State to a number of countries of the Indian Ocean and the Southeast Asia region containing possible elements of a regional convention on sea turtles in the region; (b) the contribution of the United States to a symposium held in Sabah on 15–17 July 1999. The Sabah Symposium led to the adoption of a Declaration calling for the negotiation and implementation of a regional agreement throughout the Indian Ocean and Southeast Asia region; (c) the Perth Conference in October 1999, where participating governments, including the United States, committed themselves to developing an international agreement on sea turtles for the Indian Ocean and Southeast Asia region; (d) the contribution of the United States to the Kuantan round of negotiations, 11–14 July 2000. This first round of negotiations towards the conclusion of a regional agreement resulted in the adoption of the Memorandum of Understanding on the Conservation and Management of Marine Turtles and Their Habitats of the Indian Ocean and South-East Asia (the 'South-East Asian MOU'). The Final Act of the Kuantan meeting provided

across-the-board negotiations' did not imply that agreements on environmental resources had to be actually concluded, since that would, in effect, grant a veto to individual states.¹⁵³ The Appellate Body considered that such a requirement would not be reasonable:

For a variety of reasons, it may be possible to conclude an agreement with one group of countries but not another. The conclusion of a multilateral agreement requires the co-operation and commitment of many countries. In our view, the United States cannot be held to have engaged in 'arbitrary or unjustifiable discrimination' under Article XX solely because one international negotiation resulted in an agreement while another did not.¹⁵⁴

Although the *conclusion* of an agreement with all affected countries was preferable, it was not required: what was necessary was that negotiations in different fora should be *comparable*.¹⁵⁵ The Appellate Body ruled that the Panel had correctly concluded that the efforts made by the United States in the Indian Ocean and Southeast Asia region constituted serious, good faith efforts to secure multilateral agreement on sea turtle conservation in that region, and the US measure was not being applied in a manner constituting unjustifiable or arbitrary discrimination.¹⁵⁶

On the issue of the 'flexibility' of the Revised Guidelines to take account of the differing conditions prevailing in other WTO members' territories, Malaysia argued that the Revised Guidelines breached the Article XX *chapeau* by 'unilaterally' imposing US domestic standards on exporters.¹⁵⁷ The Appellate Body rejected this argument, noting that the Revised Guidelines contained provisions permitting the US authorities to take into account the specific conditions of Malaysian shrimp production, and of the Malaysian sea turtle conservation programme, should Malaysia decide to apply for certification.¹⁵⁸ The Appellate Body found that the Revised Guidelines, on their face, permitted a degree of flexibility that would enable the United States to consider the particular conditions prevailing in Malaysia if and when Malaysia applied for certification.¹⁵⁹ The Appellate Body's approach appeared to be intended to address concerns raised in the wake of its decisions in *Reformulated Gasoline* and the first phase of the *Shrimp/Turtle* dispute, to the effect that countries wishing to adopt unilateral trade measures for environmental purposes would face an extremely onerous task if required to consider the particular conditions prevailing in every potentially affected member before acting.

Asbestos case (2000)¹⁶⁰

Closely following the Appellate Body's decision in the first phase of the *Shrimp/Turtle* case was a dispute involving a challenge by Canada to a French decree concerning asbestos and products

that, before the South-East Asian MOU could be finalised, a Conservation and Management Plan had to be negotiated and annexed to the South-East Asian MOU.

¹⁵³ *Shrimp/Turtle*, Appellate Body Recourse Report, note 149 above, para. 123. ¹⁵⁴ *Ibid.*

¹⁵⁵ *Ibid.*, paras. 122 and 124. ¹⁵⁶ *Ibid.*, para. 134. ¹⁵⁷ *Ibid.*, para. 135.

¹⁵⁸ *Ibid.*, paras. 146–7. In addition, the provisions of the Revised Guidelines stated that the import prohibitions imposed under section 609 did not apply to shrimp or products of shrimp 'harvested in any other manner or under any other circumstances that the Department of State may determine, following consultations with the [United States National Marine Fisheries Services], does not pose a threat of the incidental taking of sea turtles'.

¹⁵⁹ *Ibid.*, para. 148.

¹⁶⁰ D. A. Wirth, 'GATT – Technical Barriers to Trade Agreement – Asbestos Import Ban', 96 *American Journal of International Law* 435 (2002); S. Charnovitz, 'The Law of Environmental "PPMs" in the WTO: Debunking the Myth of Illegality', 27 *Yale Journal of International Law* 59 (2002); R. S. Carruth and B. D. Goldstein, 'The Asbestos Case:

containing asbestos, raising issues over the intersection of trade and health concerns. In the *Measures Affecting Asbestos and Asbestos-Containing Products* case, Canada requested a WTO Panel to consider the consistency of a French decree with the TBT Agreement, and Articles III and XI of the GATT.¹⁶¹ It also alleged, under Article XXIII(1)(b) of the GATT, that the French decree nullified or impaired advantages accruing to Canada directly or indirectly under the WTO Agreement, or impeded the attainment of an objective of that Agreement. The French decree generally banned the use of asbestos and asbestos-containing products, subject to time-limited exceptions for certain existing materials, products or devices containing chrysotile fibres. In particular, chrysotile fibres and products containing them could continue to be used but only where no substitute was available which 'in the present state of scientific knowledge, poses a lesser occupational health risk than chrysotile fibre to workers handling those materials, products or devices' and 'provides all technical guarantees of safety corresponding to the ultimate purpose of the use thereof'.¹⁶²

In examining the French decree under the TBT Agreement, the Panel distinguished between its general prohibition in Article 1 of the decree and the exceptions established by Article 2, holding that the former did not fall within the scope of the TBT Agreement as the asbestos ban did not amount to a 'technical regulation'.¹⁶³ The Panel did not consider whether the exceptions amounted to a technical regulation under the TBT Agreement, on the basis that no claim had been made by Canada in relation to Article 2 of the decree.¹⁶⁴ The Panel found that the law violated Article III(4) of the GATT, but held that the French measures could be justified under Article XX(b).¹⁶⁵ Canada appealed the Panel's decision to the Appellate Body, challenging the Panel's interpretations of the TBT Agreement, and provisions of the GATT including Articles III and XX(b).

In reviewing the Panel's interpretation of the term 'technical regulation' in the TBT Agreement, the Appellate Body stated that the proper legal character of the measure at issue could not be determined unless the measure was examined as a whole, including both the ban and its exceptions.¹⁶⁶ The Appellate Body ruled that the French decree was a 'technical regulation' under the TBT Agreement,¹⁶⁷ but did not go on to complete the analysis under the TBT Agreement as it concluded that it did not have an adequate factual basis in the findings of the Panel to enable it to do so.¹⁶⁸

A Comment on the Appointment and Use of Nonpartisan Experts in World Trade Organization Dispute Resolution Involving Health Risk', 24(2) *Risk Analysis* 471 (2004); M. Footer and S. Zia-Zarifi, 'European Communities – Measures Affecting Asbestos and Asbestos-Containing Products: The World Trade Organization on Trial for Its Handling of Occupational Health and Safety Issues', 3 *Melbourne Journal of International Law* 120 (2002).

¹⁶¹ *European Communities – Measures Affecting Asbestos and Asbestos-Containing Products*, Report of the Panel, WT/DS135/R, 18 September 2000 ('Asbestos, Panel Report'); *European Communities – Measures Affecting Asbestos and Asbestos-Containing Products*, Report of the Appellate Body, WT/DS135/AB/R, 12 March 2001 ('Asbestos, Appellate Body Report').

¹⁶² Décret No. 96-1133 relatif à l'interdiction de l'amiante, pris en application du code de travail et du code de la consommation, *Journal Officiel*, 26 December 1996.

¹⁶³ *Asbestos*, Panel Report, note 161 above, para. 8.63. ¹⁶⁴ *Ibid.*, paras. 8.70 and 8.72.

¹⁶⁵ *Ibid.*, paras. 8.158 and 8.241. ¹⁶⁶ *Asbestos*, Appellate Body Report, note 161 above, para. 64.

¹⁶⁷ *Ibid.*, para. 77 (stressing that its finding should not be taken to mean that all internal measures covered by Art. III(4) of the GATT affecting sale, offering for sale, purchase, transportation, distribution or use of a product were necessarily technical regulations).

¹⁶⁸ *Ibid.*, paras. 82 and 83.

For present purposes, the most important aspect of the Appellate Body's ruling relates to its interpretation of the 'like products' requirement in Article III(4). The question raised was whether chrysotile asbestos fibres were 'like' certain other fibres, namely, PVA fibres or cellulose and glass fibres (collectively referred to as PCG fibres), and whether cement-based products containing asbestos fibres were 'like' those containing one of the PCG fibres. The Panel had concluded that the two categories of products – one containing asbestos and the other containing PCG alternatives – were 'like' within the meaning of Article III(4). The EU appealed, arguing that the 'likeness' test in Article III(4) called for an analysis of the health objective of the regulatory distinction made in the measure between asbestos fibres and other fibres. The Appellate Body accepted the EU's arguments and reversed the Panel's finding.

The Appellate Body considered the term 'like products' in Article III(4) by reference to dictionary definitions, the surrounding GATT provisions, and the general principle articulated in Article III(1) that members should ensure equality of competitive conditions for imported products in relation to domestic products. It concluded that 'likeness' was 'a determination about the nature and extent of a competitive relationship between and among products', and had to be made on a case-by-case basis.¹⁶⁹ The Appellate Body adopted the criteria taken by previous GATT Panels, and the WTO Panel in the *Asbestos* case, to assess the question of likeness, namely: (1) the properties, nature and quality of the products; (2) the end uses of the products; (3) consumers' tastes and habits in respect of the products; and (4) the tariff classification of the products.¹⁷⁰ In this case, for asbestos fibres, 'evidence relating to the health risks associated with a product' could be pertinent in an examination of 'likeness' and needed to be evaluated under the criteria of physical properties, and of consumers' tastes and habits, having regard to their carcinogenicity.¹⁷¹ The evidence had established that the products in issue were physically different, and, to overcome an indication that products were *not* 'like', 'a higher burden is placed on complaining members to establish that, despite the pronounced physical differences, there is a competitive relationship between the products such that *all* of the evidence, taken together, demonstrates that the products are "like" under Article III: (4) of the GATT 1994'.¹⁷² Considering the health risks posed by asbestos products, and the implications of such for the physical properties of the products and consumers' preferences in respect of them, the Appellate Body found that the evidence relied on by the Panel in finding 'likeness' was insufficient, and reversed the Panel's finding on this point.¹⁷³

¹⁶⁹ *Ibid.*, paras. 99 and 101. The Appellate Body noted, however, that, even if two products were 'like', it did not always follow that the measure at issue was inconsistent with Art. III(4): the complaining member must still establish that the measure accorded to the group of 'like' imported products 'less favourable treatment' than it accorded to the group of 'like' domestic products: paras. 100 and 103.

¹⁷⁰ *Ibid.*, para. 102 (but noting that they were simply tools which were not treaty-mandated and did not form a closed list of criteria that would determine the legal characterisation of products). The criteria are derived from the Report of the Working Party on Border Tax Adjustments, adopted on 2 December 1970, BISD/18S/97, para. 18.

¹⁷¹ *Asbestos*, Appellate Body Report, note 161 above, paras. 113 and 114.

¹⁷² *Ibid.*, para. 118. The Appellate Body criticised the Panel for failing to consider relevant consumer preferences, noting that 'consumers' tastes and habits regarding *fibres*, even in the case of commercial parties, such as manufacturers, are very likely to be shaped by the health risks associated with a product which is known to be highly carcinogenic': *ibid.*, para. 122.

¹⁷³ *Ibid.*, paras. 126 and 128. See also the separate concurring statement (at paras. 152–4), indicating the willingness of one member of the Appellate Body to attribute even greater significance to the health risks of asbestos-containing products, not requiring evidence concerning end-uses and consumer preferences, and questioning the necessity or appropriateness of the majority's adoption of a 'fundamentally' economic interpretation of the 'likeness' criterion.

As to the meaning of ‘necessity’ under Article XX(b), the Appellate Body rejected Canada’s three grounds of challenge. It ruled that Article XX(b) did not require the Panel to ‘quantify’ the risk associated with asbestos fibres: it was sufficient for the risk to be evaluated either in quantitative or qualitative terms.¹⁷⁴ On the question of the level of health protection selected by France in its law, the Appellate Body reiterated that WTO members have an undisputed right to determine their own level of health protection, and that the ‘controlled use’ of asbestos fibres and asbestos-containing products (as proposed by Canada) was not an alternative measure that would achieve the end sought by France. In determining whether any alternative measure was ‘reasonably available’, several factors had to be taken into account, besides the difficulty of implementation, including the interests or values pursued by the measure. The health protection objective pursued by the measure was a value ‘both vital and important in the highest degree’, and France could not reasonably be expected to employ any alternative measure if the measure would involve a continuation of the very risk that the law sought to halt because the alternative measure would effectively prevent France from achieving its chosen level of health protection.¹⁷⁵

Finally, the Appellate Body made important observations about the standard of proof to be applied by Panels when evaluating scientific evidence advanced in justification of a measure taken under Article XX(b). It rejected Canada’s argument that any such claim had to be made on the basis of the ‘preponderant’ weight of the evidence, ruling that it was sufficient for a member to rely, in good faith, on scientific sources which, at the time, may represent a divergent, but qualified and respected, opinion. Thus, a member was not obliged automatically to follow what, at any given time, constituted majority scientific opinion.¹⁷⁶

Brazil Retreaded Tyres case (2007)

The most recent trade/environment case to come before a WTO panel and the Appellate Body concerned a challenge by the EU to a Brazilian ban on imports of retreaded tyres as an instance of disguised protectionism.¹⁷⁷ The WTO Panel found that the Brazilian ban was inconsistent with Article XI of GATT.¹⁷⁸ However, Brazil argued that its measure was ‘necessary’ under Article XX(b) to protect human, animal and plant life and health given the human health and biodiversity risks posed by the accumulation of waste tyres in its territory. In particular, Brazil argued that tyres contain polluting materials, which on incineration, release toxic and contaminating gases. As Brazil already has a large amount of tyre waste in its territory, it asserted that additional amounts, resulting from the import of retreaded tyres, would exacerbate existing environmental and health risks, such as the spread of malaria and dengue fever.¹⁷⁹ In determining whether the ban was ‘necessary’, the Panel applied the test that had been laid down by

¹⁷⁴ *Ibid.*, para. 167. ¹⁷⁵ *Ibid.*, paras. 172 and 174. ¹⁷⁶ *Ibid.*, para. 178.

¹⁷⁷ See K. R. Gray, ‘Brazil – Measures Affecting Imports of Retreaded Tyres’, 102(3) *American Journal of International Law* 610 (2008); I. Van Damme, ‘III. Appellate Body Report, Brazil – Measures Affecting Imports of Retreaded Tyres, Adopted on 17 December 2007’, 57 *International and Comparative Law Quarterly* 710 (2008).

¹⁷⁸ *Brazil – Measures Affecting Imports of Retreaded Tyres*, WT/DS332/R, 12 June 2007, Report of the Panel (‘Retreaded Tyres Panel Report’), para. 8.1.

¹⁷⁹ Particular risks of concern included those from mosquitoes which use tyres as breeding grounds and the exposure of human beings to toxic emissions caused by tyre fires which may cause loss of short-term memory, learning disabilities, immune system suppression, cardiovascular problems, cancer, premature mortality, reduced lung function, suppression of the immune system, respiratory effects, and heart and chest problems. Further risks to animal and plant life and health include the exposure of animals and plants to toxic emissions caused by tyre fires and the transmission of mosquito-borne disease (e.g. dengue) to animals.

the Appellate Body in other cases concerning Article XX(b) and (d),¹⁸⁰ and Article XIV(a) of GATS.¹⁸¹ This test requires that:

[the] necessity of a measure should be determined through 'a process of weighing and balancing a series of factors,' which usually includes the assessment of the following three factors: the relative importance of the interests or values furthered by the challenged measure, the contribution of the measure to the realization of the ends pursued by it and the restrictive impact of the measure on international commerce.¹⁸²

Applying the 'weighing and balancing' test in respect of the Brazilian ban, the Panel concluded that that the measure's 'objective of protecting human health and life against life-threatening diseases, such as dengue fever and malaria, is both vital and important in the highest degree'. Further, in respect of the protection of animal and plant life and health, the Panel found that 'the objective of protection of animal and plant life and health should also be considered important'.¹⁸³

Reviewing the Panel's findings, the Appellate Body agreed with the Panel on the importance of the values protected by the Brazilian measure, including environmental protection.¹⁸⁴ It concluded that there was nothing erroneous in the Panel's reasoning that, in light of the importance of the interests protected by the important ban, the contribution of the ban to the achievement of its objective outweighed its trade-restrictiveness.¹⁸⁵ Moreover, even though the Appellate Body recognised that a ban is a severe form of trade restriction – indicating that the measure should be 'apt to make a material contribution to the achievement of its objective'¹⁸⁶ – its assessment of the link between the health and environmental goals of the Brazilian measure and the regulatory approach taken was cognisant of the challenges involved in dealing with complex health and environmental problems. It observed that:

certain complex public health or environmental problems may be tackled only with a comprehensive policy comprising a multiplicity of interacting measures. In the short-term, it may prove difficult to isolate the contribution to public health or environmental objectives of one specific measure from those attributable to the other measures that are part of the same comprehensive policy. Moreover, the results obtained from certain actions – for instance, measures adopted in order to attenuate global warming and climate change, or certain preventive actions to reduce the incidence of diseases that may manifest themselves only after a certain period of time – can only be evaluated with the benefit of time.¹⁸⁷

¹⁸⁰ Art. XX(d) provides an exception for measures 'necessary to secure compliance with laws or regulations' relating to customs enforcement, the enforcement of certain types of monopolies, the protection of patents, trademarks and copyright and the prevention of deceptive practices. On the interpretation of the concept of necessity in this Article, see *Korea – Measures Affecting Imports of Fresh, Chilled and Frozen Beef*, Report of the WTO Appellate Body, WT/DS169/AB/R, 11 December 2000, para. 164.

¹⁸¹ In the context of this provision, which also includes a necessity test, the Appellate Body indicated in *United States – Measures Affecting Cross-Border Supply of Gambling and Betting Services*, Report of the WTO Appellate Body, WT/DS285/AB/R, 7 April 2005, that the analysis 'begins with an assessment of the "relative importance" of the interests or values furthered by the challenged measure': para. 306.

¹⁸² *Retreaded Tyres* Panel Report, para. 7.104. ¹⁸³ *Ibid.*, paras. 7.108–7.112.

¹⁸⁴ *Brazil – Measures Affecting Imports of Retreaded Tyres*, Report of the Appellate Body, WT/DS332/AB/R, 3 December 2007 ('*Retreaded Tyres*, Appellate Body Report'), para. 179.

¹⁸⁵ *Ibid.* ¹⁸⁶ *Ibid.*, para. 150. ¹⁸⁷ *Ibid.*, para. 151.

In this context, the Appellate Body indicated that the evidence or data relied upon by the Panel might pertain 'to the past or the present', or might consist of 'quantitative projections in the future, or qualitative reasoning based on a set of hypotheses that are tested and supported by sufficient evidence'.¹⁸⁸

Ultimately, however, both the Panel and, on a slightly different basis, the Appellate Body, found that the Brazilian ban on retreaded tyres did not satisfy the requirements of the Article XX *chapeau*. The Appellate Body found that an exemption from the ban extended by Brazil to its trading partners in the South American common market (MERCOSUR) in line with a ruling of a MERCOSUR arbitral tribunal, but not to other WTO members, meant that the import ban was 'applied in a manner that constitutes arbitrary or unjustifiable discrimination'.¹⁸⁹ On this basis, the Brazilian measure was found to be inconsistent with the provisions of the GATT.

Assessment

Overall, the 'trade and environment' disputes decided under the WTO dispute resolution system have tended to give greater weight to the environmental and health concerns reflected in the Article XX(b) and (g) exceptions than previous GATT case law. In interpreting the provisions of the GATT 1994 and other WTO Agreements, the Appellate Body has demonstrated a commitment to refer to general international law arising outside the WTO system, including multilateral environmental treaties. It has also proposed a clearer legal framework for analysis of measures under Article XX and has clarified that the purpose of the *chapeau* is to prevent protectionist abuse of the Article's exceptions, not to limit the use of measures that are genuinely intended to achieve environmental objectives. In the *Reformulated Gasoline* and *Shrimp/Turtle* cases, the Appellate Body identified two preconditions necessary to ensure that a member's environmental measures do not fall foul of the requirements of the Article XX *chapeau*: first, the need to make serious efforts to secure a co-operative solution to the problem, prior to resorting to unilateral action; and, second, the need to consider the conditions prevailing in other members' territories in designing any trade-restricting measure. The *Asbestos* case provides important guidance on the meaning of 'likeness', indicating a willingness to permit greater consideration of potential health and environmental risks associated with a product in determining 'likeness' for the purpose of Article III(4). Finally, the *Retreaded Tyres* case – the first involving a challenge to environmental measures maintained by a developing country – demonstrated the Appellate Body's acceptance of the importance of values of health and environmental protection and its sensitivity to some of the difficulties involved in seeking to regulate complex public health or environmental problems, including the spread of diseases and climate change.

Nevertheless, it is clear that the *chapeau* to Article XX places significant constraints on the capacity of WTO members to adopt unilateral trade measures for environmental purposes. The requirement for prior multilateral engagement on an environmental issue with transboundary dimensions, efforts to transfer necessary technologies and the adoption of administrative processes that are transparent, flexible and take account of conditions prevailing in exporting countries are consistent with broader principles of international environmental law. At the same time, however, they limit the capacity of states to respond swiftly and proactively to

¹⁸⁸ *Ibid.* ¹⁸⁹ *Ibid.*, para. 228.

urgent environmental problems through the adoption of trade measures. These tensions are likely to play out in future disputes over measures adopted for the purpose of climate change protection,¹⁹⁰ as states seek to effect wider environmental policy change in the absence of multilateral agreement on the further reduction of global greenhouse gas emissions.¹⁹¹

Measures for health and safety protection

An increasingly important aspect of the relationship between trade and the environment in international law is that relating to the requirements for states to adopt trade measures in furtherance of national goals of human, animal or plant health and safety protection. Health and safety measures with the potential to impact trade are dealt with by the WTO's Agreement on Sanitary and Phytosanitary Measures (SPS Agreement).¹⁹² The SPS Agreement lays down the conditions governing sanitary and phytosanitary (SPS) measures enacted by members, amplifying Article XX(b) and confirming that measures consistent with the SPS Agreement are deemed to meet the requirements of that Article.¹⁹³

The SPS Agreement affirms the right of each WTO member to take SPS measures necessary for the protection of human, animal and plant life or health, subject to the provisions of the Agreement, in particular their trade-restrictiveness and the need for scientific justification.¹⁹⁴ Members must observe national treatment and non-discrimination principles in the design of their measures, must accept the SPS measures of other members as equivalent if the exporting member objectively demonstrates equivalency, and must not apply SPS measures in a manner

¹⁹⁰ An example under much discussion in the literature at present is the border carbon adjustment measures adopted or proposed by states implementing domestic emissions trading or other carbon pricing controls: see further B. Lockwood and J. Whalley, 'Carbon-Motivated Border Tax Adjustments: Old Wine in Green Bottles?', 33(6) *World Economy* 810 (2010); K. Holzer, 'Proposals on Carbon-Related Border Adjustments: Prospects for WTO Compliance', 4(1) *Carbon and Climate Law Review* 51 (2010); R. Eckersley, 'The Politics of Carbon Leakage and the Fairness of Border Measures', 24(4) *Ethics and International Affairs* 367 (2010).

¹⁹¹ For a pertinent example, see the EU Directive on biofuels: EU Directive 2003/30/EC on the promotion of the use of biofuels and other renewable fuels for transport, 8 May 2003. See also the discussion in J. Scott, 'The Multi-Level Governance of Climate Change', in P. Craig and G. de Búrca, *Multilevel Governance in the EU* (2011), which examines the introduction of sustainability criteria for biofuels under the renewable energy Directive.

¹⁹² Agreement on Sanitary and Phytosanitary Measures, Annex 1A, 33 ILM 28 (1994). See also L. Gruszczynski, *Regulating Health and Environmental Risks under WTO Law: A Critical Analysis of the SPS Agreement* (2010); J. Scott, *The WTO Agreement on Sanitary and Phytosanitary Measures: A Commentary* (2007).

¹⁹³ Art. 2.4. SPS measures are defined in Annex A to the SPS Agreement as:
Any measure applied:

- (a) to protect animal or plant life or health within the territory of the Member from risks arising from the entry, establishment or spread of pests, diseases, disease-carrying organisms or disease-causing organisms;
- (b) to protect human or animal life or health within the territory of the Member from risks arising from additives, contaminants, toxins or disease-causing organisms in foods, beverages or feedstuffs;
- (c) to protect human life or health within the territory of the Member from risks arising from diseases carried by animals, plants or products thereof, or from the entry, establishment or spread of pests; or
- (d) to prevent or limit other damage within the territory of the Member from the entry, establishment or spread of pests.

Sanitary or phytosanitary measures include all relevant laws, decrees, regulations, requirements and procedures including, *inter alia*, end product criteria; processes and production methods; testing, inspection, certification and approval procedures; quarantine treatments including relevant requirements associated with the transport of animals or plants, or with the materials necessary for their survival during transport; provisions on relevant statistical methods, sampling procedures and methods of risk assessment; and packaging and labelling requirements directly related to food safety.

¹⁹⁴ Art. 2.1.

that would constitute a disguised restriction on international trade.¹⁹⁵ Members must also ensure that their SPS measures are applied only to the extent necessary, are based on scientific principles and are not maintained without sufficient scientific evidence.¹⁹⁶ To promote the harmonisation of SPS measures, members are encouraged to base their SPS measures on international standards where they exist.¹⁹⁷ SPS measures that 'conform to' international standards are deemed necessary to protect human, animal and plant life or health and are presumed to be consistent with the SPS Agreement.¹⁹⁸ Members are not prevented from introducing or maintaining SPS measures which are stricter than those reflected in international standards 'if there is a scientific justification, or as a consequence of the level of sanitary or phytosanitary protection a Member determines to be appropriate in accordance with the relevant provisions of paragraphs 1 through 8 of Article 5'.¹⁹⁹

Article 5 provides that members are to ensure their SPS measures are based on a risk assessment that takes into account, *inter alia*, available scientific evidence and relevant processes and production methods, and relevant ecological and environmental conditions.²⁰⁰ In assessing risk and determining the measure to achieve its appropriate level of SPS protection, a member must take into account as relevant economic factors the potential damage in terms of loss of production or sales in the event of entry, the establishment or spread of the pest or disease, the costs of control or eradication and the relative cost-effectiveness of alternatives to limiting risks.²⁰¹ Members must avoid arbitrary or unjustifiable distinctions in the levels of protection considered appropriate in different situations if the distinctions result in discrimination or a disguised restriction on international trade.²⁰² They must also ensure that measures are not more trade-restrictive than is required to achieve the appropriate level of SPS protection, taking into account technical and economic feasibility.²⁰³ Where relevant scientific evidence is insufficient to allow a full risk assessment, Article 5.7 allows the adoption of provisional SPS measures by a member 'on the basis of available pertinent information' and subject to undertaking a subsequent risk assessment within a 'reasonable' period of time.²⁰⁴

Disputes between members over SPS measures are dealt with under the dispute settlement procedures of the WTO. To date, there have been six major disputes before WTO Panels and the Appellate Body which raised issues under the SPS Agreement: the *Beef Hormones*, *Australia Salmon*, *Japan Varietals*, *Japan Apples*, *Continued Suspension of Obligations* and *Australia Apples* cases.²⁰⁵ One dispute concerning the EU's *de facto* moratorium on the approval of new

¹⁹⁵ Arts. 2.3 and 2.4. ¹⁹⁶ Art. 2.2. ¹⁹⁷ Art. 3.1. ¹⁹⁸ Art. 3.2.

¹⁹⁹ Art. 3.3. A footnote to the Article explains that '[f]or the purposes of paragraph 3 of Article 3, there is a scientific justification if, on the basis of an examination and evaluation of available scientific information in conformity with the relevant provisions of this Agreement, a Member determines that the relevant international standards, guidelines or recommendations are not sufficient to achieve its appropriate level of sanitary or phytosanitary protection'.

²⁰⁰ Arts. 5.1 and 5.2. ²⁰¹ Art. 5.3.

²⁰² Art. 5.5. To assist in determining the consistency of SPS measures to address different risks, the Committee on Sanitary and Phytosanitary Measures established by the SPS Agreement has developed guidelines for the practical implementation of Art. 5.5 that bear in mind 'the exceptional character of human health risks to which people voluntarily expose themselves': Guidelines to Further the Practical Implementation of Article 5.5, G/SPS/15, 18 July 2000.

²⁰³ Art. 5.6.

²⁰⁴ See J. Bohanes, 'Risk Regulation in WTO Law: A Procedure-Based Approach to the Precautionary Principle', 40 *Columbia Journal of Transnational Law* 323 (2002).

²⁰⁵ Another case, *United States – Certain Measures Affecting Imports of Poultry from China*, WT/DS392/R, 25 October 2010, was determined by a Panel partially on the basis of arguments under the SPS Agreement.

genetically modified crops, as well as various EU and other schemes designed to require the labelling of products which contain, or may contain, GMOs, was determined by a WTO Panel in 2006 but not appealed to the Appellate Body. The SPS case law has fairly rapidly developed a detailed jurisprudence and associated literature around the various complex issues raised by provisions of the SPS Agreement.²⁰⁶ It is not the purpose of this book to elaborate all aspects of SPS law. Rather the following sections highlight the major contributions of the SPS case law to issues of relevance to the intersection of trade and health and environmental concerns.

Beef Hormones²⁰⁷

The *Beef Hormones* case presented the WTO Appellate Body with a first opportunity to consider the application of the provisions of the SPS Agreement. The dispute concerned an EU prohibition on imports of meat or meat products derived from cattle to which either natural hormones (oestradiol-17 β , progesterone, testosterone) or certain synthetic hormones (trenbolone acetate, zeranol or melengestrol acetate (MGA)) had been administered for growth-promotion purposes.²⁰⁸ The prohibition was set forth in a series of EU Directives,²⁰⁹ which covered both the placing on the EU market, and the import, of meat from animals to which such hormones had been administered. Exceptions were allowed in certain circumstances for meat of animals that had been administered substances having hormonal or thyrostatic action for therapeutic or zootechnical purposes.

Canada and the United States challenged the EU measures primarily on the ground of the alleged failure of the EC to undertake a risk assessment, prior to adoption of the measures, as required by the SPS Agreement. The Panel upheld the challenges, holding that the EU measure was inconsistent with Article 5.1, and that the import prohibition was inconsistent with Articles 3.3 and 5.5 of the SPS Agreement.²¹⁰ Beyond its conclusion on the relevance of the

²⁰⁶ For a selection, see J. Pauwelyn, 'The WTO Agreement on Sanitary and Phytosanitary (SPS) Measures as Applied in the First Three SPS Disputes EC – Hormones, Australia – Salmon and Japan Varietals', 2(4) *Journal of International Economic Law* 641 (1999); D. Victor, 'The Sanitary and Phytosanitary Agreement of the World Trade Organization: An Assessment After Five Years', 32 *New York University J. International Law and Politics* 865 (2000); R. Howse, 'Democracy, Science, and Free Trade: Risk Regulation on Trial at the World Trade Organization', 98 *Michigan Law Review* 2329 (2000); J. Scott, *The WTO Agreement on Sanitary and Phytosanitary Measures: A Commentary* (2007); L. Gruszczynski, *Regulating Health and Environmental Risks under WTO Law: A Critical Analysis of the SPS Agreement* (2010); J. Peel, *Science and Risk Regulation in International Law* (2010), particularly Chapter 5.

²⁰⁷ J. McDonald, 'Big Beef Up or Consumer Health Threat?: The WTO Food Safety Agreement, Bovine Growth Hormone and the Precautionary Principle', 15 *Environmental and Planning Law Journal* 115 (1998); D. A. Wirth, 'European Communities Restrictions on Imports of Beef Treated with Hormones', 92 *American Journal of International Law* 755 (1998); J. Pauwelyn, 'The WTO Agreement on Sanitary and Phytosanitary Measures as Applied in the First Three SPS Disputes', 2 *Journal of International Economic Law* 641 (1999); T. Christoforou, 'Settlement of Science-Based Trade Disputes in the WTO: A Critical Review of the Developing Case Law in the Face of Scientific Uncertainty', 8 *New York University Environmental Law Journal* 622 (2000); A. Arcuri, L. Gruszczynski and A. Herwig, 'Independence of Experts and Standards for Evaluation of Scientific Evidence under the SPS Agreement: New Directions in the SPS Case Law', 1(2) *European J. Risk Regulation* 183 (2010); A. Arcuri, 'Food Safety at the WTO After "Continued Suspension": A Paradigm Shift?', in A. Antoniadis, R. Schütze and E. Spaventa (eds.), *The European Union and Global Emergencies: A Law and Policy Analysis* (2011), available at <http://ssrn.com/abstract=1633390>.

²⁰⁸ *EC – Measures Concerning Meat and Meat Products (Hormones)*, Report of the Appellate Body, WT/DS26/AB/R and WT/DS48/AB/R, 16 January 1998.

²⁰⁹ Culminating in Council Directive 96/22/EC of 29 April 1996, OJ L125, 23 May 1996, 3.

²¹⁰ *EC – Measures Concerning Meat and Meat Products (Hormones)*, Reports of the US and Canadian Panels, WT/DS26/R/USA and WT/DS48/R/CAN, 18 August 1997.

precautionary principle,²¹¹ the Appellate Body overturned the Panel's ruling that the SPS Agreement allocated the 'evidentiary burden' to the member imposing an SPS measure.²¹² It found that the complaining parties bore the initial burden of showing *prima facie* inconsistency of the challenged measures with the SPS Agreement; only after such a *prima facie* case was made did the burden shift to the other party to provide evidence and arguments to disprove the complaining party's claim.²¹³ The standard of review was neither *de novo* review nor 'total deference' to national authorities, but rather the 'objective assessment of the matter' required by Article 11 of the DSU.²¹⁴

As to Article 3.1 and 3.3 of the SPS Agreement, the Appellate Body overturned the Panel, ruling that Article 3.1 did not require members to harmonise their SPS measures, by conforming those measures to international standards. Instead, a measure which was 'based on' international standards (such as Codex Alimentarius standards) may adopt some but not necessarily all of the elements of the international standard.²¹⁵ Measures based on (rather than conforming to) international standards enjoyed no presumption of GATT consistency, but the burden was on the complainant to demonstrate *prima facie* inconsistency with the SPS Agreement.²¹⁶ The Appellate Body noted that Article 3.3 gave members an 'autonomous right' (which was neither unqualified nor absolute) to establish their own levels of SPS protection, which may be stricter than international standards.²¹⁷ In this regard, it agreed with the Panel that a higher standard pursuant to Article 3.3 required a risk assessment (pursuant to Article 5.1).²¹⁸

As to Article 5.1, the Appellate Body considered that the function of the Panel was simply to determine whether the measures were sufficiently supported or reasonably warranted by the risk assessment.²¹⁹ It was not necessary that the risk assessment come to a monolithic conclusion that coincided with the scientific conclusion or view implicit in the SPS measure.²²⁰ The SPS measure might be based on a qualified but divergent minority scientific view:

The risk assessment could set out both the prevailing view representing the 'mainstream' of scientific opinion, as well as the opinions of scientists taking a divergent view. Article 5.1 does not require that the risk assessment must necessarily embody only the view of a majority of the relevant scientific community. In some cases, the very existence of divergent views presented by qualified scientists who have investigated the particular issue at hand may indicate a state of scientific uncertainty. Sometimes the divergence may indicate a roughly equal balance of scientific opinion, which may itself be a form of scientific uncertainty. In most cases, responsible and representative governments tend to base their legislative and administrative measures on 'mainstream' scientific opinion. In other cases, equally responsible and representative governments may act in good faith on the basis of what, at a given time, may be a divergent opinion coming from qualified and respected sources. By itself, this does not necessarily signal the absence of a reasonable relationship between the SPS measure and the risk assessment, especially where the risk involved is life-threatening in character and is perceived to constitute a clear and imminent threat to public health and safety.²²¹

²¹¹ Chapter 6, p. 221, above. ²¹² *Ibid.*, para. 102. ²¹³ *Ibid.*, para. 109. ²¹⁴ *Ibid.*, para. 116.

²¹⁵ *Ibid.*, para. 163. ²¹⁶ *Ibid.*, paras. 170 and 171. ²¹⁷ *Ibid.*, paras. 172 and 173. ²¹⁸ *Ibid.*, paras. 175 *et seq.*

²¹⁹ *Ibid.*, para. 186. ²²⁰ *Ibid.*, para. 194. ²²¹ *Ibid.*

The Appellate Body also addressed the preparation and content of the risk assessment.²²² It concluded that the EU's measures were not based on a risk assessment that reasonably supported or warranted the import prohibition. The various scientific studies the EU had adduced (produced by European committees, international organisations and individual scientists which it sought to rely upon as the basis for its measures) were too general in nature.²²³ Accordingly, the measures were inconsistent with Article 5.1 and consequently also with Article 3.3.²²⁴

Continued Suspension of Obligations dispute

Following the Appellate Body's ruling in *Beef Hormones*, the EU refused to remove its impugned measures, leading the US and Canada to seek approval for trade sanctions against certain European products. In 2003, after seeking seventeen scientific opinions over the period 1999–2002, the EU introduced revised measures that, albeit somewhat less stringent, still had the effect of excluding the complainants' beef products from the EU market.²²⁵ In November 2004, the EU requested the WTO Dispute Settlement Body to order the removal of trade sanctions on the basis that the new measure complied with the SPS Agreement as the scientific opinions sought by the EU comprised an adequate risk assessment for SPS purposes.²²⁶ The appeal of the Panel's findings to the Appellate Body in the *Continued Suspension of Obligations* case resulted in some important clarifications of the original *Beef Hormones* rulings. Nonetheless, the core question at the heart of the dispute – whether the EU measures were based upon an SPS-compliant risk assessment – remains unresolved as significant deficiencies in the Panel's assessment of the scientific evidence left the Appellate Body unable to 'complete the analysis' on the substantive legal issues.²²⁷

²²² *Ibid.*, paras. 187–90.

²²³ *Ibid.*, paras. 195–200. For example, with regard to the synthetic hormone, MGA, the EU produced studies which dealt with the category of progestins (of which the hormone progesterone is a member) arguing that, as MGA is an anabolic agent which mimics the action of progesterone, the studies were highly relevant. However, the Appellate Body considered that the studies were too general as they did not assess how closely related MGA is chemically and pharmacologically to other progestins or the effects of MGA when administered for growth promotion purposes. The Appellate Body did not insist on the production of studies on MGA by the complainants as this material 'was proprietary and confidential in nature'. Consequently, the Appellate Body upheld the Panel's finding that the EU had not based its measure with respect to MGA on a risk assessment: *ibid.*, para. 201.

²²⁴ *Ibid.*, paras. 208–9.

²²⁵ Directive 2003/74/EC of the European Parliament and of the Council of 22 September 2003 amending Council Directive 96/22/EC concerning the prohibition on the use in stockfarming of certain substances having a hormonal or thyrostatic action and of beta-agonists, OJ L262, 14 October 2003. Under the new Directive, only one hormone (oestradiol-17 β) was banned outright. For the other five hormones (testosterone, progesterone, trenbolone acetate, zeranol and MGA), provisional bans were introduced which the EU sought to justify under Art. 5.7.

²²⁶ *United States – Continued Suspension of Obligations in the EC – Hormones Dispute*, Request for Consultations by the European Communities, WT/DS320/1, G/L/713, 10 November 2004; *United States – Continued Suspension of Obligations in the EC – Hormones Dispute*, Request for the Establishment of a Panel by the European Communities, WT/DS320/6, 14 January 2005.

²²⁷ *United States – Continued Suspension of Obligations in the EC – Hormones Dispute*, Report of the WTO Appellate Body, WT/DS320/AB/R, 16 October 2008 (the report issued in DS321 brought by Canada is identical to the US report), para. 736 ('*Continued Suspension of Obligations*'). Consequently, the Appellate Body recommended that the parties be requested to initiate compliance proceedings under Art. 21.5 of the DSU without delay: para. 737. However, in the meantime, the United States and the EU have reached a provisional deal: the ban on US hormone-treated beef remains in place but duty-free access for non-hormone-treated US beef has been increased. In return, the United States will reduce punitive trade sanctions on EU exports such as Roquefort cheese and Italian mineral water. Further WTO litigation between the parties on the matter has also been suspended.

The principal contributions to the SPS jurisprudence made by the Appellate Body's findings in *Continued Suspension of Obligations* concern elaboration of the notion of the types of SPS risk amenable to risk assessment and the degree of 'specificity' required of scientific studies put forward to support a finding of risk; the standard of review to be applied by panels scrutinising members' risk assessments; and the test for 'insufficient' scientific evidence that is the basis for adopting provisional measures in accordance with Article 5.7.

In relation to the notion of risk relevant for the purposes of SPS risk assessment, the Appellate Body in *Beef Hormones* had indicated that 'theoretical uncertainty [i.e. the uncertainty that is inherent in the scientific method which can never provide absolute certainty that a given substance will not ever have adverse health effects] is not the kind of risk which, under Article 5.1, is to be assessed'.²²⁸ Accordingly, the Appellate Body ruled that, in order to be of regulatory concern, an SPS risk must be 'an ascertainable risk' because, 'if a risk is not ascertainable, how does a Member ever know or demonstrate that it exists?'²²⁹ In *Continued Suspension of Obligations*, the Appellate Body provided some clarification as to what it saw as the difference between 'theoretical uncertainty' and 'ascertainable risk', remarking that:

it is . . . difficult to understand the concept of risk as being devoid of any indication of potentiality. A risk assessment is intended to identify adverse effects and evaluate the possibility that such adverse effects might arise. This distinguishes an ascertainable risk from theoretical uncertainty.²³⁰

The Appellate Body agreed with a Canadian submission that 'to examine the "potential" for adverse effects is to ask whether those adverse effects could ever occur'.²³¹ Moreover, the Appellate Body made clear that if 'there is no ascertainable risk . . . no SPS measure can be taken'.²³²

On the question of the need for 'specific' studies to support conclusions of risk in a risk assessment, the Appellate Body recognised that, in the case of substances potentially toxic to human health, it would be unethical to insist on a 'specific' evaluation of risks through testing the effects of actual human consumption of the substances.²³³ In addition, the Appellate Body found that there was no need for the EU to establish 'a direct causal relationship' between consumption of meat from cattle treated with growth hormones and the possibility of adverse health effects, as 'it was sufficient for the European Communities to demonstrate that the additional human exposure to residues of oestradiol-17 β in meat from treated cattle is one of the factors contributing to the possible adverse health effects'.²³⁴ This latter ruling of the Appellate Body should help to ease the stringency of the specificity requirement in situations of cumulative risk, as, for example, where hormone residues in consumed beef add to levels of hormones and other substances already present in the body to give rise to health effects. Accordingly, '[w]here multiple factors may contribute to a particular risk, a risk assessor is not required to differentiate the individual contribution made by each factor'.²³⁵ The Appellate Body pointed to the requirement in Article 5.1 that SPS measures be based on a risk assessment 'as appropriate to the circumstances' as indicating the need for the underlying scientific inquiry

²²⁸ *Beef Hormones*, para. 186. ²²⁹ *Ibid.* ²³⁰ *Continued Suspension of Obligations*, para. 569.

²³¹ *Ibid.*, para. 572. ²³² *Ibid.*, para. 531. ²³³ *Ibid.*, para. 563. ²³⁴ *Ibid.* ²³⁵ *Ibid.*

to 'take due account of particular methodological difficulties posed by the nature and characteristics of the particular substance and risk being evaluated'.²³⁶

In the longer term, perhaps the most significant rulings of the Appellate Body in *Continued Suspension of Obligations* are those regarding the standard of review to be applied by panels when evaluating a member's measure and its relationship to a risk assessment and scientific evidence. In previous case law, the Appellate Body confirmed that the standard of review applicable under the SPS Agreement is 'neither *de novo* review, as such, nor "total deference", but rather the "objective assessment of the facts"'.²³⁷ In *Continued Suspension of Obligations*, the Appellate Body took the opportunity to clarify the applicable standard of review, as well as related standards pertaining to the treatment of expert evidence about risk. Discussion of the latter came in the context of an evaluation of whether the EU had been afforded 'due process' as a result of the panel's decision to consult two experts closely associated with the production of risk assessments for hormone residues underlying relevant Codex Alimentarius standards. The EU's submissions also revisited the question of the applicable standard of review in SPS cases, arguing that the Panel's mandate was limited to determining whether there was any 'reasonable scientific basis' for the SPS measures concerned.²³⁸ On this basis, the EU took issue with the Panel's approach to the expert evidence that essentially sought to determine whether particular findings were generally accepted by the relevant scientific community.²³⁹

According to the Appellate Body, the Panel was under an obligation to afford the parties to the dispute 'due process' to ensure that the proceedings were conducted with fairness and impartiality and that one party was not unfairly disadvantaged with respect to the other parties in the dispute.²⁴⁰ Given that '[s]cientific experts and the manner in which their opinions are solicited and evaluated can have a significant bearing on a panel's consideration of the evidence and its review of a domestic measure, especially in cases . . . involving highly complex scientific issues', the Appellate Body recognised that appointment and consultation of experts who are not independent or impartial can compromise a Panel's ability to act as an independent adjudicator in an SPS case.²⁴¹ In light of the close association of two of the experts consulted with the preparation of Codex Alimentarius risk assessments related to hormone use, the Appellate Body ruled that it was improper for the panel to have asked those experts to evaluate the EU's risk assessment, and incompatible with applicable due process obligations.²⁴² Consequently, the Appellate Body found that it was difficult to sustain the Panel's findings on scientific and risk assessment issues in the case, which relied heavily upon the responses of the two experts in question.²⁴³

The EU's concerns with respect to the expert evidence related not just to the Panel's decision to consult scientists of questionable independence and impartiality, but also to the way in which the Panel relied upon the expert evidence in reaching its findings. Reflecting their lack of confidence as non-scientists to engage deeply with the scientific evidence, the Panel tended simply to survey and summarise the opinions of the experts on a particular issue and then reach a conclusion based upon the view expressed by 'a majority in the spectrum of the scientific

²³⁶ *Ibid.* ²³⁷ *Beef Hormones*, para. 117. ²³⁸ *Continued Suspension of Obligations*, para. 587.

²³⁹ *Ibid.*, paras. 607 and 610. ²⁴⁰ *Ibid.*, para. 433.

²⁴¹ *Ibid.*, para. 436. The Appellate Body stressed that the obligation to afford due process was not circumscribed to the expert selection stage and does not end with the appointment of experts but continues to apply throughout the panel's questioning and consultations with experts: para. 473.

²⁴² *Ibid.*, para. 469. ²⁴³ *Ibid.*, para. 484.

experts consulted by the Panel'.²⁴⁴ Criticising the Panel for having 'reviewed the scientific experts' opinions and somewhat peremptorily decid[ing] what it considered to be the best science',²⁴⁵ the Appellate Body went on to articulate what it saw as the appropriate standard and approach to the review of consistency of a member's SPS measure with Article 5.1 of the SPS Agreement. It ruled that the review power of a panel pursuant to Article 11 of the DSU 'is not to determine whether the risk assessment undertaken by a WTO Member is correct, but rather to determine whether that risk assessment is supported by coherent reasoning and respectable scientific evidence and is, in this sense, objectively justifiable'.²⁴⁶ The Appellate Body then went on to spell out, in some detail, the correct methodology for a Panel to follow where it is reviewing a member's risk assessment, particularly one that encompasses divergent or minority scientific perspectives on the risks in question. This methodology involved an identification of the scientific basis of the measure, verifying that the scientific basis of the measure comes from a respected and qualified source and has 'the necessary scientific and methodological rigour to be considered reputable science', evaluating whether the reasoning articulated on the basis of the scientific evidence is objective and coherent, and determining whether the requisite objective relationship exists between the identified scientific basis and the SPS measure adopted by the member.²⁴⁷ The experts advising the Panel may, and indeed are expected, to play a major role in the Panel's review of an SPS measure. However, the role of the experts is commensurate with the limited mandate of the Panel. Consultations with the experts thus 'should not seek to test whether the experts would have done a risk assessment in the same way and would have reached the same conclusions as the risk assessor'.²⁴⁸

Questions surrounding the scientific basis of measures were also important to the Appellate Body's rulings on the meaning of the term 'insufficient scientific evidence' used in Article 5.7. Unlike its earlier Directive at issue in the *Beef Hormones* case, the EU's revised hormones Directive sought to rely directly on Article 5.7 in order to sustain a provisional ban on meat treated with any of the five hormones: testosterone, progesterone, trenbolone acetate, zeranol and MGA. The Panel found that this provisional ban failed to meet the requirements of Article 5.7 on the basis that the EU had not shown that the relevant scientific evidence regarding the health effects of residues of these hormones in meat was insufficient. The Panel based this conclusion on the fact that Codex Alimentarius bodies had been able to undertake a risk assessment suggesting that the available evidence of health risks was not insufficient. In order to render the existing scientific evidence 'insufficient', the Panel ruled that:

there must be a *critical mass* of new evidence and/or information that calls into question the fundamental precepts of previous knowledge and evidence so as to make relevant, previously sufficient, evidence now insufficient. In the present case where risk assessments have been performed and a large body of quality evidence has been accumulated, this would be possible only if it put into question existing relevant evidence *to the point that* this evidence is no longer sufficient to support the conclusions of existing risks assessments.²⁴⁹

²⁴⁴ *Ibid.*, para. 597. See also paras. 598 and 602. ²⁴⁵ *Ibid.*, para. 612. ²⁴⁶ *Ibid.*, para. 590.

²⁴⁷ *Ibid.*, para. 591. ²⁴⁸ *Ibid.*, para. 592.

²⁴⁹ *US – Continued Suspension of Obligations*, Panel Report, para. 7.648; *Canada – Continued Suspension of Obligations*, Panel Report, para. 7.626.

The Appellate Body's findings on Article 5.7 largely focused on the 'critical mass' test developed by the Panel, eventually reversing the Panel's approach as setting too inflexible and too high a threshold for determination of the issue of insufficiency.²⁵⁰ Instead, the Appellate Body used the concept of 'a spectrum' to illuminate the question of the sufficiency or insufficiency of scientific knowledge for SPS risk assessment in the context of a constantly evolving body of scientific knowledge. At one extreme of this spectrum 'lies the incremental advance of science'; '[w]here these scientific advances are at the margins, they would not support the conclusion that previously sufficient evidence has become insufficient'.²⁵¹ Given that members are permitted to rely on divergent or minority views from qualified and respected sources in risk assessment, the Appellate Body indicated that mere scientific controversy, or the possibility of conducting further research or of analysing additional information, by themselves, do not render relevant scientific evidence 'insufficient' for the purposes of Article 5.7.²⁵² At the other extreme of the spectrum 'lie the more radical [and infrequent] scientific changes that lead to a paradigm shift'.²⁵³ The application of Article 5.7 is not limited to such situations as, for instance, where new scientific evidence emerges that entirely displaces the scientific theories upon which previous research relies.²⁵⁴ Rather, 'WTO Members should be permitted to take a provisional measure where new evidence from a qualified and respected source puts into question the relationship between the pre-existing body of scientific evidence and the conclusions regarding risks', in other words, 'where new scientific evidence casts doubt as to whether the previously existing body of scientific evidence still permits of a sufficiently objective assessment of risk'.²⁵⁵ In practice, discerning the difference between 'some evidence' of risk and 'enough' to complete a full and sufficiently objective risk assessment is likely to prove a complex and fraught task.

Australia Salmon

The *Salmon* dispute arose out of a Canadian complaint regarding Australia's prohibition on the importation of fresh, chilled or frozen salmon from Canada.²⁵⁶ The Australian restrictions, which had been in place since 1975, were maintained on the basis that importation of Canadian salmon could result in the introduction of exotic disease agents into Australia, with negative consequences for the health of fish in the country's waters. They prohibited the import of dead salmon into Australia unless, prior to importation, the fish had been 'subject to such treatment as in the opinion of the Director of Quarantine is likely to prevent the introduction of any infectious or contagious disease, or disease or pest affecting persons, animals or plants'.²⁵⁷ The Director of Quarantine had permitted the entry of commercial imports of heat-treated salmon products for human consumption as well as non-commercial quantities of other salmon (primarily for scientific purposes) subject to prescribed conditions.²⁵⁸ Australian authorities had conducted an import risk analysis for uncooked, wild, adult, ocean-caught, Pacific salmon which was initially set forth in a 1995 Draft Report, finalised in December 1996 (Final Report). The 1995 Draft Report had recommended allowing the importation of ocean-caught Pacific

²⁵⁰ See *Continued Suspension of Obligations*, paras. 705–7, 712, 725 and 731. ²⁵¹ *Ibid.*

²⁵² *Ibid.*, paras. 677 and 702. ²⁵³ *Ibid.*, para. 703. ²⁵⁴ *Ibid.*, para. 725. ²⁵⁵ *Ibid.*, para. 703.

²⁵⁶ *Australia – Measures Affecting Importation of Salmon*, Report of the Appellate Body, WT/DS18/AB/R, 20 October 1998. See also *Australia – Measures Affecting the Importation of Salmon*, Recourse by Canada to Article 21.5 of the DSU, Report of the Panel, DSR 2000:IV, 2031, 20 March 2000.

²⁵⁷ *Ibid.*, para. 2. ²⁵⁸ *Ibid.*

salmon under certain conditions but this was revised in the Final Report, which recommended continuing the import prohibition for uncooked salmon products.²⁵⁹ Acting on the basis of the Final Report, the Director of Quarantine decided to prohibit the importation of uncooked ocean-caught Pacific salmon.²⁶⁰

The WTO Panel found that the Australian prohibition was in breach of the SPS Agreement on the grounds that it was not based on a risk assessment and that the prohibition was more trade-restrictive than required to achieve Australia's chosen level of SPS protection. The Panel also held that Australia had adopted arbitrary or unjustifiable distinctions in the levels of SPS protection designated for salmon *vis-à-vis* non-salmonids in breach of Article 5.5.²⁶¹ Australia appealed the Panel's decision to the WTO Appellate Body, challenging the Panel's interpretation of Articles 5.1, 5.5 and 5.6 of the SPS Agreement.

As to Article 5.1, the Appellate Body conducted its own assessment of the consistency of the Australian measure with Article 5.1. It first examined whether the risk analysis conducted by Australian authorities amounted to a risk assessment for the purpose of Article 5.1, holding that a risk assessment on which quarantine restrictions are based must satisfy three conditions, namely, it must:

1. *identify* the diseases whose entry, establishment or spread a Member wants to prevent within its territory, as well as the potential biological and economic consequences associated with the entry, establishment or spread of these diseases;
2. *evaluate* the likelihood of entry, establishment or spread of these diseases, as well as the associated potential biological and economic consequences; and
3. *evaluate* the likelihood of entry, establishment or spread of these diseases according to the SPS measures which might be applied.²⁶²

The Appellate Body stressed that it was not sufficient for a risk assessment to conclude that there was a possibility of entry, establishment or spread of diseases. Rather, a proper risk assessment had to evaluate the likelihood (i.e. the 'probability') of entry, establishment or spread of diseases and associated biological and economic consequences, including by reference to the SPS measures that might be applied.²⁶³ The likelihood or probability of an event could be expressed quantitatively or qualitatively and there was no requirement for a risk assessment to establish a certain magnitude or threshold level of degree of risk.²⁶⁴ On this basis, the Appellate Body concluded that the 1996 Final Report was not a proper risk assessment within the meaning of Article 5.1.²⁶⁵ With regard to Article 5.5, the Appellate Body found that the different levels of SPS protection adopted by Australia for imports of different fish and fish products were arbitrary,²⁶⁶ and that the distinctions in the levels of protection imposed by Australia resulted in a disguised restriction on international trade.²⁶⁷ As to Article 5.6, the Appellate Body reversed the Panel's finding but made no final determination as to the consistency of the import prohibition with Article 5.6.²⁶⁸

²⁵⁹ *Ibid.* ²⁶⁰ *Ibid.*

²⁶¹ *Australia – Measures Affecting Importation of Salmon*, Report of the Panel, WT/DS18/R, 12 June 1998.

²⁶² *Ibid.*, para. 121. ²⁶³ *Ibid.*, para. 123. ²⁶⁴ *Ibid.*, para. 124. ²⁶⁵ *Ibid.*, paras. 135 and 136. ²⁶⁶ *Ibid.*

²⁶⁷ *Ibid.*, para. 177. The Appellate Body made the same finding in relation to imports of other types of Canadian salmon: see para. 240.

²⁶⁸ *Ibid.*, para. 213. The Appellate Body made the same finding in relation to imports of other types of Canadian salmon: see para. 242.

Japan Varietals

The *Japan Varietals* dispute concerned a challenge by the United States to a requirement imposed by Japan to test and confirm the efficacy of quarantine treatment for each variety of certain agricultural products prior to import.²⁶⁹ Under its Plant Protection Law and Regulation, Japan prohibited the importation of eight agricultural products (apples, cherries, peaches, walnuts, apricots, pears, plums and quince) from, *inter alia*, the United States on the ground that these fruits were potential hosts of the codling moth, a pest of quarantine significance to Japan. Pursuant to the Japanese regulations, the import prohibition could be lifted if an exporting country proposed an alternative quarantine treatment that would achieve a level of protection equivalent to the import prohibition. Japan issued administrative guidelines concerning the testing requirements that applied to initial lifting of the import prohibition on a product and also to import approval for additional varieties of the product. The testing requirement for additional varieties was the measure challenged by the United States in the dispute. A WTO Panel found that Japan's measure violated several provisions of the SPS Agreement, including Articles 2.2, 5.6 and 5.7.²⁷⁰

The Panel found that Japan's varietal testing requirement (as applied to apples, cherries, nectarines and walnuts) was maintained without sufficient scientific evidence and therefore inconsistent with Article 2.2.²⁷¹ Japan appealed the Panel's findings, arguing that the requirement in Article 2.2 for a member not to maintain an SPS measure 'without sufficient scientific evidence' should be interpreted in light of the precautionary principle.²⁷² The Appellate Body upheld the Panel's ruling, and reiterated its finding in *Beef Hormones* that the precautionary principle, while finding reflection in the Preamble, Article 3.3 and Article 5.7, 'has not been written into the SPS Agreement as a ground for justifying SPS measures that are otherwise inconsistent with the obligations of Members set out in particular provisions of the Agreement'.²⁷³

The Panel had also rejected Japan's reliance on Article 5.7. Reviewing that provision, the Appellate Body found that it establishes four requirements for provisional SPS measures, all of which must be satisfied, namely, that the measure is:

1. imposed where 'relevant scientific information is insufficient';
2. adopted 'on the basis of available pertinent information';
3. not maintained unless the member 'seek[s] to obtain the additional information necessary for a more objective assessment of risk'; and
4. 'review[s] the . . . measure accordingly within a reasonable period of time'.²⁷⁴

The Appellate Body upheld the Panel's finding that additional information collected by Japan had failed to 'examine the appropriateness' of the SPS measure at issue and had not addressed the core issue of whether 'varietal characteristics cause a divergency in quarantine efficacy'.²⁷⁵

²⁶⁹ *Japan – Measures Affecting Agricultural Products*, Report of the Appellate Body, WT/DS76/AB/R, 22 February 1999.

²⁷⁰ *Japan – Measures Affecting Agricultural Products*, Report of the Panel, WT/DS76/R, 27 October 1998. The Panel also ruled that Japan had acted inconsistently with Art. 7 of the SPS Agreement by not publishing the varietal testing requirement.

²⁷¹ *Japanese Varietals*, Appellate Body Report, note 269 above, para. 72. ²⁷² *Ibid.*, para. 81.

²⁷³ *Ibid.*, paras. 81–4 and 113–14. ²⁷⁴ *Ibid.*, paras. 89–90. ²⁷⁵ *Ibid.*, para. 92.

It also confirmed that Japan had not conducted the necessary review within a 'reasonable period of time'.²⁷⁶

Japan Apples

In the case of *Japan Apples*, Japanese phytosanitary requirements were once again at issue as a result of a challenge brought by the United States.²⁷⁷ The United States alleged that Japanese measures for control of the plant disease fire blight were inconsistent with Article 2.2 of the SPS Agreement as there was 'no scientific evidence' that harvested, mature US apples exported to Japan could serve as a pathway for introduction of the disease.²⁷⁸ The United States supported this contention by deconstructing the putative pathway for transmission of the disease from apples harvested in American orchards to apples growing in Japan, pointing to the lack of scientific evidence available for a probabilistic evaluation of risk in relation to each and every step in that pathway. In its rulings, the WTO Panel essentially adopted the evaluative approach advocated by the United States, carrying out its own objective step-by-step assessment of the relationship the available scientific evidence bore to Japan's allegations of risk. The Panel engaged in a detailed review of the available scientific studies on fire blight transmission, including questions of their methodological soundness,²⁷⁹ and whether or not they qualified as 'scientific evidence' for the purposes of Article 2.2.²⁸⁰ The Panel concluded that the overall risk of disease transmission was 'negligible', and hence that Japan's stringent phytosanitary requirements were 'clearly disproportionate'.²⁸¹ Although the Panel's findings were based on the opinion of its advising experts that the risks at issue were negligible, the experts themselves expressed their discomfort with the idea that a scientific assessment of negligible risk should lead to the elimination of Japan's phytosanitary controls 'in one step'.²⁸² Although the Panel's treatment of scientific evidence in the case was subject to an appeal by Japan, the Appellate Body had little to say on the evaluative 'methodology' employed by the Panel, beyond noting that it did 'not exhaust the range of methodologies available to determine whether a measure is maintained "without sufficient scientific evidence" within the meaning of Article 2.2'.²⁸³

The majority of the Appellate Body's findings in *Japan Apples* were concerned with the concept of insufficient scientific evidence in the context of Article 5.7. The Panel had interpreted the notion narrowly, seeing Article 5.7 as primarily 'designed to be invoked in situations where little, or no, reliable evidence was available on the subject matter at issue'.²⁸⁴ The Appellate Body, on the other hand, adopted an apparently broader approach, judging the concept of insufficiency in light of the wider task of risk assessment under Article 5. It ruled that "relevant scientific evidence" will be "insufficient" within the meaning of Article 5.7 if the body of available scientific evidence does not allow, in quantitative or qualitative terms, the performance of an adequate assessment of risks as required under Article 5.1 and as defined in Annex A to the SPS Agreement'.²⁸⁵ This finding clarifies the relationship between Articles 2.2

²⁷⁶ *Ibid.*, paras. 93 and 94.

²⁷⁷ *Japan – Measures Affecting the Importation of Apples*, Report of the WTO Appellate Body, WT/DS245/AB/R, 26 November 2003 ('*Japan Apples*, Appellate Body Report').

²⁷⁸ *Japan – Measures Affecting the Importation of Apples*, Report of the Panel, WT/DS245/R, 15 July 2003 ('*Japan Apples*, Panel Report'), para. 4.21.

²⁷⁹ E.g. *ibid.*, para. 8.127. ²⁸⁰ *Ibid.*, paras. 8.92, 8.93 and 8.95. ²⁸¹ *Ibid.*, para. 8.198. ²⁸² *Ibid.*, para. 8.173.

²⁸³ *Japan Apples*, Appellate Body Report, para. 164. ²⁸⁴ *Japan Apples*, Panel Report, para. 8.219.

²⁸⁵ *Japan Apples*, Appellate Body Report, para. 179.

and 5.1, on the one hand, and Article 5.7 on the other. Consequently, where relevant scientific evidence is sufficient to perform a risk assessment to the standards specified by the SPS Agreement, a member may take an SPS measure only where the measure is based on a risk assessment (in accordance with Article 5.1) and meets the obligations set out in Article 2.2. If the relevant scientific evidence is insufficient to perform a risk assessment, a member may adopt a provisional SPS measure, subject to meeting the cumulative obligations set out in Article 5.7.

The Appellate Body emphasised that its test of insufficiency, judged against the task of risk assessment, would not necessarily exclude from the ambit of Article 5.7 'cases where the available evidence is more than minimal in quantity but has not led to reliable or conclusive results'.²⁸⁶ However, it was not prepared to equate the concept of insufficient scientific evidence in Article 5.7 with the animating notion of the precautionary approach, namely, scientific uncertainty. Instead, Japan's contentions regarding the scope for consideration of scientific uncertainty under Article 5.7 were summarily dismissed by the Appellate Body relying on the text of the provision. It ruled that that the two concepts of insufficiency of relevant scientific evidence and scientific uncertainty 'are not interchangeable'.²⁸⁷

Australia Apples

The facts of the most recent SPS dispute to be decided by a WTO Panel and the Appellate Body closely resembled those of the *Japan Apples* case. At issue were long-standing Australian phytosanitary measures designed to prevent the introduction of various pests and diseases, including fire blight, from other countries where these diseases and pests were established. New Zealand challenged the Australian measures, arguing that there was 'no scientific support' for Australia's contention that mature, symptomless apples are a pathway for transmitting various plant diseases and pests, including fire blight, and hence that the Australian measures were inconsistent with Article 2.2 of the SPS Agreement.²⁸⁸ New Zealand also argued that the Import Risk Analysis produced by Australian authorities to justify and elaborate quarantine restrictions on New Zealand apples was inconsistent with Articles 5.1, 5.2 and 5.6 of the SPS Agreement. This argument was upheld by the Panel, which found that Australia's requirements contained in its Import Risk Analysis were inconsistent with Article 5.1 and also 'by implication' with Article 2.2.²⁸⁹ The Panel also found that Australia's measures with respect to fire blight, European canker and apple leafcurling midge were inconsistent with Article 5.6.

On appeal, the Appellate Body upheld the Panel's central finding that the Australian measures for fire blight, European canker and apple leafcurling midge were inconsistent with Articles 5.1, 5.2 and 2.2 of the SPS Agreement. Its analysis of the Panel's approach to these questions provided the first opportunity to examine the implementation of the new standard of review articulated by the Appellate Body in *Continued Suspension of Obligations*.²⁹⁰ This had been challenged by Australia, which argued that the Panel had misinterpreted and misapplied the standard of review applicable to review of the Import Risk Analysis under Article 5.1; that

²⁸⁶ *Ibid.*, para. 185. ²⁸⁷ *Ibid.*, para. 184. ²⁸⁸ New Zealand, First Written Submissions, 41–87.

²⁸⁹ *Australia – Measures Affecting the Importation of Apples from New Zealand*, Report of the Panel, WT/DS367/R, 9 August 2010 ('*Australia Apples*, Panel Report'), para. 7.472.

²⁹⁰ L. Gruszczynski, 'How Deep Should We Go? Searching for an Appropriate Standard of Review in the SPS Cases', 1 *European Journal of Risk Regulation* 55 (2011).

the Panel had erred in its assessment of the use of expert judgment in the Import Risk Analysis to draw conclusions about risk in circumstances of scientific uncertainty; and that the Panel had failed to assess the materiality of the faults it found with the reasoning in the Import Risk Analysis.²⁹¹

In respect of the first two of these arguments, the Appellate Body upheld the Panel's application of the standard of review and its finding that the Import Risk Analysis' conclusions were not objective or coherent because they exaggerated or overestimated certain risks and consequences and did not find sufficient support in the scientific evidence relied upon. The Appellate Body drew a distinction between the scrutiny applied to the underlying scientific basis of a measure – suggesting a more deferential standard based on the fact that Panels are not well-equipped to undertake their own scientific assessment²⁹² – and scrutiny of the reasoning of a risk assessor on the basis of the scientific evidence, which apparently attracted a more stringent standard.²⁹³ The Appellate Body also rejected Australia's argument for a distinction between the 'intermediate' and 'ultimate' conclusions of the Import Risk Analysis with analysis of the former limited to a simple review of whether they fell within a range that could be considered legitimate by the scientific community. It further explained that 'when the exercise of expert judgement forms an integral part of the risk assessor's analysis, then it should be subject to the same type of scrutiny by the panel as all other reasoning and conclusions in the risk analysis';²⁹⁴ in other words, conclusions based on the exercise of expert judgment in circumstances of scientific uncertainty must still satisfy standards of objectivity and coherence, and have a sufficient basis in the available scientific evidence.²⁹⁵ The Appellate Body did not view the phrase 'as appropriate to the circumstances' in Article 5.1 of the SPS Agreement as affording such flexibility as to excuse a risk assessor from properly performing the risk assessment. It also reiterated its finding in *Australia – Salmon*, that the existence of 'unknown and uncertain elements' does not relieve a risk assessor from complying with the requirements of Articles 5.1 and 5.2 of the SPS Agreement.²⁹⁶

The Appellate Body pointed out that the fact that Australia had performed a risk assessment and adopted a semi-quantitative methodology for assessing risks in its Import Risk Analysis demonstrated that Australia considered the available scientific evidence sufficient for the purposes of risk assessment. In those circumstances, while recourse to expert judgment was not in itself objectionable, 'it must be reasoned and explained consistently with Articles 5.1 and 5.2 of the SPS Agreement so that the risk assessment can still be considered a scientific process that is based on the "available scientific evidence"'.²⁹⁷

The Appellate Body also rejected Australia's final argument that the Panel ought to have assessed whether any of the identified flaws in the Import Risk Analysis' reasoning were so serious as to undermine reasonable confidence in the risk assessment as a whole. It observed that it was not necessary for a panel to establish whether each fault it finds with a risk assessment is, in itself, serious enough to undermine the entire risk assessment; instead, a 'comprehensive analysis of all the steps and factors reviewed may be sufficient to determine whether various flaws are, when taken together, serious enough to render a risk assessment one

²⁹¹ *Australia – Measures Affecting the Importation of Apples from New Zealand*, Report of the Appellate Body, WT/DS367/AB/R, 29 November 2010, para. 216.

²⁹² *Ibid.*, para. 225. ²⁹³ *Ibid.*, para. 224. ²⁹⁴ *Ibid.*, paras. 222–4. ²⁹⁵ *Ibid.*, para. 236.

²⁹⁶ *Ibid.*, para. 237. ²⁹⁷ *Ibid.*, para. 241.

that does not constitute a proper risk assessment within the meaning of Article 5.1 of the SPS Agreement'.²⁹⁸ The Appellate Body also rejected Australia's arguments that the Panel had failed to undertake an objective assessment of the facts of the case in its treatment of expert testimony and its analysis of risk assessment methodology employed in the Import Risk Analysis.²⁹⁹

The Appellate Body overturned the Panel's findings of violation of Article 5.6, which were based on the view that alternative, less trade-restrictive measures put forward by New Zealand were sufficient to meet the level of quarantine risk protection sought by Australia. The problem lay with the methodology adopted by the Panel, which failed to assess whether the alternative measures proposed met Australia's appropriate level of protection. The Panel's flawed methodology necessitated reversal of its legal conclusions but also prevented, according to the Appellate Body, a comparison of alternative measures sufficient for the Appellate Body to complete the legal analysis on the question of compliance with Article 5.6.³⁰⁰

EC – Biotech

Analysis of the contribution of the SPS jurisprudence to the intersection of trade and environment would not be complete without discussion of the 2006 decision of a WTO Panel in the *EC – Biotech* case.³⁰¹ The decision of the parties (the United States, Canada and Argentina as complainants; the EU as the defendant) not to appeal the Panel's legal interpretations of the SPS Agreement leaves the Panel report in a precedential grey zone. In this respect, it is noteworthy that the *EC – Biotech* Panel report was only referred to with approval on a few occasions by the Panel in *Continued Suspension of Obligations* and not at all by the Appellate Body in its appeal decision.³⁰² In part, this might reflect the very particular course taken by the legal arguments in the *EC – Biotech* case, which only incidentally touched on the major scientific evidence and risk assessment requirements of the SPS Agreement. While the legal findings of the *EC – Biotech* Panel constitute an important ruling in their own right (and one, moreover, that addressed questions of *environmental* risk under the SPS Agreement for the first time), it remains unclear to what extent the Appellate Body might follow the reasoning of the *EC – Biotech* Panel in any

²⁹⁸ *Ibid.*, para. 258. ²⁹⁹ *Ibid.*, paras. 315 and 327.

³⁰⁰ *Ibid.*, paras. 386 and 402.

³⁰¹ *EC – Measures Affecting the Approval and Marketing of Biotech Products*, Reports of the Panel, WTO Docs WT/DS291/R, WT/DS292/R, WT/DS293/R, 29 September 2006 ('*EC – Biotech*'). Since the Panel's decision, a substantial literature has developed, analysing the findings of the Panel Report, as well as their broader implications for the field of biotechnology and GMO agriculture: F. Baetens, 'Safe Until Proven Harmful? Risk Regulation in Situations of Scientific Uncertainty: The GMO Case', 66(2) *Cambridge Law Journal* 276 (2007); I. Cheyne, 'Life after the Biotech Products Dispute', 10 *Environmental Law Review* 52 (2008); C. E. Foster, 'Prior Approval Systems and the Substance–Procedure Dichotomy under the WTO Agreement on Sanitary and Phytosanitary Measures', 42(6) *Journal of World Trade* 1199 (2008); R. Howse and H. Horn, 'European Communities – Measures Affecting the Approval and Marketing of Biotech Products', 8(1) *World Trade Review* 49 (2009); S. Lester, 'International Decision: European Communities – Measures Affecting the Approval and Marketing of Biotech Products', 101 *American Journal of International Law* 453 (2007); D. Prevost, 'Opening Pandora's Box: The Panel's Findings in the *EC – Biotech Products Dispute*', 34(1) *Legal Issues of Economic Integration* 67 (2007); G. Shaffer, 'A Structural Theory of WTO Dispute Settlement: Why Institutional Choice Lies at the Centre of the GMO Case', 41 *New York University Journal of International Law and Politics* 1 (2008); A. Thomison, 'A New and Controversial Mandate for the SPS Agreement: The WTO Panel's Interim Report in the *EC – Biotech Dispute*', 32 *Columbia Journal of Environmental Law* 287 (2007); N. Zerbe, 'Risking Regulation, Regulating Risk: Lessons from the Transatlantic Biotech Dispute', 24(5) *Review of Policy Research* 407 (2007).

³⁰² *US – Continued Suspension of Obligations*, Panel Report, paras. 7.429, 7.431, 7.433, 7.609, 7.626 and 7.633; *Canada – Continued Suspension of Obligations*, Panel Report, paras. 7.420, 7.422, 7.424, 7.587, 7.604 and 7.611.

subsequent case. Already, some of the Panel's findings – particularly with respect to the insufficiency of scientific evidence for the purposes of Article 5.7 – seem to stand at odds with Appellate Body rulings in the *Continued Suspension of Obligations* case.

The *EC – Biotech* case concerned the long-running trans-Atlantic dispute over the EU's GMO risk regulatory regime applicable to the authorisation of GMOs for environmental release and for use as or in foods. The dispute centred on allegations made by the three complainants – the United States, Canada and Argentina – that the EU had maintained a *de facto* moratorium on GMO approvals, effectively refusing to implement the decision-making processes specified under its GMO regulatory framework. The complainants also challenged several safeguard measures maintained by member states of the EU that purported to restrict the growing or sale of particular GMOs or GMO foods in the territories of the member states concerned.³⁰³ Arguments of WTO-inconsistency were primarily, though not exclusively,³⁰⁴ focused on the SPS Agreement.

The Panel upheld the complainants' allegations of a general *de facto* moratorium affecting GMO products and causing delays in the processing of specific product applications,³⁰⁵ but declined to make any finding as to the consistency of the moratorium, or its product-specific manifestations, with the provisions of Articles 2.2 and 5.1 of the SPS Agreement. The Panel achieved this result by distinguishing between the EU's overall pre-marketing approval scheme – which it found was an SPS measure – and the implementation of that scheme – which it held to be simply a 'procedural' decision 'relating to the application, or operation, of the existing EU approval procedures'.³⁰⁶ Based on this reasoning, member states' safeguard measures were assessable under Articles 2.2 and 5.1 (as would have been the entire EU GMO scheme had it been challenged by the complainants).³⁰⁷ The Panel found that the safeguard measures did not meet the requirements of Article 5.1 as the inconclusive studies on which they were based did not satisfy rigorous standards for SPS risk assessment.³⁰⁸ An important aspect of the Panel's findings in this regard was that European-level committees had been prepared to issue and later reaffirm favourable risk assessments of the products subject to member state safeguard measures, which indicated in the Panel's view that the available scientific evidence was sufficient for risk assessment purposes.³⁰⁹

On the other hand, the moratorium, as something less than an SPS measure, was not evaluated against the scientific evidence and risk assessment requirements of the Agreement. Rather the Panel focused its attention on the previously unexplored requirements of Annex C(1)(a) of the SPS Agreement that require Members to ensure 'with respect to any procedure to check and ensure the fulfilment of sanitary or phytosanitary measures that . . . such procedures are undertaken and completed without undue delay'. The Panel found that the EU moratorium maintained between June 1999 and August 2003 had resulted in undue delay generally in the approval process and also in twenty-four of the twenty-seven product cases cited by the complainants.³¹⁰

³⁰³ Safeguard measures may be adopted by individual EU member states, on a provisional basis, to restrict or prohibit the use and/or sale of a GMO that has received approval under the EC regulations as or in a product on the member's territory.

³⁰⁴ Canada and Argentina also presented claims under the GATT and the TBT Agreement; however, in light of its findings under the SPS Agreement, the Panel did not proceed to consider the validity of these claims.

³⁰⁵ *EC – Biotech*, para. 7.1272. ³⁰⁶ *Ibid.*, para. 7.1378. ³⁰⁷ *Ibid.*, para. 8.4.

³⁰⁸ *Ibid.*, paras. 8.21–8.32. ³⁰⁹ *Ibid.*, para. 8.9. ³¹⁰ *Ibid.*, para. 8.6.

For future SPS case law, two other elements of the Panel's rulings in *EC – Biotech* are particularly worth noting. The first is the broad approach that the Panel took in interpreting the definition of an SPS measure under Annex A of the SPS Agreement. The Panel sought the 'ordinary meaning' of terms used in Annex A, while also finding that the 'indirect' and long-term health and environmental effects of pests, diseases and food additives could be encompassed within the scope of risks addressed by the SPS Agreement.³¹¹ Notably, the Panel saw no bar to the SPS Agreement dealing with environmental risk measures,³¹² or to broad environmental concerns such as the effects of GMOs on biodiversity.³¹³

The second ruling of the Panel, of potentially broader significance, related to its findings on the role of other international law in interpretation and application of provisions of the SPS Agreement. As in *Beef Hormones*, the EC argued that the precautionary principle was a general principle of international law of relevance in the interpretation of the SPS Agreement. The Panel essentially followed the reasoning of the Appellate Body in *Beef Hormones* on this issue, declining to make a finding on the status of the precautionary principle in international law, although it agreed with the EC that Annex C(1)(a) did not 'preclude the application of a prudent and precautionary approach to identifying, assessing and managing risks to human health and the environment arising from GMOs and GMO-derived products'.³¹⁴ Ultimately, however, the Panel found that precaution must always be 'subject to reasonable limits, lest the precautionary approach swallow the discipline imposed by Annex C(1)(a), first clause' and thus did not provide a justification for delay in the circumstances. The Panel also took a narrow approach to the application of the Biosafety Protocol in interpretation pursuant to Article 31(3)(c) of the Vienna Convention on the Law of Treaties allowing for consideration of any relevant rules of international law 'applicable in the relations between the parties'.³¹⁵ The Panel interpreted this phrase to mean that the other treaty, in this case the Biosafety Protocol, must be applicable to *all* WTO members in order to be relevant for the purposes of interpretation.³¹⁶ Beyond the limited sphere of environmental treaties with universal participation, this finding effectively rules out reference to international environmental conventions as part of the process of applying SPS or other WTO rules.

Assessment

The decisions under the SPS Agreement indicate the extent of the limitations on the ability of WTO members to adopt SPS measures with potential trade effects. If the rulings of the *EC – Biotech* Panel are followed in subsequent cases, a wider range of measures, including those addressed to environmental risks, may potentially come within the scope of the SPS Agreement. The case law emphasises the need for SPS measures to be based on a scientific assessment of potential risks, which – at least in the case of risks concerned with pests and diseases – comprehensively evaluates the probability (not the mere possibility) of adverse effects, on a case-by-case basis.³¹⁷ 'Real world' risks can be taken into account as part of the assessment but

³¹¹ *Ibid.*, paras. 7.225–7.226. ³¹² *Ibid.*, para. 7.226.

³¹³ *Ibid.*, para. 3.72. On the implications of these findings for the scope of the SPS Agreement, see J. Peel, 'A GMO by Any Other Name . . . Might Be an SPS Risk!: Implications of Expanding the Scope of the WTO Sanitary and Phytosanitary Measures Agreement', 17(5) *European Journal of International Law* 1009 (2007).

³¹⁴ *EC – Biotech*, para. 7.1522. ³¹⁵ Chapter 4, pp. 101–2, above. ³¹⁶ *EC – Biotech*, paras. 7.68–7.70.

³¹⁷ In *Beef Hormones*, the Appellate Body indicated that a different standard of risk assessment applies for food safety measures, namely, that of possible rather than probable harm: *Beef Hormones*, para. 184.

there must be a rational relationship between any SPS measure and the scientific evidence. As to Article 5.5, the Appellate Body has affirmed that members have an autonomous right to determine their appropriate level of SPS protection for different risks.³¹⁸ The decisions in *Beef Hormones* and *Australian Salmon* emphasise the need for WTO members to pay greater attention to the issue of consistency between the SPS measures that they maintain for similar risks. In *Beef Hormones*, the Appellate Body appeared willing to accept differences in levels of SPS protection reflecting the socio-cultural environment of the adopting member state; the *Australian Salmon* case suggests that substantial differences between SPS measures for similar risks may be taken as an indication of a discriminatory or protectionist intent, especially in the absence of a scientific risk assessment justifying the measures adopted. With regard to Article 5.7, members must navigate the difficult concept of 'insufficient' scientific evidence (which is not treated as equivalent to the precautionary standard of scientific uncertainty), as well as seeking additional information germane to the conduct of a proper risk assessment and review any provisional measures within a reasonable period of time. The precautionary principle does not provide a separate basis for the adoption of SPS measures where the underlying science is uncertain, though a precautionary approach to risk assessment may be warranted in such circumstances. In particular, a member may be justified in basing its measures on qualified divergent scientific opinion 'where the risk involved is life-threatening in character and is perceived to constitute a clear and imminent threat to public health and safety'.³¹⁹ The Appellate Body's findings on the standard of review in *Continued Suspension of Obligations* also suggest a trend towards granting WTO members greater leeway in their evaluation of risks, although, as the *Australia Apples* case demonstrates, any flexibility afforded does not excuse members from 'properly' performing their risk assessments.

European Union³²⁰

Similar provisions to those found in the GATT also exist in the Treaty on the Functioning of the European Union (EU Treaty), which from 2009 replaced the former Treaty Establishing the European Community (EC Treaty) adopted in 1957 to create a 'common market' between the six original member states. Article 34 (formerly Article 28) of the EU Treaty prohibits quantitative restrictions on imports and all measures having equivalent effects (non-tariff barriers to trade). The express exceptions to Article 34, set out in Article 36 (formerly Article 30), include the

³¹⁸ *Ibid.*, para. 194. ³¹⁹ *Beef Hormones*, Appellate Body Report, para. 172.

³²⁰ EC Commission, 1992: *The Environmental Dimension – Task Force Report on the Environment and the Internal Market* (1990); P. Demaret, 'Trade-Related Environmental Measures (TREM) in the External Relations of the European Community', in M. Maresceau (ed.), *The European Community's Commercial Policy After 1992: The Legal Dimension* (1993); A. Ziegler, *Trade and Environmental Law in the European Community* (1996); L. Gormley, 'Free Movement of Goods and the Environment', in J. Holder (ed.), *The Impact of EC Environmental Law in the United Kingdom* (1997); H. Temminck, 'From Danish Bottles to Danish Bees', 1 *Yearbook of European Law* 61 (2000); J. Scott, *EC Environmental Law* (2000), Chapter 4; J. Jans, *European Environmental Law* (2000), 121–34 and Chapter VI; L. Krämer, *EC Environmental Law* (2000, 4th edn), 74–89; V. Heyvaert, 'Balancing Trade and Environment in the European Union: Proportionality Substituted?', 13 *Journal of Environmental Law* 392 (2001); J. Scott, 'International Trade and Environmental Governance: Relating Rules (and Standards) in the EU and the WTO', 15 *European Journal of International Law* 307 (2004); J. Scott, 'The Precautionary Principle Before the European Courts', in R. Macrory, I. Havercroft and R. Purdy (eds.), *Principles of European Environmental Law* (2004), 49; F. Jacobs, 'The Role of the European Court of Justice in the Protection of the Environment', 18(2) *Journal of Environmental Law* 185 (2006); J. Bovet, 'Recent Case-Law of the European Court of Justice and the Court of First Instance', 7(1) *Journal for European Environmental and Planning Law* 91 (2010).

protection of health and life of humans, animals or plants, provided that such prohibitions or restrictions do not constitute a means of arbitrary discrimination or a disguised restriction on trade between member states. Environmental protection is not expressly included as an exception. Following the conclusion of the Treaty of Amsterdam in 1997, the EC Treaty was amended to provide that, where harmonisation measures, including environmental measures, are adopted by the EU under Article 114 (formerly Article 95) to achieve the progressive establishment of the internal market, then, if

a Member State deems it necessary to maintain national provisions on grounds of major needs referred to in Article 36, or relating to the protection of the environment or the working environment, it shall notify the Commission of these provisions as well as the grounds for maintaining them. Moreover . . . if, after the adoption by the Council or by the Commission of a harmonisation measure, a Member State deems it necessary to introduce national provisions based on new scientific evidence relating to the protection of the environment or the working environment on grounds of a problem specific to that Member State arising after the adoption of the harmonisation measure, it shall notify the Commission of the envisaged provisions as well as the grounds for introducing them.³²¹

Where environmental protection measures are adopted under Article 191 (formerly Article 175) of the EU Treaty, member states are not prevented from 'maintaining or introducing more stringent protective measures' that are compatible with the Treaties.³²² Even after the amendments introduced in 1986, 1992, 1997, 2001 and 2007, the EU Treaty is silent as to the permissibility of national environmental measures which restrict or limit trade where no EU measures have been adopted on a particular environmental matter under Articles 114 or 191.

Trade restrictions on environmental grounds: the role of the European Court of Justice
The European Court of Justice (ECJ) has played an important role in delimiting the conditions under which environmental protection measures adopted by EU member states will be permitted. In 1983, the ECJ upheld French legislation that restricted the export of waste oils from France to other EU member states.³²³ Two years later, the ECJ held that the protection of the environment was one of the Community's 'essential objectives' which could, as such, justify certain limitations on the free movement of goods provided that they did not 'go beyond the inevitable restrictions which are justified by the pursuit of the objective of environmental protection'.³²⁴ This was followed by two landmark cases that provided significant guidance on the position of the ECJ: the 1989 judgment in the *Danish Bottles* case³²⁵ and the 1992 judgment in the *Belgian Waste Disposal* case.³²⁶

³²¹ Art. 114(4) and (5) (formerly Art. 95(4) and (5)).

³²² Art. 193 (formerly Art. 176); pursuant to the 1992 Maastricht Treaty amendments, such measures must be notified to the Commission.

³²³ Case 172/82, *Syndicat National des Fabricants d'Huile de Graissage v. Groupement d'Intérêt Economique 'Inter-Huiles'* [1983] ECR 555.

³²⁴ Case 240/83, *Procureur de la République v. Association de Défenses des Brûleurs d'Huiles Usagées* [1985] ECR 531.

³²⁵ Case 302/86, *Commission v. Denmark* [1989] 1 CMLR 619; P. Kromarek, 'Environmental Protection and Free Movement of Goods: The Danish Bottles Case', 2 *Journal of Environmental Law* 89 (1990); P. Sands, 'Danish Bottles and Mexican Tuna', 1 *Review of European Community and International Environmental Law* 28 (1992).

³²⁶ Case C-2/90, *Commission v. Belgium* [1993] 1 CMLR 365.

The *Danish Bottles* case concerned Danish legislation introduced to allow the adoption of rules limiting, prohibiting or requiring the use of certain materials and types of container for drinks. The legislation required, first, that containers for gaseous mineral waters, lemonade, soft drinks and beer be subject to a compulsory deposit-and-return system, and, second, that such containers be approved by the National Agency for the Protection of the Environment (NAPE). Producers of beverages and containers in other member states, and their trade associations, considered the Danish legislation to establish a non-tariff barrier to trade, which restricted the import into Denmark of their products and could be considered to have certain extra-territorial effects. The producers were supported in their view by the European Commission, which called on the Danish government to change its law. This led to an amendment allowing beverages covered by the original legislation to be sold in non-approved containers, provided that the quantity sold did not exceed 3,000 hectolitres per annum per producer, or that the beverage was being sold in the container normally used for that product in the country of production in order to 'test-market' it in Denmark. Additionally, the amendment required that no metal containers be used, that a return/recycling system for non-approved containers be set up, that the deposit for the container be equal to that normally charged on a similar approved container, and that the person marketing the product keep the NAPE fully informed to show compliance.

The European Commission was not satisfied with the amendments, and in 1986 brought proceedings to have the compulsory deposit-and-return system and the NAPE bottle-approval system declared incompatible with Article 34 of the EU Treaty. The ECJ held that the deposit-and-return system was compatible with Article 34, but that the NAPE approval system was not so compatible. The ECJ stated that:

in the absence of common rules relating to the marketing of the products concerned, obstacles to movement within the Community resulting from disparities between national laws must be accepted, in so far as such rules, applicable to domestic and imported products without distinction, may be recognised as being necessary in order to satisfy mandatory requirements of Community law. It is also necessary for such rules to be proportionate to the aim in view. If a member state has a choice between various measures to achieve the same objective, it should choose the means which least restrict the free movement of goods . . . The protection of the environment is a mandatory requirement which may limit the application of Article 30 of the Treaty.³²⁷

The ECJ found that the deposit-and-return system established an obligation that was:

an essential element of a system aiming to secure the re-use of containers and therefore appears to be necessary to attain the objectives of the disputed regulations. In view of this finding, the restrictions which they impose on the free movement of goods should not be considered as disproportionate.

However, as regards the NAPE approval system, the ECJ found that, by restricting the quantity of beer and soft drinks that could be marketed by a single producer in non-approved

³²⁷ Note 325 above, 631.

containers to 3,000 hectolitres per year, Denmark had adopted measures with disproportionate consequences:

the existing system of return for approved containers guarantees a maximum percentage of re-use and therefore gives considerable protection to the environment because the empty containers can be returned to any retailer of beverages, whereas non-approved containers can only be returned to the retailer who sold the beverage because of the impossibility of setting up such a complete organisation for such containers also. However, the system for returning non-approved containers is capable of protecting the environment and, so far as imports are concerned, covers only limited quantities of beverages by comparison with the quantity consumed in the country because of the restrictive effect of the compulsory return of containers on imports. Under these conditions, limiting the quantity of products which can be marketed by importers is disproportionate to the objective.³²⁸

In summary, the Court found that in the absence of specific EC legislation establishing a rule of environmental protection, national environmental rules to restrict trade between member states are permitted provided that:

1. the rules are necessary to protect the environment;
2. the effect on trade is not disproportionate to the objective pursued; and
3. the rules are not discriminatory against producers in third countries.

The ECJ's approach is not dissimilar to the analysis applied to the Article XX *chapeau* by the Appellate Body in the *Shrimp/Turtle* dispute, although the Appellate Body spoke in terms of the need to maintain a balance between the right of a member to invoke an exception under Article XX and the rights of the other members under GATT's substantive provisions, rather than in terms of proportionality. The ECJ's approach recognises the widespread support for weight to be given to legal aspects of environmental protection, even if this results in disparities in environmental standards and justifiable interference with the sanctity of free trade ideals.

In the *Belgian Waste Disposal* case, decided in July 1992, the ECJ ruled that Belgian legislation limiting the free movement of waste had been adopted in breach of an EU Directive but did not violate the provision on the free movement of goods. The judgment established further principles to justify restrictions on free trade that are adopted for environmental protection purposes. The case was brought by the European Commission against Belgium on the basis that legislation of the Wallonia region of Belgium which prohibited the disposal in Wallonia of waste originating from another state was incompatible with relevant EU waste Directives, as well as Article 34 (formerly Article 28) and Article 36 (formerly Article 30) of the EU Treaty.

The question concerning the violation of Articles 34 and 36 raised interesting points analogous to issues raised in GATT/WTO disputes. It turned on whether the EU Treaty provisions governing the free movement of goods applied to wastes which could not be recycled or re-used. Belgium argued that such wastes were not goods within the meaning of Article 34, since they had no intrinsic commercial value and could not be the subject of a sale. The Court

³²⁸ *Ibid.*, 632.

rejected this approach. It held that any objects which were transported across a boundary to give effect to a commercial transaction were subject to Article 34, whatever the nature of the transaction, and that recyclable or non-recyclable wastes were products subject to Article 34 whose free movement under that Article should not, as a matter of principle, be limited.³²⁹ The Court held that the distinction between recyclable and non-recyclable wastes created serious practical difficulties of application, particularly in the context of constantly evolving technical progress; whether waste was recyclable or not depended also on the cost of recycling and the usefulness of the re-use envisaged.

Having decided that wastes were covered by Article 34, the Court considered whether the prohibition imposed by the limitation could nevertheless be justified. It accepted that the protection of the environment could justify the Belgian legislation, and rejected the Commission's argument that the legislation should be declared unlawful on the grounds that it was discriminatory because it treated wastes from other member states more restrictively than the same wastes which might have been produced in Wallonia having regard 'to the differences between waste produced in one place and that in another and its connection with the place where it is produced'.³³⁰ The Court considered that waste had a special character and that the application of Article 191(2) (formerly Article 174(2)) of the EU Treaty, which establishes the principle that environmental damage should as a priority be rectified at source, implied that it was a matter for each region, commune or other local authority to take appropriate measures to ensure the receipt, treatment and disposal of its own wastes: waste should be disposed of as close as possible to the place where it is produced in order to keep the transport of waste to the minimum practicable.³³¹ The Court thus endorsed an environmentally based limitation on the free movement of goods under EU law, justifying this on the grounds that it accorded with the principles of 'self-sufficiency' and 'proximity' as provided in the 1989 Basel Convention.³³²

Since these early cases, the ECJ has decided a number of other cases dealing with both environmental protection measures and measures concerned with the related goal of ensuring public health and safety.³³³ One such case, which has parallels with a dispute currently before the WTO dispute settlement system,³³⁴ was the *German Renewable Energy* case.³³⁵ This case concerned, *inter alia*, the compatibility with Article 34 of a German law obliging electricity supply undertakings, which operated a general supply network, to purchase the electricity produced in their area of supply from renewable sources of energy. The ECJ noted that, according to the well-known *Dassonville* formula, 'any national measure which is capable of hindering, directly or indirectly, actually or potentially, intra-Community trade' is inconsistent with Article 34.³³⁶ It recalled that its case law established that an obligation to obtain a certain percentage of supplies from a national supplier limited the possibility of importing the same

³²⁹ *Ibid.*, 396. ³³⁰ *Ibid.*, 397. ³³¹ *Ibid.*

³³² *Ibid.* On the 1989 Basel Convention, see Chapter 12, pp. 568–71, above.

³³³ See e.g. Case C-293/94, *Rechtbank van eerste aanleg Turnhout – Belgium* [1996] ECR I-3159; Case C-389/96, *Aher-Waggon GmbH v. Germany* [1998] ECR I-4473; Case C-67/97, *Criminal Proceedings Against Bluhme* [1998] ECR I-8033; Case C-217/99, *Commission of the European Communities v. Kingdom of Belgium* [2000] ECR I-10251; Case C-473/98, *Kemikalieinspektionen v. Tooler Alpha AB* [2000] ECR I-5681; Case C-320/03, *Commission v. Austria* [2005] ECR I-9871.

³³⁴ See p. 864, below.

³³⁵ Case C-379/98, *PreussenElektra AG v. Schlesweg AG* [2001] ECR I-2099. See also D. Thieme and B. Rudolf, 'PreussenElektra AG v. Schlesweg AG. Case C-379/98', 96(1) *American Journal of International Law* 225 (2002).

³³⁶ Case 8/74, *Dassonville* [1974] ECR 837, para. 5.

product because purchasers are precluded from obtaining supplies, in respect of part of their needs, from suppliers situated in other member states.³³⁷ Consequently, the German law was 'capable, at least potentially, of hindering intra-Community trade', since it expressly stated that the purchase obligation imposed on electricity suppliers applied only to electricity produced from renewable energy sources within the respective supply area.³³⁸

Notwithstanding this finding, the Court ruled that the German measure was not incompatible with Article 34 given its aim and the features of the electricity market.³³⁹ In particular, the Court noted that:

use of renewable energy sources for producing electricity, which a statute such as the amended *Stromeinspeisungsgesetz* is intended to promote, is useful for protecting the environment in so far as it contributes to the reduction in emissions of greenhouse gases which are among the main causes of climate change which the European Community and its Member States have pledged to combat.³⁴⁰

In contrast to the *Danish Bottles* case, the Court did not rely on environmental protection as a 'mandatory requirement' justifying a departure from Article 34. Rather, it pointed to a number of considerations supporting its conclusion that, 'in the current state of Community law concerning the electricity market', legislation such as the German law was not incompatible with Article 34 of the Treaty. These included the obligations assumed by the Community and individual member states under the 1992 Climate Change Convention and the 1997 Kyoto Protocol to promote growth in the use of renewable energy; the requirements of Article 11 (formerly Article 6) of the EU Treaty (environmental protection requirements must be integrated into the definition and implementation of the Union's policies and activities with a view to promoting sustainable development); various recitals of the relevant Council Directive concerning common rules for the internal market in electricity, which expressly stated that it was 'for reasons of environmental protection' that the Directive authorised member states to give priority to the production of electricity from renewable sources; and the fact that, once electricity has been allowed into the transmission or distribution system, it is difficult to determine its origin and, in particular, the source of energy from which it was produced necessitating a system of certificates of origin for electricity produced from renewable sources, capable of being the subject of mutual recognition, in order to make intra-Community trade in that type of electricity both reliable and possible in practice.³⁴¹

Canada–United States Free Trade Agreement

The Canada–United States Free Trade Agreement (FTA) aims to eliminate a large number of barriers to trade between the two countries.³⁴² Although it has been superseded by the NAFTA (see below), the FTA merits consideration because of the case law it has generated. Under the FTA, the parties affirm the 1979 GATT Agreement on Technical Barriers to Trade and agree not

³³⁷ Note 335 above, para. 70. ³³⁸ Para. 71. ³³⁹ Para. 72. ³⁴⁰ Para. 73. ³⁴¹ Paras. 76–80.

³⁴² Ottawa, 22 December 1987 and 2 January 1988, and at Washington and Palm Springs, 23 December 1987 and 2 January 1988, in force 2 January 1988, 27 ILM 281 (1988); M. Swenarchuk, *Environmental Impacts of the Canada–US Free Trade Deal* (Canadian Environmental Law Association, 1988).

to 'maintain or introduce standards-related measures or procedures for product approval that would create unnecessary obstacles to trade between the territories of the parties'.³⁴³ 'Unnecessary obstacles' are not deemed to be created if 'the demonstrable purpose of the measure or procedure is to achieve a legitimate domestic objective' and the measure or procedure does not exclude goods of the other party that meet such an objective.³⁴⁴ An objective whose purpose is to protect the environment is a legitimate objective.³⁴⁵ Exceptions are also made for trade in goods by Article 1201 of the FTA, which incorporates Article XX of the GATT. The FTA requires the parties to exchange full texts of proposed federal standards-related measures and product approval procedures prior to their adoption, except in urgent cases where delay would frustrate the achievement of a legitimate domestic objective.³⁴⁶

The FTA has its own dispute settlement provisions, including the establishment of FTA Panels. In 1989, an FTA Panel interpreted Article XX(g) of the GATT in the *Salmon and Herring* case, and in 1990 an FTA Panel considered environmental issues in the *Lobsters from Canada* case.³⁴⁷ The latter dispute concerned the enactment by the United States of an amendment to the Magnuson Fishery Conservation and Management Act to prohibit, *inter alia*, the sale or transport in or from the United States of whole live lobsters smaller than the minimum possession size in effect under US federal law. Canada considered that the application of this law to Canadian lobster exports to the United States was contrary to Article 407 of the FTA, which incorporates Article XI of the GATT. The United States agreed that, even if the measures were contrary to Article XI, they fell within the exception under Article XX(g) of the GATT, which was incorporated by Article 1201 of the FTA. The Panel held, by a majority of three to two, that the US measures imposed on live US and Canadian lobsters were not covered by Article XI but by Article III of GATT, and that they came within the 'scope of laws, regulations and requirements affecting the internal sale, offering for sale, purchase, transportation, distribution or use of products'. The Panel did not determine whether these Article III measures were consistent with the national treatment requirements, since such determination lay outside its terms of reference. Accordingly, the majority did not consider the applicability of Article XX of the GATT.

The minority, however, found that Article XI was applicable and that the US measures conflicted with that provision, since they had the effect of totally denying access to the US market of Canadian live small lobsters. Accordingly, they considered whether the US measures were permitted by the conservation exception in Article XX(g). The minority relied on the interpretation of Article XX(g) adopted by the FTA Panel in the *Salmon and Herring* case,³⁴⁸ which had held that Article XX(g) must be narrowly construed and that to qualify for an exemption:

- the measure must relate to an exhaustible natural resource;
- domestic production of the resource must be likewise restricted;

³⁴³ Arts. 602 and 603. The provisions apply to technical standards related to goods other than agricultural, food, beverage and certain related goods as defined in Chapter Seven of the FTA (Agriculture): Art. 601.

³⁴⁴ Art. 603. ³⁴⁵ Art. 609. ³⁴⁶ Art. 607.

³⁴⁷ *Lobsters from Canada*, Final Report of the Panel, 25 May 1990, USA 89-1807-01.

³⁴⁸ *In the Matter of Canada's Landing Requirements for Pacific Coast Salmon and Herring*, Final Report of the FTA Panel, 16 October 1989, 30 ILM 181 (1991).

- the measure must not involve arbitrary or unjustifiable discrimination between foreign countries; and
- the measure must be primarily aimed at conservation.³⁴⁹

On this basis, the minority in the *Lobsters from Canada* case concluded that the US measures were in the nature both of a conservation measure and of a trade restriction, and that therefore the 1989 Magnuson amendment was not 'primarily aimed at' conservation, since the United States had not addressed the reasons why its conservation objections could not be met by alternative measures, such as the special marking of small Canadian lobsters, or the requirement that lobsters be sorted by size prior to importation into the United States, or particular documentary requirements as to small lobsters of Canadian origin, or increased penalties for the possession of sub-sized lobsters, more vigilant enforcement efforts, or other requirements.³⁵⁰

North American Free Trade Agreement³⁵¹

The North American Free Trade Agreement (NAFTA) between Canada, Mexico and the United States³⁵² establishes a free trade area between the parties in accordance with Article XXIV of the GATT, and is intended to establish principles and rules (including national treatment and most-favoured nation treatment, to, *inter alia*, eliminate barriers to trade in goods and services and promote competition between the parties) in a manner which is consistent with environmental protection and conservation and which will promote sustainable development.³⁵³ In the event of inconsistencies between the NAFTA and the GATT, and except as otherwise provided in the NAFTA, the provisions of the NAFTA prevail.³⁵⁴ The NAFTA's provisions on foreign investment protection are addressed in Chapter 20 below.

Environmental considerations were and remain a controversial aspect of the NAFTA, due to strong lobbying by environmental groups and labour unions in the United States who were concerned by the potential effect of weaker Mexican environmental standards on the more stringent US environmental standards, and on the implications for labour. The NAFTA addresses environmental issues, and further measures to strengthen its commitment to environmental protection were set forth in the 1993 Agreement on Environmental Co-operation (see below). It expressly provides that trade obligations under the 1973 CITES, the 1987 Montreal Protocol (and its 1990 amendments), the 1989 Basel Convention (upon its entry into force for the parties – the United States is yet to ratify the treaty) and the agreements set out in Annex 104.1 to the NAFTA, are to prevail to the extent of inconsistency 'provided that where a party has a choice among equally effective and reasonably available means of complying with such obligations, the party chooses the alternative that is least inconsistent with the other provisions of [NAFTA]'.³⁵⁵ Moreover, for the purposes of Part Two (Trade in Goods) and Part Three

³⁴⁹ *Ibid.*, paras. 7.02 and 7.04.

³⁵⁰ *Lobsters from Canada*, Final Report of the Panel, 25 May 1990, USA 89-1807-01, para. 1.9.1.

³⁵¹ G. C. Hufbauer and J. J. Schott, *NAFTA and the Environment: Seven Years Later* (2000); K. Gallagher, *Free trade and the Environment: Mexico, NAFTA, and Beyond* (2004).

³⁵² Washington, 8 and 17 December 1992; Ottawa, 11 and 17 December 1992; Mexico City, 14 and 17 December 1992, in force 1 January 1994, 32 ILM 289 (1993) and 32 ILM 605 (1993).

³⁵³ Preamble and Arts. 101 and 102(1)(a) and (b). ³⁵⁴ Art. 103(2).

³⁵⁵ Art. 104(1). The agreements identified in Annex 104.1 are the 1983 Agreement Between the United States of America and the United Mexican States on Cooperation for the Protection and Improvement of the Environment in

(Technical Barriers to Trade) of the NAFTA, Article XX of the GATT is incorporated on the understanding that 'the measures referred to in GATT Article XX(b) include environmental measures necessary to protect human, animal or plant life or health, *and* that GATT Article XX(g) applies to measures relating to the conservation of living and non-living exhaustible natural resources'.³⁵⁶

The NAFTA requires each party to accord national treatment to the goods of the other parties in accordance with Article III of the GATT,³⁵⁷ and provides for the elimination of tariffs.³⁵⁸ Except as provided in the NAFTA, non-tariff measures such as prohibitions on imports or exports, which could include national environmental protection measures, are prohibited except in accordance with Article XI of the GATT.³⁵⁹ Prohibited non-tariff measures include customs user fees, country-of-origin marking, standards and labelling of distinctive products, and export taxes and other export measures.³⁶⁰ The NAFTA contains detailed provisions on sanitary and phytosanitary measures, and other non-technical barriers to trade, drawing a distinction between the rules applicable to each type of measure.

Agricultural, sanitary and phytosanitary measures

The NAFTA establishes a framework of rules and disciplines to guide the development, adoption and enforcement of sanitary and phytosanitary measures that may directly or indirectly affect trade between the parties which is virtually identical to that of the WTO SPS Agreement.³⁶¹ The NAFTA SPS rules allow each party to adopt, maintain or apply any sanitary or phytosanitary measure which is 'necessary for the protection of human, animal or plant life or health in its territory, including a measure more stringent than an international standard, guideline or recommendation'.³⁶² Under Article 712(2), each party may establish appropriate levels of protection in accordance with protecting human, animal or plant life or health, but must ensure that any sanitary or phytosanitary measure that it adopts, maintains or applies:

- (1) is based on scientific principles (including a risk assessment);³⁶³
- (2) does not arbitrarily or unjustifiably discriminate between its goods and like goods of another party or between goods of another party and like goods of any other country where identical or similar conditions prevail;³⁶⁴
- (3) is applied only to the extent necessary to achieve its appropriate level of protection (Article 712(5)); and
- (4) does not create a disguised restriction on trade.³⁶⁵

the Border Areas, La Paz, Baja California Sur, 14 August 1983, and the 1986 Agreement Between Canada and the United States of America Concerning the Transboundary Movement of Hazardous Waste, Ottawa, 28 October 1986.

³⁵⁶ Art. 2101. ³⁵⁷ Art. 301; but, on sanitary and phytosanitary measures, see below.

³⁵⁸ Arts. 302–308.

³⁵⁹ Art. 309; on sanitary and phytosanitary measures, see below. 'Measures' includes 'any law, regulation, procedure, requirement or practice': Art. 201(1). Annex 301.3 sets out measures to which this prohibition and that under Art. 301 do not apply, including controls by each of the parties on the export of logs of all species.

³⁶⁰ Arts. 310–315 and Annexes.

³⁶¹ Art. 709; Arts. 301 and 309 and Art. XX(b) of the GATT, as incorporated into Art. 2101, do not apply to any sanitary or phytosanitary measures.

³⁶² Art. 712(1). ³⁶³ Art. 712(3). ³⁶⁴ Art. 712(4). ³⁶⁵ Art. 712(6).

Under NAFTA, international standards, guidelines or recommendations are to be used as the basis for sanitary and phytosanitary conditions.³⁶⁶ The general objective of this section is to create equivalence in standards:

Without reducing the level of protection of human, animal or plant life or health, the parties shall, to the greatest extent practicable and in accordance with this Section, pursue equivalence of their respective sanitary and phytosanitary measures.³⁶⁷

Article 715 sets out the factors that are to be taken into account in conducting risk assessments. These include: relevant techniques and methodologies of international standardising organisations; relevant scientific evidence; relevant processes and production methods and inspection and testing methods; the prevalence of relevant diseases or pests; relevant ecological or other environmental conditions; relevant treatments such as quarantine; certain specified economic factors; and the objective of minimising negative trade effects and arbitrary or unjustifiable restrictions on trade which discriminate or constitute a disguised restriction on trade.³⁶⁸ NAFTA provides for adaptation to regional conditions and the procedures for dealing with control, inspection and approval, and for the notification and publication of information on federal measures, and establishes an advisory Committee on Sanitary and Phytosanitary Measures to facilitate the enhancement of food safety and the improvement of sanitary and phytosanitary conditions, activities under Articles 713 and 714, technical co-operation and consultation.³⁶⁹

Non-technical barriers to trade

Chapter 9 of the NAFTA (Articles 901–915) establishes rules for any standards-related measure of a party other than sanitary and phytosanitary measures, that may directly or indirectly affect trade in goods or services between the parties, and to measures of the parties relating to such standards. This includes environmental measures other than those related to agriculture. Further to Article 103, the parties affirm their existing rights and obligations relating to standards-related measures under the 1979 GATT Agreement on Technical Barriers to Trade and all other international agreements, including environmental and conservation agreements, to which they are party.³⁷⁰

Under Article 904(1), the parties are allowed to adopt, maintain or apply any standards-related measure, which is defined as a standard, technical regulation, or conformity assessment procedure, including those ‘relating to safety, the protection of human, animal and plant life or health, the environment or consumers, and any measure to ensure its enforcement or implementation’. Article 904(1) provides that such measures include those to prohibit the importation of a good of another party that fails to comply with the applicable requirements of those measures. Since the definition of standard and technical regulation includes ‘processes and

³⁶⁶ Art. 713(1). Art. 713 also establishes a presumption that measures conforming to international standards are presumed to be consistent with Art. 712, but that measures which differ from such international standards shall not for that reason alone be presumed to be inconsistent with Chapter 7, subparagraph B: Art. 713(2). The parties are encouraged to participate in relevant international standardising organisations, including the Codex Alimentarius Commission, the International Office of Epizootics, the International Plant Protection Convention, and the North American Plant Protection Convention.

³⁶⁷ Art. 714(1). ³⁶⁸ Art. 715(1) and (2). ³⁶⁹ Arts. 716–724. ³⁷⁰ Art. 903.

production methods' related to goods,³⁷¹ Article 904 would appear to permit US legislation prohibiting the import of yellow-fin tuna from Mexico on the ground that it was caught in a way which violated US environmental and fisheries standards, in effect superseding the ruling of the GATT Panel in the *Yellow-Fin Tuna* case. This would appear to be the correct interpretation, since in pursuing its legitimate environmental objectives each party may establish the level of protection that it considers appropriate, provided that those measures:

avoid arbitrary or unjustifiable distinctions between similar goods or services in the level of protection it considers appropriate, where the distinctions:

- (a) result in arbitrary or unjustifiable discrimination against goods or service providers of another party;
- (b) constitute a disguised restriction on trade between the parties; or
- (c) discriminate between similar goods or services for the same use under the same conditions that pose the same level of risk and provide similar benefits.³⁷²

Goods and service providers are entitled to national treatment and treatment no less favourable than that accorded to goods or service providers of any other country.³⁷³ Standards-related measures are prohibited if they create an unnecessary obstacle to trade, but no such unnecessary obstacle will be deemed to be created if the demonstrable purpose of such measures is to achieve a legitimate objective and they do not exclude goods of another party that meet that legitimate objective.³⁷⁴ However, the parties must use established international standards (or international standards whose completion is imminent) as a basis for their standards-related measures, except where such standards would be ineffective or inappropriate to fulfil legitimate objectives, including their failure to achieve a 'level of protection that the party considers appropriate'.³⁷⁵ Measures based on international standards will be presumed to be consistent with Article 904(3) and (4).³⁷⁶ Moreover, and crucially, Article 905(1) is not to be construed

to prevent a party, in pursuing its legitimate objectives, from adopting, maintaining or applying any standards-related measure that results in a higher level of protection than would be achieved if the measures were based on the relevant international standard.³⁷⁷

In this context (and recognising the 'crucial role of standards-related measures in promoting and protecting legitimate objectives'), the parties agree to work jointly to enhance the level of the protection of the environment; without reducing such protection, and taking into account international standardisation activities, NAFTA commits the parties 'to the greatest extent practicable, [to] make compatible their respective standards-related measures'.³⁷⁸ To that end,

³⁷¹ Art. 915(1). ³⁷² Arts. 904(2) and 907(2). ³⁷³ Art. 904(3). ³⁷⁴ Art. 904(4). ³⁷⁵ Art. 905(1).

³⁷⁶ Art. 905(2). ³⁷⁷ Art. 905(3).

³⁷⁸ Art. 906(1) and (2). 'Make compatible' is defined as bringing 'different standards-related measures of the same scope approved by different standardising bodies to a level such that they are either identical, equivalent, or have the effect of permitting goods or services to be used in place of one another or fulfil the same purpose': Art. 915(1).

the parties undertake to seek to promote the compatibility of specific standard or conformity assessment procedures.³⁷⁹ Each importing party agrees to treat technical regulations adopted or maintained by an exporting party as equivalent to its own where the exporting party demonstrates to the satisfaction of the importing party that its technical regulation adequately fulfils the importing party's legitimate objectives.³⁸⁰ In pursuing their legitimate objectives, a party may conduct a risk assessment on a good or service, which is to include: consideration of available scientific evidence; intended end uses; processes or production and other methods; and environmental conditions.³⁸¹

Chapter 9 of NAFTA also provides for rules establishing the compatibility of conformity assessment, the notification and publication of proposals adopting or modifying technical regulations, inquiry points and technical co-operation.³⁸² A Committee on Standards-Related Measures is established to, *inter alia*: monitor implementation; facilitate the compatibility of measures and enhance the development, application and enforcement of measures; and consider non-governmental regional and multilateral developments regarding standards-related measures, including those under the WTO/GATT.³⁸³

Competition

The rules on competition are far less detailed than their equivalent in the EU and are unlikely, in the short or medium term, to provide a basis for the further development of international law rules on competition and the environment. The NAFTA requires each party to adopt or maintain measures to proscribe anti-competitive business conduct.³⁸⁴ A monopoly must not act in a manner which is inconsistent with a party's obligations under the NAFTA, must act solely in accordance with commercial considerations, and must not use its monopoly position to engage in anti-competitive practices in a non-monopolised market in its territory.³⁸⁵ The NAFTA establishes a Working Group on Trade and Competition, but has no rules on subsidies.³⁸⁶ National laws on anti-dumping and countervailing duties are retained.³⁸⁷

Institutions and dispute settlement

NAFTA's principal organ is the Free Trade Commission, which is responsible for supervising implementation, overseeing its further elaboration, resolving disputes concerning interpretation and application, supervising the work of committees established under the Agreement and considering any other matters which arise.³⁸⁸ The Commission, which comprises cabinet-level representatives or their designees, is assisted by a secretariat.³⁸⁹ The system for the settlement of disputes under the NAFTA provides for a number of options. First, disputes arising under both the NAFTA and the GATT may be settled in either forum at the discretion of the complaining party.³⁹⁰ However, where the responding party claims that its action is subject to Article 104 (Relation to Environmental and Conservation Agreements) and requests that the matter be dealt with under the NAFTA, only the procedures available under the NAFTA will be available.³⁹¹ Similar provisions apply in respect of disputes arising under the provisions on sanitary and phytosanitary measures and standards-related measures concerning, *inter alia*, measures to protect the environment or factual issues concerning the environment and directly

³⁷⁹ Art. 906(3). ³⁸⁰ Art. 906(4). ³⁸¹ Art. 907(1). ³⁸² Arts. 908–912. ³⁸³ Art. 913.
³⁸⁴ Art. 1501. ³⁸⁵ Art. 1502(3). ³⁸⁶ Art. 1504. ³⁸⁷ NAFTA, Chapter 19 and Art. 1902.
³⁸⁸ Art. 2001(1) and (2). ³⁸⁹ Art. 2002. ³⁹⁰ Art. 2005(1). ³⁹¹ Art. 2005(3).

related scientific matters.³⁹² If consultations between the parties and the good offices of the Free Trade Commission fail to resolve the matter, an arbitral panel of five members may be established by the Commission at the request of any consulting party.³⁹³ The Panel's initial report will be based on the parties' submissions and arguments, and on information from experts and Scientific Review Boards, and may contain findings of fact, determinations, and recommendations for the resolution of the dispute.³⁹⁴ Unless the parties agree otherwise, the Panel will present a final report within thirty days of the initial report, which will be published fifteen days after its transmission to the Commission.³⁹⁵ The parties will then agree on the resolution of the dispute, which 'normally shall conform with the determinations and recommendations of the panel', and either not implement a measure or remove a measure which does not conform with the NAFTA, or provide compensation.³⁹⁶ If no agreement is reached within thirty days, the complaining party may suspend the application to the party in breach of benefits of equivalent effect until agreement is reached.³⁹⁷ Agreed interpretations of the NAFTA by the Commission may be submitted to national courts or bodies, but the NAFTA excludes rights of action before domestic courts on the ground that a measure by another party is inconsistent with the NAFTA.³⁹⁸

North American Agreement on Environmental Cooperation

To counter criticisms of the inadequate provisions of the NAFTA on environmental matters, in September 1993 the three NAFTA parties adopted a supplementary North American Agreement on Environmental Cooperation to support the environmental goals and objectives of NAFTA.³⁹⁹ The Agreement's general objectives include protecting and improving the environment, promoting sustainable development, enhancing compliance with environmental laws and regulations, and promoting pollution prevention.⁴⁰⁰ The Agreement's general commitments address information, education, environmental assessment and promoting the use of economic instruments; it does not affect rights and obligations under other applicable international environmental agreements.⁴⁰¹ Marginally more substantive are the obligations which require each party to 'ensure that its laws and regulations provide for high levels of environmental protection' and to effectively enforce these laws and regulations through governmental action and the availability of judicial and administrative enforcement proceedings to sanction or remedy violations.⁴⁰² Each party is also required to ensure that 'persons with a legally recognised right under its law in a particular matter' have appropriate access to enforcement proceedings, and to ensure that such proceedings are fair, open and equitable and subject to procedural guarantees.⁴⁰³

The Agreement creates a Commission for Environmental Cooperation to oversee implementation of the Agreement and further development, comprising a Council, secretariat and Joint

³⁹² Art. 2005(4).

³⁹³ Art. 2008(1) and (2). Three such disputes have been determined by NAFTA Panels: *Tariffs Applied by Canada to Certain US Origin Agricultural Products*, Final Panel Report, File No. CDA-95-2008-01, 1996 FTAPD LEXIS 10 (1996); *The US Safeguard Action Taken On Broom Corn Brooms from Mexico*, Final Panel Report, File No. USA-97-2008-01 (1998); and *Cross-Border Trucking Services*, Final Report of the Panel, File No. USA-MEX-98-2008-01 (2001).

³⁹⁴ Art. 2016. ³⁹⁵ Art. 2017. ³⁹⁶ Art. 2018. ³⁹⁷ Art. 2019(1). ³⁹⁸ Arts. 2020 and 2021.

³⁹⁹ Washington, Ottawa and Mexico City, 8, 9, 12 and 14 September 1993, in force 1 January 1994, 32 ILM 1480 (1993). See also the North American Agreement on Labor Cooperation, 32 ILM 1499 (1993).

⁴⁰⁰ Art. 1. ⁴⁰¹ Arts. 2 and 40. ⁴⁰² Arts. 3 and 5(1) and (2). ⁴⁰³ Arts. 6(2) and 7.

Public Advisory Committee.⁴⁰⁴ The Council has limited powers to adopt non-binding recommendations on a wide range of matters, although it has a more substantive role in the enforcement process. The secretariat may consider submissions from any non-governmental organisation or person asserting that a party is 'failing to effectively enforce its environmental law' and can request a response from the party concerned if it determines that the submission so merits.⁴⁰⁵ The secretariat may be instructed by the Council, by a two-thirds vote, to prepare a 'factual record' which may be made public by the Council.⁴⁰⁶ The Council may also, upon request of any party and by a two-thirds vote, establish an Arbitral Panel to address an 'alleged persistent pattern of failure by the party complained against to effectively enforce its environmental law' involving companies or sectors which produce goods or provide services which are traded between the parties or which compete with the goods or services of another party.⁴⁰⁷ Panel reports should lead to an agreement between the disputing parties on a mutually satisfactory action plan, which will normally conform with the Panel's recommendations.⁴⁰⁸ Non-implementation of the action plan may lead to the Panel being reconvened and a monetary enforcement assessment being imposed, the non-payment of which may lead to the suspension of benefits.⁴⁰⁹

Border Environment Cooperation Commission, and North American Development Bank

The United States and Mexico also adopted an Agreement Concerning the Establishment of a Border Environment Cooperation Commission and a North American Development Bank.⁴¹⁰ The Commission's purpose is to preserve, protect and enhance the environment of the border region by developing environmental infrastructure projects and arranging public and private financing for such projects.⁴¹¹ The Bank will provide financing for projects certified by the Commission or for community adjustments and investments supporting the purposes of NAFTA that have been endorsed by the United States or Mexico.⁴¹² The Bank is capitalised at US\$3 billion, which is divided in equal shares between Mexico and the United States.

African Economic Community

The Treaty Establishing the African Economic Community was adopted in 1991 to promote interrelated objectives, including: economic, social and cultural development and the integration of African economies; co-operation in all fields of human endeavour to raise the standards of living of African peoples; and to 'co-ordinate and harmonise policies among existing and future economic communities in order to foster the gradual establishment of the [African

⁴⁰⁴ Arts. 8–19. See www.cec.org.

⁴⁰⁵ Art. 14. On CEC enforcement, see Chapter 5, pp. 168–9, above.

⁴⁰⁶ Art. 15. The procedure has been used by NGOs in all three of the NAFTA states parties to raise issues of non-compliance with environmental laws. Factual records have been produced in several cases but as yet no Arbitral Panel has been established to hear a complaint. Records of the submissions made and the factual reports and responses of NAFTA parties are made available by the Commission for Environmental Cooperation on its website, www.cec.org/Page.asp?PageID=751&SiteNodeID=250&BL_ExpandID=99.

⁴⁰⁷ Art. 24(1); and see Arts. 22–37. 'Environmental law' is defined at Art. 45(2). ⁴⁰⁸ Art. 34.

⁴⁰⁹ Arts. 34–36 and Annexes 34 (Monetary Enforcement Assessments), 36A (Canadian Domestic Enforcement and Collection) and 36B (Suspension of Benefits).

⁴¹⁰ Washington and Mexico City, 16 and 18 November 1993, in force 1 January 1994, 32 ILM 1545 (1993).

⁴¹¹ Chapter I, Art. 1. ⁴¹² Chapter II, Art. I.

Economic] Community'.⁴¹³ The Treaty sets forth a range of measures that are to be taken towards the achievement of those objectives. At their heart is the commitment to abolish customs duties and non-tariff barriers among member states, together with a commitment to the 'harmonisation and co-ordination of environmental protection policies'.⁴¹⁴ The Treaty is silent as to how it will address those environmental laws of its member states that are also non-tariff barriers, and it does not propose a basis upon which the balance between environmental objectives and free trade objectives is to be struck. It does, however, include several provisions that suggest that the environment will not necessarily be accorded a significantly lower status. By Article 58, the member states undertake to 'promote a healthy environment' and, to that end, agree to adopt national, regional and continental policies, strategies and programmes, and to establish institutions for the protection and enhancement of the environment. Moreover, member states commit themselves to accelerating the process leading to 'ecologically rational, economically sound and socially acceptable development policies', to take every appropriate step to ban the importation and dumping of hazardous wastes in their territories, and to cooperate in accordance with the yet-to-be-negotiated Protocol on the Environment.⁴¹⁵

The Treaty therefore provides a basis for the development of regional and continental environmental policies, much in the same way that the original EC Treaty served, in the name of economic integration, as the basis for the development of an extensive body of environmental laws aimed both at establishing basic standards and at removing barriers to trade.

COMPETITION AND SUBSIDIES⁴¹⁶

Closely related to international trade obligations are the emerging rules that prohibit anti-competitive behaviour that distorts trade. These rules, established by the WTO/GATT and some regional trading blocs, such as the EU, are potentially significant for environmental issues. They are intended, in large part, to supplement free trade obligations by limiting anti-competitive practices that might distort competition and consequently affect trade between states.

Competition law has intersected with the environment in at least three ways. First, environmental considerations influence the application of rules prohibiting or limiting the grant by governments and other public authorities of subsidies (state aids). As early as 1972, the OECD Council recommended that environmental protection measures should not be accompanied by subsidies that would create significant distortions in international trade and investment, although exceptions or special arrangements may occur.⁴¹⁷ Second, environmental considerations are beginning to be taken into account in applying competition rules to agreements between companies, including 'environmental agreements'.⁴¹⁸ Third, the failure to integrate environmental costs into production costs has led to charges of 'environmental dumping' in

⁴¹³ Abuja, 3 June 1991, in force May 1994, 30 ILM, 1241 (1991).

⁴¹⁴ Art. 4(2)(d) and (o); see also Arts. 29–31 on the elimination of customs duties and non-tariff barriers.

⁴¹⁵ Arts. 58(2), 59 and 60.

⁴¹⁶ OECD, *Subsidies and Environment: Exploring the Linkages* (1996); D. Geradin, 'EC Competition Law and Environmental Protection', 2 *Yearbook of European Environmental Law* 117 (2002).

⁴¹⁷ OECD Council Recommendation on Guiding Principles Concerning International Economic Aspects of Environmental Policies, C(72)128 (1972), Annex, paras. 4 and 5.

⁴¹⁸ On environmental agreements, see Chapter 4, pp. 130–1, above; see generally R. Khalastchi and H. Ward, 'New Instruments for Sustainability: An Assessment of Environmental Agreements under Community Law', 10 *Journal of Environmental Law* 257 (1998).

international trade. A fourth aspect of the relationship concerns the international instruments addressing the economic aspects of environmental policies, which have long recognised the relationship between environmental protection and competition. The development and application of the polluter pays principle, described in Chapter 6, is closely related to competition rules, since it is intended in part to ensure that the costs of the environmental measures necessary to protect the environment should be reflected in the costs of goods and services which cause pollution in their production or consumption.

Subsidies⁴¹⁹

The introduction of environmental considerations into the law of subsidies has at least two consequences. It may allow the grant of subsidies that would otherwise be prohibited for activities that are environmentally beneficial. And it may allow enforcement bodies to prevent subsidies from being granted to activities that are particularly harmful to the environment. Although Agenda 21 called for the removal or reduction of subsidies that do not conform with sustainable development objectives,⁴²⁰ international legal developments have so far focused on the first of these two aspects.⁴²¹ In 1974, the OECD Council recommended that in application of the polluter pays principle the state should not, as a general rule, assist polluters in bearing the costs of pollution control whether by means of subsidies, tax advantages or other measures.⁴²² The OECD Council further recommended that the grant of such assistance for pollution control should be strictly limited and be notified to OECD member countries, and must comply with three conditions:

- (1) it should be selective and restricted to those parts of the economy, such as industries, areas or plants, where severe difficulties would otherwise occur;
- (2) it should be limited to well-defined transitional periods, laid down in advance and adapted to the specific socio-economic problems associated with the implementation of a country's environmental programme; and
- (3) it should not create significant distortions in international trade and investment.⁴²³

The OECD rules have influenced the EU. Article 107 (formerly Article 87) of the EU Treaty prohibits state aids (subsidies) which distort competition and affect trade between member states by favouring certain undertakings or the production of certain goods unless it has a social character, makes good damage caused by natural disasters or other exceptional occurrences, or is 'aid granted to the economy of certain areas of the Federal Republic of Germany

⁴¹⁹ S. Z. Bigdeli, 'Will the "Friends of Climate" Emerge in the WTO? The Prospects of Applying the "Fisheries Subsidies" Model to Energy Subsidies', 1 *Carbon and Climate Law Review* 81 (2008).

⁴²⁰ Agenda 21, para. 8.32(b). See also the WSSD Plan of Implementation, calling for completion of the work programme of the Doha Ministerial Declaration on subsidies so as to 'encourage reform of subsidies that have considerable negative effects on the environment and are incompatible with sustainable development': para. 91(b).

⁴²¹ In respect of calls for the removal of fossil fuel subsidies, see S. Z. Bigdeli, 'Will the "Friends of Climate" Emerge in the WTO? The Prospects of Applying the "Fisheries Subsidies" Model to Energy Subsidies', 1 *Carbon and Climate Law Review* 81 (2008).

⁴²² OECD Council Recommendation C(74)223, Chapter 6, Part III, para. 1. See also OECD Council Recommendation C(89)88/FINAL, Recommendation of the Council Concerning the Application of the Polluter-Pays Principle to Accidental Pollution; and OECD Joint Working Party on Trade and Environment, 'The Polluter Pays Principle as it Relates to International Trade', 23 December 2002, COM/ENV/TD(2001)44/FINAL.

⁴²³ Paras. 2 and 4.

affected by the division of Germany, insofar as such aid is required in order to compensate for the economic disadvantages caused by that division'.⁴²⁴ However, state aid may be held compatible with the common market by the European Commission if it:

1. promotes the economic development of certain areas where the standard of living is abnormally low or where there is serious underemployment;
2. promotes the execution of an important project of common European interest;
3. remedies a serious disturbance in the economy of a member state;
4. facilitates the development of certain economic activities and does not adversely affect trading conditions to an extent contrary to the common interest;
5. promotes culture and heritage conservation where such aid does not affect trading conditions and competition in the Union to an extent that is contrary to the common interest; or
6. as otherwise decided by the Council.⁴²⁵

The EU approach on state aid for environmental protection is now governed by its 2008 Guidelines, although since 1975 the grant of environmental aid in the EU has been the subject of special rules and practice.⁴²⁶ The 2008 Guidelines were adopted as one instrument to implement the Council's Energy Action Plan for 2007–9 and the environmental aspects of its energy and climate-change-related targets (20 per cent reduction in greenhouse gas emissions from 1990 levels by 2020, a saving of 20 per cent of the EU's energy consumption compared to 2020 projections, a target of a 20 per cent share for renewables by 2020, and a 10 per cent binding minimum target for all member states to achieve for the share of biofuels in petrol and diesel consumption by 2020).⁴²⁷ They expand upon the previous 2001 guidelines in several ways, most notably in allowing for aid in new situations, including aid for early adaptation to standards, environmental studies, district heating, waste management and aid involved in tradeable permit schemes and increasing the 'aid intensity'.⁴²⁸ The aid amount is based on the extra environmental investment costs rather than the full investment costs to ensure that state aid results in a higher level of environmental protection than would otherwise be achievable.⁴²⁹ The Commission maintains a register of state aid decisions on environmental aid.⁴³⁰

Article XVI(1) of the GATT has a similar objective to Article 107 of the EU Treaty, although the former does not prohibit subsidies or declare them void *per se*. Rather, Article XVI(1)

⁴²⁴ The ECJ has held that aid must involve a direct or indirect transfer of state resources to undertakings: see Case C-379/98, *PreussenElektra AG v. Schleswag AG* [2001] ECR I-2099 (provision requiring that private electricity supply undertakings must purchase electricity produced in their area of supply from renewable energy sources at minimum prices higher than the real economic value of that type of electricity, and that distributing the financial burden resulting from that obligation between those electricity supply undertakings and upstream private electricity network operators does not constitute state aid within the meaning of Art. 107(1) of the EU Treaty).

⁴²⁵ Art. 107(3). See also Council Regulation (EC) No. 994/98 of 7 May 1998 on the application of Articles 92 and 93 of the Treaty establishing the European Community to certain categories of horizontal state aid, OJ L142, 14 May 1998, 1.

⁴²⁶ EC Commission, 'Community Approach to State Aids in Environmental Matters', 7 November 1974, Fourth Report on Competition Policy, points 180–2.

⁴²⁷ Community Guidelines on State Aid for Environmental Protection (Text with EEA Relevance), OJ C82, 1 April 2008, 1, Part 1.1.

⁴²⁸ *Ibid.*, Parts 3.1.3, 3.1.5, 3.1.8, 3.1.9 and 3.1.12, respectively, save for aid intensity which is included in various parts including the foregoing.

⁴²⁹ *Ibid.*, Part 1.3.5. ⁴³⁰ See http://ec.europa.eu/competition/state_aid/register.

requires any contracting party to notify the other contracting parties on the nature and extent of any subsidisation and its estimated effect on imports or exports, and requires discussions between the parties concerned, or with the contracting parties, about the possibility of limiting subsidies which are determined to cause or threaten serious prejudice to the interests of any other contracting party. To date, the provision has not apparently led to any disputes between contracting parties over environment-related subsidies. The increased attention being given by states to their international competitiveness in the face of increased national and international environmental regulation makes it likely, however, that Article XVI(1) could become a contentious issue. Indeed, in June 2011, Japan requested (and the WTO dispute settlement body agreed) to establish a panel to examine measures maintained by Canada intended to promote renewable energy generation. Japan alleges that rules established by the Canadian province of Ontario in 2009 providing for guaranteed, long-term pricing for the output of a renewable-energy-generation facility are inconsistent with GATT Article III and provisions of the Subsidies and Countervailing Measures Agreement discussed below.⁴³¹

Under the auspices of the GATT Uruguay Round, a Subsidies and Countervailing Measures (SCM) Agreement was negotiated which is binding on all WTO members. The Agreement defines certain 'non-actionable' subsidies, including those related to environmental protection. It states, quite specifically, that non-actionable environmental subsidies cover:

assistance to promote adaptation of existing facilities to new environmental requirements imposed by law and/or regulations which result in greater constraints and financial burden on firms, provided that the assistance:

- (i) is a one-time non-recurring measure; and
- (ii) is limited to 20 per cent of the cost of adaptation; and
- (iii) does not cover the cost of replacing and operating the assisted investment, which must be fully borne by firms; and
- (iv) is directly linked to and proportionate to a firm's planned reduction of nuisances and pollution, and does not cover any manufacturing cost savings which may be achieved; and
- (v) is available to all firms which can adopt the new equipment and/or production processes.⁴³²

In November 2001, the WTO Doha Ministerial Declaration agreed to negotiations aimed at clarifying and improving disciplines under the SCM Agreement, in particular fisheries subsidies.⁴³³ Currently, the fisheries subsidies negotiations are ongoing in the Negotiating Group on Rules, with some promising signs that agreement on reducing environmentally harmful subsidies will be reached.⁴³⁴ In 2005, at the Hong Kong WTO Ministerial Council, the Ministerial

⁴³¹ *Canada – Certain Measures Affecting the Renewable Energy Generation Sector*, Request for the Establishment of a Panel by Japan, WTO Doc. WT/DS412/5, 7 June 2011.

⁴³² Art. 8.2(c) of the Agreement on Subsidies and Countervailing Measures. In November 2001, the WTO Doha Ministerial Declaration agreed to negotiations aimed at clarifying and improving disciplines under the Subsidies Agreement, in particular fisheries subsidies.

⁴³³ Doha Ministerial Declaration of the Fourth Ministerial Conference, Doha, Qatar, 14 November 2001, WT/MIN(01)/DEC/1, available at www.wto.org/english/thewto_e/minist_e/min01_e/mindecl_e.htm, para. 28.

⁴³⁴ UNEP, *Fisheries Subsidies, Sustainable Development and the WTO* (2010).

Declaration noted the 'broad agreement' for strengthening WTO disciplines on subsidies in the fisheries sector 'including through the prohibition of certain forms of fisheries subsidies that contribute to overcapacity and over-fishing'. The Declaration called on participants 'promptly to undertake further detailed work to, *inter alia*, establish the nature and extent of those disciplines, including transparency and enforceability'. The Declaration further noted that '[a]ppropriate and effective special and differential treatment for developing and least-developed Members should be an integral part of the fisheries subsidies negotiations, taking into account the importance of this sector to development priorities, poverty reduction, and livelihood and food security concerns'.⁴³⁵

Anti-competitive agreements

The second area of competition law with environmental implications relates to rules that prohibit anti-competitive agreements and practices by companies and other persons. The WTO does not yet have rules on this subject, but Article 101 (formerly Article 81) of the EU Treaty prohibits agreements, decisions and concerted practices that affect trade between member states and prevent, restrict or distort competition. Under Article 102 (formerly Article 82), similar prohibitions apply to abuses by companies of dominant positions, such as price-fixing and limiting markets and technical developments. Under Article 101(3), the European Commission may find that the Article 101 prohibition is not applicable to agreements, decisions or practices, or categories thereof, which are considered to bring public benefits; these public benefits include improving the production or distribution of goods or promoting technical or economic progress, while allowing consumers a fair share of the resulting benefit, provided that the agreement does not impose restrictions which are not indispensable to the attainment of these objectives or eliminate competition in respect of a substantial part of the products in question. This is broad enough language to justify exemptions for technical or economic progress that contributes to environmental protection, thereby benefiting consumers.⁴³⁶ In *Cali v. Servizi ecologici porto di Genova SpA*, the ECJ ruled that Article 102 (formerly Article 82) of the EU Treaty is not applicable to anti-pollution surveillance with which a body governed by private law has been entrusted by the public authorities in an oil port of a member state, even where port users must pay dues to finance that activity.⁴³⁷ The European Commission has been willing to take into account environmental considerations in applying Articles 101 and 102, and has also applied Article 101 to 'environmental agreements' between companies.⁴³⁸ By way of example, in *Re Independent Power Generators*,

⁴³⁵ WT/MIN(05)/DEC, 18 December 2005, Annex D, para. 9.

⁴³⁶ European Commission, Guidelines on the Applicability of Article 101 of the Treaty on the Functioning of the European Union to Horizontal Co-operation Agreements, OJ C11, 14 January 2011, 7, para. 18 and accompanying note 1. Note that the updated guidelines integrate discussion of environmental agreements into various chapters, as they contain no separate chapter on environmental agreements as was previously the case: see European Commission, Guidelines on the Applicability of Article 81 of the EC Treaty to Horizontal Co-operation Agreements, OJ C3, 6 January 2001, 2, paras. 179 *et seq.* See also Decision 94/322, Exxon/Shell, OJ L144, 9 June 1994, 20, and other examples cited in D. Geradin, 'EC Competition Law and Environmental Protection: Conflict or Compatibility', 2 *Yearbook of European Environmental Law* 117 (2002).

⁴³⁷ Case C-343/95, *Diego Cali and Figli Srl v. Servizi Ecologici Porto di Genova SpA* [1997] ECR I-1547.

⁴³⁸ See the examples cited in Geradin, note 436 above.

which concerned a joint venture agreement in the energy sector which included certain restrictive practices (agreement not to compete), one of the factors the Commission took into account in deciding not to object to a long-term exclusive purchase agreement, which might otherwise have been caught, was the intended use by the joint venture of combined cycle gas turbine generators or clean coal-fired systems, which was considered to be efficient generating technology offering environmental advantages.⁴³⁹

Anti-dumping

The third area of competition law that is likely to become relevant in relation to environmental protection is that on dumping. Under Article VI(1) of the GATT, as elaborated by the Uruguay Round Anti-Dumping Agreement,⁴⁴⁰ dumping (which is defined as the introduction of products into the market of another country at 'less than normal value of the products') will be condemned if it causes or threatens material injury to an established industry in the territory of a contracting party or materially retards the establishment of a domestic industry. The product is introduced at less than normal value if the price of the product exported from one country to another:

1. is less than the comparable price, in the ordinary course of trade, for the like product when destined for consumption in the exporting country; or
2. in the absence of such domestic price, is less than either:
 - (i) the highest comparable price for the like product for export to any third country in the ordinary course of trade; or
 - (ii) the cost of production of the product in the country of origin plus a reasonable addition for selling cost and profit.

These provisions allow for 'environmental dumping' arguments to be raised in respect of price differentials resulting from the failure to integrate environmental costs into production costs. GATT Article VI does require due allowance to be made for, *inter alia*, 'other differences affecting price comparability', and this raises the question of whether, and if so to what extent, environmental costs must be reflected in production costs.⁴⁴¹ It will be recalled that the Rio Declaration sends out conflicting messages which call for a balancing of interests: Principle 11 states that environmental standards should reflect the environmental and developmental context to which they apply and that standards applied by some countries may be inappropriate and of unwarranted social cost to other countries, particularly developing countries. Principle 16, on the other hand, calls on states to promote the internalisation of environmental costs.

CONCLUSIONS

As this chapter shows, a large body of international legislation and case law has developed over the past two decades as the international community seeks, at the regional and global level, to find an acceptable balance between trade liberalisation objectives and environmental

⁴³⁹ European Commission Notice (Case IV/34.078) [1992] 5 CMLR 88 at 89.

⁴⁴⁰ Agreement on the Implementation of Article VI of the General Agreement on Tariffs and Trade (Marrakesh), 15 April 1994, in force 1 January 1995, 1868 UNTS 201.

⁴⁴¹ See also the Agreement on Subsidies and Countervailing Measures, above.

objectives. If anything, the legal situation has become increasingly complex. On the one hand, with the conclusion of the WTO Agreements, the international community furthered its efforts to liberalise and deregulate international trade;⁴⁴² on the other hand, it redoubled efforts to develop international environmental agreements, many of which rely upon trade sanctions to achieve their objectives or otherwise have the potential to conflict with trade requirements. These international initiatives have been accompanied by domestic legislation, mostly in industrialised countries, which tightens up national environmental regulations, including restrictions on imports. In the midst of these political and legal controversies, international courts and other bodies find themselves increasingly being called upon to adjudicate on the basis of bilateral, regional and global legal arrangements, and it is hardly surprising that they will apply different tests and reach different conclusions on the appropriate balance between environmental objectives and trade objectives. It is one of the ironies of the trade/environment tension that the free trade ideal based upon deregulation has required a new layer of international regulation to set minimum standards; the experience in each region and globally has been that free trade inevitably points to a degree of harmonisation of environmental standards, at least in the sense that minimum standards are to be met. The challenge for the international community is to ensure that those harmonised standards do not lead to a general weakening of environmental protection. In this regard, it is notable that many international environmental agreements explicitly recognise the right of a party to maintain more stringent standards, subject to certain requirements.⁴⁴³

While it can be argued that the GATT/WTO rules do not give adequate weight to the environment, the jurisprudence of, in particular, the WTO Appellate Body has significantly expanded the potential for the 'environmental exceptions' available under Article XX of the GATT. This development reflects recognition that legitimate environmental measures can, in certain circumstances, lawfully restrict international trade, provided that certain conditions are met. The international community faces two challenges here. One relates to standards, the other to institutions. With regard to standards, further efforts will be needed to refine and clarify (either through negotiations in the Doha Round or through practice) the emerging rules to assist governments, international organisations and adjudicative bodies to determine when environmental considerations can be allowed. In view of the approach taken by the Appellate Body, it may no longer be necessary to reconsider and modernise Article XX of the GATT, as the first edition of this book suggested. It is apparent that the WTO Appellate Body has been inspired by rules of international law arising outside the WTO, including the approach taken by the ECJ in the *Danish Bottles* and *Belgian Waste Disposal* cases, and reflected in Principle 12 of the Rio Declaration. With regard to institutions, significant advances have been made with the establishment of the WTO and the conclusion of agreements relating to SPS measures and technical barriers to trade. However, the concept of sustainable development (and its practical consequences) remains to be defined, and the relationship between international trade law and multilateral environmental agreements remains less certain than it should be. The level of controversy and debate stimulated by the Appellate Body's decisions in *Beef Hormones* and *Continued Suspension of Obligations*, together with the WTO Panel decision in *EC – Biotech*,

⁴⁴² However, efforts to continue this process under the auspices of the Doha Declaration have not yet yielded substantive results.

⁴⁴³ 1998 Chemicals Convention, Art. 15(4); 2000 Biosafety Protocol, Art. 2(4).

suggested that the interaction of international trade obligations with domestic health and environmental standards will be a continuing frontier on which the 'trade and environment' battle is fought out over the course of the twenty-first century.

In many ways, the trade/environment debate reflects a broader issue as to how far environmental considerations can go in bringing about a restructuring of established international economic organisations, how far environment and development can (as a matter of law) be integrated, and whether it is the environment which will ultimately be subsumed into economic approaches, or whether it will be the other way round.

In the meantime, if the past two decades were about trade and environment, the next related international legal issue looming on the horizon is the relationship between competition law and the environment. It is likely that environmental arguments will increasingly be raised to justify commercial agreements that might otherwise be caught by antitrust laws. It is equally foreseeable that the law on subsidies and the environment will expand, and that environmental dumping (selling goods whose prices do not fully reflect their environmental costs and impacts) will be subject to international legal scrutiny. It is at this interface between international environmental law and international economic law that the effectiveness of the standards that have been meticulously developed to protect flora, fauna and other environmental resources will be judged.

20

Foreign investment

INTRODUCTION¹

Foreign direct investment is now the largest source of external finance for developing countries, having outstripped public sector overseas development assistance since the early 1990s.

In 2002, the WSSD Plan of Implementation called on states to:

[f]acilitate greater flows of foreign direct investment so as to support sustainable development activities, including the development of infrastructure, of developing countries, and enhance the benefits that developing countries can draw from foreign investment, with particular actions to:

- (a) Create the necessary domestic and international conditions to facilitate significant increases in flows of [foreign direct investment] to developing countries . . .
- (b) Encourage foreign direct investment in developing countries and countries with economies in transition through export credits that could be instrumental to sustainable development.²

The objective of increasing foreign investment in areas of environmental need is reflected in mechanisms established under various environmental agreements, such as the Clean

¹ R. Buckley, 'International Trade, Investment and Environmental Regulation: An Environmental Management Perspective', 27 *Journal of World Trade Law* 101 (1993); H. Ward and D. Brack, *Trade, Investment and the Environment* (1999); Permanent Court of Arbitration/Peace Palace Papers, *International Investments and the Protection of the Environment* (2000); T. Waelde and A. Kobo, 'Environmental Regulation, Investment Protection and "Regulatory Taking" in International Law', 50 *International and Comparative Law Quarterly* 811 (2001); R. Barsh, 'Is the Expropriation of Indigenous Peoples' Land Gatt-able?', 10 *Review of European Community and International Environmental Law* 13 (2001); E. Neumayer, *Greening Trade and Investment: Environmental Protection Without Protectionism* (2001); Symposium on Regulatory Takings in National and International Law, 11 *New York University Environment Law Journal* 1 (2003); O. K. Fauchald, 'International Investment Law and Environmental Protection', 17 *Yearbook of International Environmental Law* 3 (2006); K. Miles, 'Transforming Foreign Investment: Globalisation, the Environment, and a Climate of Controversy', *Macquarie Law Journal* 81 (2007); S. F. Puvimanasinghe, *Foreign Investment, Human Rights and the Environment: A Perspective from South Asia on the Role of Public International Law for Development* (2007); K. Tienhaara, *The Expropriation of Environmental Governance: Protecting Foreign Investors at the Expense of Public Policy* (2009); S. A. Spears, 'The Quest for Policy Space in a New Generation of International Investment Agreements', 13 *Journal of International Economic Law* 1037 (2011); D. Hunter, J. Salzman and D. Zaelke, *International Environmental Law and Policy* (2011, 4th edn), Chapter 17.

² WSSD Plan of Implementation, para. 78.

Development Mechanism established by the 1997 Kyoto Protocol,³ as well as in provisions of various environmental agreements promoting the transfer of technology.⁴ Among the international mechanisms available to encourage foreign direct investment, two are especially important for present purposes: the first comprises investment treaties – bilateral and multilateral – which seek to protect foreign investments against certain governmental acts, in particular expropriation and unfair treatment; the second comprises arrangements – domestic and international – which seek to provide guarantees (insurance and other) against the acts prohibited by investment treaties. Both mechanisms are becoming increasingly connected to international environmental rules, in the sense that they may impact upon the ability of states to adopt certain environmental measures at the national level or through multilateral environmental agreements, or encourage states to reduce their environmental standards in order to attract foreign investment.⁵ In international case law on the topic (discussed below), the principal issue has been the manner in which the protections that investment treaties are intended to afford against expropriation and other prohibited acts are applied when such acts are motivated by environmental (or other social) objectives, including those which are taken in accordance with international environmental obligations. In relation to export credit insurance, the principal issues concern the extent to which such arrangements should be available to projects which may be environmentally harmful, and what mechanisms are available to identify such projects at an early stage of their development.

INVESTMENT TREATIES

The rules of international law protecting the property rights of foreigners (traditionally referred to as ‘aliens’) are well established. Customary international law grants states a broad measure of discretion in relation to the treatment they accord to the property of aliens on their territory, including foreign investment. According to one leading commentator, ‘far-reaching interference with private property, including that of aliens, is common in connection with such matters as taxation, measures of police, public health, the administration of public utilities and the planning of urban and rural development’.⁶ To the list may be added measures intended to protect the environment, which could have the effect of limiting the economic benefits of an investment, or of bringing such benefits to an end altogether. It is accepted, however, that the state’s discretion is not unlimited, and customary law requires a state to observe certain minimum international standards in respect of alien property. These standards are relatively well developed in relation to acts of expropriation and due process rights (including a right of access to courts and the principle of equality before the law). In assessing the legality

³ Chapter 7, p. 288, above.

⁴ Chapter 16, pp. 679 *et seq.*, above; see also H. French, ‘Harnessing Private Capital Flows for Environmentally Sustainable Development’ (Worldwatch Paper 139, 1998); K. Miles, ‘Innovative Financing: Filling in the Gaps on the Road to Sustainable Environmental Funding’, 14(3) *Review of European Community and International Environmental Law* 202 (2005).

⁵ For a review of literature on the environmental effects of foreign investment, see Note by the OECD Secretariat, DAF/MAI/RD(97)33/Rev1 (www1.oecd.org/daf/mai/pdf/ng/ng9733r1e.pdf); M. Rauscher, ‘International Trade, Foreign Investment, and the Environment’, in K.-G. Mäler and J. R. Vincent (eds.), *Handbook of Environmental Economics* (2005), vol. 3, 1403.

⁶ R. Jennings and A. Watts (eds.), *Oppenheim’s International Law* (1992, 9th edn), 912; see generally M. Sornarajah, *The International Law on Foreign Investment* (2010, 3rd edn).

of such acts, it is apparent that a balance must be struck between the legitimate interests of the state hosting the investment and the need to protect such investments from excessive interference.⁷

The minimum standards set by customary international law are supplemented by more specific rules established by treaties. More than 2,600 bilateral investment treaties (BITs) have now been adopted,⁸ and they are joined by a growing number of multilateral agreements applicable within a region or to a particular economic activity, such as the 1994 North American Free Trade Agreement (NAFTA) and the 1994 Energy Charter Treaty. Efforts to establish a global regime – in the mid-1990s under the auspices of the OECD – failed, and subsequent efforts to renew these negotiations under the auspices of the WTO have stalled. Bilateral and multilateral treaties establish specific rules providing substantive protections, together with procedures for resolving disputes between foreign investors and host states, usually in the form of international adjudicatory arrangements.

Substantive rules

Each BIT and multilateral agreement establishes its own substantive rules governing the extent of the protection to be granted to foreign investments. In general terms, however, the protection extends to two kinds of act: a prohibition on acts or measures which expropriate or relatedly interfere with the investment, and a prohibition on acts or measures which constitute ‘unfair treatment’.

In relation to rules prohibiting expropriation, it is important to note that the obligations imposed on the host state will not be identical in each bilateral treaty, so that each one must be considered on its own merits and interpreted and applied in accordance with the normal rules of treaty interpretation.⁹ As one leading commentary has put it:

The most common terms . . . are expropriation and nationalization, but in addition some BITs refer to ‘dispossession’, ‘taking’, ‘deprivation’ or ‘privation’. These latter terms are considered quite wide in scope and would include expropriation, nationalization and the transfer of property to nationals of the host state (i.e. indigenisation). BITs generally do not define the term expropriation or any of the other terms denoting similar measures of forced dispossession . . . Such apparent reluctance to attempt a definition of ‘expropriation’ in the BITs may be explained by the fact that a host state, as is well known, can take a number of measures which have a similar effect of expropriation or nationalization, although they do not *de jure* constitute an act of expropriation; such measures are generally termed ‘indirect’, ‘creeping’, or ‘*de facto*’ expropriation. The expropriation clause in most BITs therefore commonly includes expropriation and nationalization as well as a reference to indirect measures, and accords to them all the same legal treatment.¹⁰

⁷ R. Jennings and A. Watts (eds.), *Oppenheim’s International Law* (1992, 9th edn), 913–15.

⁸ See UNCTAD, *Recent Developments in International Investment Agreements (2008–June 2009)* (2009), 2, available at www.unctad.org/en/docs/webdiaeia20098_en.pdf (recording an aggregate of 2,676 bilateral investment treaties at the end of 2008).

⁹ On the 1969 Vienna Convention on the Law of Treaties, see Chapter 4, pp. 100–2, above.

¹⁰ On ‘indirect takings’, see R. Higgins, ‘The Taking of Property by the State’, 176 *Recueil des Cours* 267 (1982-III).

In broad terms, the approach taken by bilateral treaties is followed by multilateral agreements seeking to promote and protect foreign investments. The approach taken by Chapter 11 of the NAFTA is not unusual in this regard, although its language has led to varied approaches from the growing number of arbitral tribunals charged with resolving disputes. Article 1102 imposes a 'national treatment' requirement,¹¹ and Article 1106 prohibits certain 'performance requirements'.¹² Additionally, Article 1105(1) provides:

Each Party shall accord to investments of investors of another Party treatment in accordance with international law, including fair and equitable treatment and full protection and security.

And Article 1110(1) provides:

No Party may directly or indirectly nationalize or expropriate an investment of an investor of another Party in its territory or take a measure tantamount to nationalization or expropriation of such an investment ('expropriation'), except:

- (a) for a public purpose;
- (b) on a non-discriminatory basis;
- (c) in accordance with due process of law and Article 1105(1); and
- (d) on payment of compensation in accordance with paragraphs 2 through 6.¹³

Article 1114(1) of NAFTA (Environmental Measures) provides that nothing in Chapter 11

shall be construed to prevent a Party from adopting, maintaining or enforcing any measure otherwise consistent with this Chapter that it considers appropriate to ensure that investment activity in its territory is undertaken in a manner sensitive to environmental concerns.

This language indicates a hierarchy between the Article 1105 and 1110 obligations of the NAFTA parties and their rights in relation to environmental protection measures, and does not

¹¹ Art. 1102(1) provides: 'Each Party shall accord to investors of another Party treatment no less favourable than that it accords, in like circumstances, to its own investors with respect to the establishment, acquisition, expansion, management, conduct, operation, and sale or other disposition of investments.'

¹² Art. 1106(1) provides that no party may impose or enforce certain performance requirements in relation to investments, including requirements to transfer technology, a production process or other proprietary knowledge to a person in its territory, except when the requirement is imposed or the commitment or undertaking is enforced by a court, administrative tribunal or competition authority to remedy an alleged violation of competition laws or to act in a manner not inconsistent with other provisions of NAFTA (Art. 1106(1)(f)). Art. 1106(2) provides: 'A measure that requires an investment to use a technology to meet generally applicable health, safety or environmental requirements shall not be construed to be inconsistent with paragraph 1(f).'

¹³ Art. 1110(2) provides: 'Compensation shall be equivalent to the fair market value of the expropriated investment immediately before the expropriation took place ("date of expropriation"), and shall not reflect any change in value occurring because the intended expropriation had become known earlier. Valuation criteria shall include going concern value, asset value including declared tax value of tangible property, and other criteria, as appropriate, to determine fair market value.'

suggest that environmental objectives can inform the interpretation or application of Article 1105 and 1110 obligations. However, Article 1114(2) directs parties not to relax their environmental rules to attract foreign investment, indicating the parties' recognition that:

it is inappropriate to encourage investment by relaxing domestic health, safety or environmental measures. Accordingly, a Party should not waive or otherwise derogate from, or offer to waive or otherwise derogate from, such measures as an encouragement for the establishment, acquisition, expansion or retention in its territory of an investment of an investor. If a Party considers that another Party has offered such an encouragement, it may request consultations with the other Party and the two Parties shall consult with a view to avoiding any such encouragement.

The 1994 Energy Charter Treaty reflects a similar approach, although it is limited to investments relating to the energy sector. Part 3 addresses investment promotion and protection, and Article 10(1) provides:

Each Contracting Party shall, in accordance with the provisions of this Treaty, encourage and create stable, equitable, favourable and transparent conditions for Investors of other Contracting Parties to make Investments in its Area. Such conditions shall include a commitment to accord at all times to Investments of Investors of other Contracting Parties fair and equitable treatment. Such Investments shall also enjoy the most constant protection and security and no Contracting Party shall in any way impair by unreasonable or discriminatory measures their management, maintenance, use, enjoyment or disposal. In no case shall such Investments be accorded treatment less favourable than that required by international law, including treaty obligations. Each Contracting Party shall observe any obligations it has entered into with an Investor or an Investment of an Investor of any other Contracting Party.

Article 13(1) provides:

Investments of Investors of a Contracting Party in the Area of any other Contracting Party shall not be nationalized, expropriated or subjected to a measure or measures having effect equivalent to nationalization or expropriation (hereinafter referred to as 'Expropriation') except where such Expropriation is:

- (a) for a purpose which is in the public interest;
- (b) not discriminatory;
- (c) carried out under due process of law; and
- (d) accompanied by the payment of prompt, adequate and effective compensation.¹⁴

¹⁴ It goes on to provide: 'Such compensation shall amount to the fair market value of the Investment expropriated at the time immediately before the Expropriation or impending Expropriation became known in such a way as to affect the value of the Investment (hereinafter referred to as the "Valuation Date"). Such fair market value shall at the request of the Investor be expressed in a Freely Convertible Currency on the basis of the market rate of exchange existing for that currency on the Valuation Date. Compensation shall also include interest at a commercial rate established on a market basis from the date of Expropriation until the date of payment.'

Dispute settlement

Beyond the substantive obligations imposed in the bilateral and multilateral agreements, the arrangements almost always provide a means for internationalising the settlement of disputes.¹⁵ The investor will usually wish to avoid the national courts of the host state, and the host state will wish to avoid the national courts of the investor, or of a third state. The preferred option is therefore to provide for the settlement of disputes relating to claims of expropriation or unfair treatment to be addressed by international arbitration. Numerous options are available, but the tendency is either resort to the World Bank's International Centre for Settlement of Investment Disputes (ICSID)¹⁶ or recourse to arbitration under the rules of the United Nations Commission on International Trade Law (UNCITRAL).¹⁷ The attraction of ICSID is that it provides an established institutional structure, which the UNCITRAL rules do not. It is to be noted that initiation of the procedure is almost invariably at the instigation of the investor alone; since the host state generally has no express rights granted under the BIT or the multilateral treaty, *vis-à-vis* the investor, no right is generally granted to it to invoke proceedings.

The NAFTA and the Energy Charter Treaty illustrate the options. Under Article 1120(1) of the NAFTA, once six months have elapsed since the events giving rise to a claim a disputing investor may submit the claim to arbitration under:

- (a) the ICSID Convention, provided that both the disputing Party and the Party of the investor are parties to the Convention;
- (b) the Additional Facility Rules of ICSID, provided that either the disputing Party or the Party of the investor, but not both, is a party to the ICSID Convention; or
- (c) the UNCITRAL Arbitration Rules.

Article 26 of the 1994 Energy Charter Treaty allows the investor to choose to submit the dispute to a marginally wider choice of procedures. Three months after the parties' failure to settle a dispute amicably, the investor may submit the dispute: to the courts or administrative tribunals of the state party to the dispute; to any applicable, previously agreed dispute settlement procedure; or to international arbitration or conciliation under the ICSID rules, or the ICSID Additional Facility rules (where the state is not a party to the ICSID Convention), or UNCITRAL rules, or an arbitral proceeding under the Arbitration Institute of the Stockholm Chamber of Commerce.¹⁸

Global rules

In 1995, negotiations began under the auspices of the OECD towards agreeing a Multilateral Agreement on Investment (MAI), which would have established investment rules of global application. The negotiations foundered in 1998, by which time considerable progress had been

¹⁵ On the settlement of disputes in BITs, see R. Dolzer and M. Stevens, *Bilateral Investment Treaties* (1995), Chapter 5; and K. Vandevelde, *Bilateral Investment Treaties: History, Policy and Interpretation* (2010).

¹⁶ <http://icsid.worldbank.org/ICSID/Index.jsp>; see generally C. Schreuer, *The ICSID Convention: A Commentary* (2009, 2nd edn).

¹⁷ www.uncitral.org.

¹⁸ Art. 26 provides certain limited exceptions in relation to states making declarations under the 1994 Treaty.

made towards agreement on the rules relating to investment protection and the procedures to govern the settlement of disputes between an investor and a contracting party. On both of these aspects, the draft text generally followed the approach taken in the NAFTA and the Energy Charter Treaty.¹⁹ However, one of the central sticking points concerned the relationship between the obligation not to expropriate or otherwise interfere with an investment, on the one hand, and the maintenance, adoption or enforcement of domestic environmental standards, on the other. By the time the negotiations collapsed in 1998, four draft texts sought to address the general agreement that states should not lower environmental standards; other draft texts addressed related environmental matters.²⁰ One of the draft texts proposed a 'general exception Article' (reflecting Article XX(b) and (g) of the GATT 1994) stating:

Subject to the requirement that such measures are not applied in a manner which would constitute a means of arbitrary or unjustifiable discrimination or a disguised restriction on investment, nothing in this agreement shall be construed to prevent the adoption, maintaining or enforcement by any Contracting Party of measures:

- (a) necessary to protect human, animal or plant life or health;
- (b) relating to the conservation of living or non-living exhaustible natural resources.²¹

Another (unnamed) state proposed a full-scale 'environmental review' of the MAI, addressing *inter alia* the following questions:

1. Could MAI obligations affect parties' implementation and enforcement of their existing national and regional environmental laws?
2. Could the MAI affect a party's ability to address environmental problems in the future (i.e. the creation of new policy means to tackle new problems or the creation of new policies/regulations to deal with problems yet to be identified)?
3. Would MAI obligations conflict with any existing obligations under existing multilateral environmental agreements?²²
4. Could MAI obligations constrain the future development of existing or new multilateral environmental agreements?
5. Could the MAI encourage either MAI parties or non-parties to slacken environmental regulation in order to attract investment?²³

The MAI negotiations did not lead to agreement on these or other issues. In 2001, however, the Doha WTO Ministerial Declaration revived the idea of global rules, within the framework of the WTO. Ministers recognised 'the case for a multilateral framework to secure transparent, stable and predictable conditions for long-term cross-border investment, particularly foreign direct investment, that will contribute to the expansion of trade', and agreed that negotiations would

¹⁹ OECD, 'The MAI Draft Consolidated Text' (as of 22 April 1998), DAF/MAI(98)7(REV1), available at www.oecd.org/daf/mai/pdf/ng/ng987r1e.pdf.

²⁰ *Ibid.*, 54–5. ²¹ *Ibid.*, 56.

²² See Note by the OECD Secretariat, 'Relationships Between the MAI and Selected MEAs', DAF/MAI/(98)1 (www.oecd.org/daf/mai/pdf/ng/ng981e.pdf).

²³ DAF/MAI/RD(97)43/Final (www.oecd.org/daf/mai/pdf/ng/ngrd9743fe.pdf).

commence in 2003 with a view to concluding the negotiations by January 2005. These efforts have since stalled but it is still possible that the environmental issues raised in the MAI negotiation might yet re-emerge in future WTO negotiations.

Case law

Within the past fifteen years a number of cases have been arbitrated internationally that address the relationship between domestic environmental protection measures and obligations to protect foreign investments from expropriatory and other practices. The cases have largely – but not exclusively – arisen in the NAFTA context, and in certain respects mirror the case law of the European Court of Human Rights in relation to the protection of property rights.²⁴ A number of NAFTA cases are of particular interest for their implications on national and international environmental rules.²⁵

Ethyl Corporation v. Canada was the first arbitral decision under Chapter 11 of NAFTA, although it settled after the jurisdiction phase. The United States investor challenged Canada's ban on inter-provincial trade in and commercial imports of MMT, a manganese-based compound which enhances the octane value of unleaded gasoline. Ethyl Corporation claimed that the ban (which had been adopted on environmental grounds) violated, *inter alia*, national treatment requirements and represented an act 'tantamount to an expropriation' without compensation, as required by Article 1110 of NAFTA, and claimed damages of US\$251 million. After the arbitrators found that the NAFTA/UNCITRAL tribunal had jurisdiction,²⁶ and after a Canadian procedure had found that the ban violated Canada's Agreement on Internal Trade, the parties settled the dispute, with Canada paying Ethyl US\$13 million. It is not clear why Canada settled the case. The settlement indicated that the claim might have had some merit, and apparently encouraged other Article 1110 claims premised on the view that domestic environmental regulations could unlawfully interfere with investors' rights under NAFTA.

In *S. D. Myers Inc. v. Canada*, the United States investor challenged a Canadian legislative order banning exports of polychlorinated biphenyls (PCBs) and PCB wastes, on the ground, *inter alia*, of violations of Articles 1102, 1105, 1106 and 1110 of NAFTA. The Canadian ban had been adopted in November 1995 purportedly on the ground of 'a significant danger to the environment and to human life and health'; government views supporting the ban included a statement to the effect that Canada was obliged by the terms of the 1989 Basel Convention to dispose of its own PCBs.²⁷ The ban was lifted in 1997, while the proceedings were pending. The arbitral tribunal found that the ban was intended primarily to protect the Canadian PCB disposal industry from US competition and that 'there was no legitimate environmental reason

²⁴ Chapter 18, above. It will be apparent that the approach taken by the European Court of Human Rights is less protective of property rights than some of the arbitral tribunals that have addressed investment disputes: see H. Mountfield, 'Regulatory Expropriations in Europe: The Approach of the European Court of Human Rights', 11 *New York University Environmental Law Journal* 136 (2003).

²⁵ For information on all NAFTA cases, see www.naftalaw.org. Beyond the cases discussed here, a number of other cases also touch on environmental subjects: see *Azinian, Davitian and Baca v. Mexico*, Award of 1 November 1998, 5 ICSID Repts 269 (no violation of Arts. 1105 and 1110 in dispute relating to waste collection and disposal concession contract); and *Waste Management Inc. v. Mexico*, Award of 30 April 2004, 43 ILM 967 (no violation of Arts. 1105 and 1110 in dispute relating to a waste collection and disposal concession contract).

²⁶ *Ethyl Corporation v. Canada*, Jurisdiction Phase, 38 ILM 708 (1999).

²⁷ Partial Award, 11 November 2000, paras. 184–5; on the 1989 Basel Convention, see Chapter 12 above.

for introducing the ban'.²⁸ In interpreting the NAFTA rules, the arbitral tribunal had regard to a range of environmental agreements, including the 1986 US–Canada Agreement Concerning the Transboundary Movement of Hazardous Waste, the 1989 Basel Convention and the 1994 North American Agreement on Environmental Cooperation, stating that:

the NAFTA should be interpreted in the light of the following general principles:

- Parties have the right to establish high levels of environmental protection. They are not obliged to compromise their standards merely to satisfy the political or economic interests of other states;
- Parties should avoid creating distortions to trade;
- Environmental protection can and should be mutually supportive.²⁹

The tribunal considered that the logical corollary of these principles was that:

Where a state can achieve its chosen level of environmental protection through a variety of equally effective and reasonable means, it is obliged to adopt the alternative that is most consistent with open trade. This corollary also is consistent with the language and the case law arising out of the WTO family of agreements.³⁰

Taking into account these principles, the arbitral tribunal held that Canada had violated Article 1102 of NAFTA by not treating US and Canadian companies involved in the destruction of PCBs in 'like circumstances', an assessment of which should take into account circumstances that would justify governmental regulations that treat entities differently in order to protect the public interest (i.e. the environment).³¹ A majority of the arbitral tribunal ruled that the breach of Article 1102 additionally gave rise to a breach of Article 1105, by failing to provide 'fair and equitable treatment'.³² However, the arbitral tribunal found no breach of Articles 1106 and 1110.³³ The tribunal awarded the claimant US\$6.05 million in damages, with interest.³⁴

Metalclad Corporation v. Mexico is one of the most notorious of the NAFTA environmental cases.³⁵ The facts bear careful consideration, indicating the context of environmental and federalism issues against which the arbitral tribunal's approach is to be assessed. A Mexican company (COTERIN) owned a site in the valley of La Pedrera in the municipality of Guadalcazar, located in the Mexican state of San Luis Potosi. COTERIN began operating a hazardous waste transfer station at the site in 1990, pursuant to an authority granted by the federal government of Mexico. However, 20,000 tons of waste were unlawfully deposited on the site

²⁸ Paras. 194–5 (noting that 'there were other equally effective means of encouraging the development and maintenance of a Canadian-based PCBs remediation industry').

²⁹ Para. 220. ³⁰ Para. 221. ³¹ Paras. 249–57.

³² Paras. 258–66 (Arbitrator Chiasson dissented, on the ground that a finding of a violation of Art. 1105 had to be based on a demonstrated failure to meet the fair and equitable requirements of international law).

³³ On Art. 1110, the tribunal concluded: 'Canada realised no benefit from the measure. The evidence does not support a transfer of property or benefit directly to others. An opportunity was delayed. This is not an expropriation case' (paras. 287–8).

³⁴ Second Partial Award (Damages), 21 October 2002. ³⁵ Award, 25 August 2000, 40 ILM 35 (2001).

without treatment or separation, and in September 1991 the federal government ordered the closure of the transfer station, which remained in effect until February 1996. Also in 1991, COTERIN applied to the municipality for a permit to construct a hazardous waste landfill at the site, but the application was refused, and the municipality's opposition to any further use of the site for the storage of hazardous wastes was reaffirmed in 1992. In 1993, COTERIN received two federal permits in respect of a hazardous waste landfill at the site, two federal environmental impact authorisations in respect of the construction and operation of the landfill, and a land-use permit issued by the state of San Luis Potosi. In 1993, Metalclad Corporation (a US investor) purchased COTERIN (and the site), without a municipal construction permit having been granted, or a decision having been given by the Mexican courts that no such permit was needed.³⁶ It was well aware of the municipal permit issue, having made three-quarters of the purchase price contingent upon its resolution. COTERIN commenced construction of the landfill at the site without a municipal construction permit (although a further federal construction permit was issued in January 1995). In October 1994, the municipality issued a 'stop work' order due to the lack of a municipal permit. COTERIN applied for a municipal construction permit in November 1994, but it was denied by the municipality in December 1995.³⁷ By March 1995, construction of the landfill facility at the site had been completed. In November 1995, Metalclad entered into an agreement (*convenio*) with two sub-agencies of the Secretariat of the Environment of the Mexican Government, permitting operation of the landfill for an initial period of five years.³⁸ In February 1996, the federal authorities issued a further permit to COTERIN increasing the annual permitted capacity of the facility from 36,000 tons to 360,000 tons. In April 1996, the municipality rejected a renewed application for a construction permit. The refusal was challenged in the Mexican federal court, but was dismissed on the ground that COTERIN had not exhausted its administrative remedies. An appeal to the Mexican Supreme Court was subsequently abandoned. In October 1996, Metalclad initiated NAFTA arbitration proceedings, alleging breaches of Articles 1105 and 1110 of NAFTA. On 20 September 1997, the governor of the state of San Luis Potosi issued an ecological decree declaring an area of 188,758 hectares within the municipality, including the site, to be an ecological preserve for the protection of cacti.

The arbitral tribunal found that Mexico could be internationally responsible for the acts of the municipality and the state of San Luis Potosi.³⁹ As to Article 1105, it found that Mexico had not treated Metalclad fairly and equitably, having regard to the requirements of transparency imposed by Articles 102 and 1802 of NAFTA. The tribunal ruled that the denial of the construction permit by the municipality – by reference to environmental impact and other considerations – was improper, since the federal authority's jurisdiction was controlling and the

³⁶ In the arbitration proceedings, Metalclad alleged, and the tribunal found, that Mexican federal officials had assured Metalclad that COTERIN had all the authorisations required to undertake the landfill project.

³⁷ The municipality denied the application on the grounds, *inter alia*, that: (1) COTERIN had been denied a construction permit in 1991; (2) COTERIN had commenced construction before applying for the permit and finished the construction while the permit application was pending; (3) there were environmental concerns; and (4) a great number of the municipality's inhabitants were opposed to the granting of the permit.

³⁸ The municipality challenged the *convenio*, by means of administrative complaint to the federal Secretariat of the Environment and by filing a writ of *amparo* with the Federal Court in January 1996. In the *amparo* proceedings, the municipality obtained an injunction in respect of the *convenio* in February 1996, but the *amparo* proceedings were dismissed in May 1999.

³⁹ Award, 25 August 2000, 40 ILM 35 (2001), para. 73.

authority of the municipality extended only to 'appropriate construction considerations'.⁴⁰ It found that Mexico had failed to ensure the transparent and predictable framework for Metalclad's investment, and that the lack of orderly process and timely disposition was inconsistent with the investor's expectation that it would be treated fairly and justly.⁴¹ With regard to Article 1110, the tribunal ruled that Mexico had indirectly expropriated Metalclad's investment:

By permitting or tolerating the conduct of Guadalcazar in relation to Metalclad which the Tribunal has already held amounts to unfair and inequitable treatment breaching Article 1105 and by thus participating or acquiescing in the denial to Metalclad of the right to operate the landfill, notwithstanding the fact that the project was fully approved and endorsed by the federal government, Mexico must be held to have taken a measure tantamount to expropriation in violation of NAFTA Article 1110(1) . . . [The municipality's denial of a construction permit], taken together with the representations of the Mexican federal government, on which Metalclad relied, and the absence of a timely, orderly or substantive basis for the denial by the Municipality of the local construction permit, amount to an indirect expropriation.⁴²

For good measure, the tribunal added:

Although not strictly necessary for its conclusion, the Tribunal also identifies as a further ground for a finding of expropriation the Ecological Decree issued by the Governor of [San Luis Potosi] on September 20, 1997. The Decree covers an area of 188,758 hectares within the 'Real de Guadalcazar' that includes the landfill site, and created therein an ecological preserve. This Decree had the effect of barring forever the operation of the landfill . . . The Tribunal need not decide or consider the motivation or intent of the adoption of the Ecological Decree. Indeed, a finding of expropriation on the basis of the Ecological Decree is not essential to the Tribunal's finding of a violation of NAFTA Article 1110. However, the Tribunal considers that the implementation of the Ecological Decree would, in and of itself, constitute an act tantamount to expropriation.⁴³

⁴⁰ Paras. 86–97; the conclusion was not affected by Art. 1114 of NAFTA: para. 98. ⁴¹ Para. 99.

⁴² Paras. 104 and 107. In reaching this conclusion, the tribunal relied on a generous, broad and unprecedented definition of expropriation: 'expropriation under NAFTA includes not only open, deliberate and acknowledged takings of property, such as outright seizure or formal or obligatory transfer of title in favour of the host state, but also covert or incidental interference with the use of property which has the effect of depriving the owner, in whole or in significant part, of the use or reasonably to-be-expected economic benefit of property even if not necessarily to the obvious benefit of the host state': para. 103.

⁴³ Paras. 109 and 111. In reaching this conclusion, the tribunal appears to have relied on the Decree's ninth Article (forbidding 'any work inconsistent with the Ecological Decree's management programme'); the fourteenth Article (forbidding 'any conduct that might involve the discharge of polluting agents on the reserve soil, subsoil, running water or water deposits and prohibit[ing] the undertaking of any potentially polluting activities'); and the fifteenth Article (forbidding 'any activity requiring permits or licences unless such activity is related to the exploration, extraction or utilisation of natural resources'). It does not appear from the award that the tribunal had regard to any evidence as to whether the Ecological Decree did in fact 'bar forever' the operation of the landfill site.

The tribunal awarded Metalclad US\$16.685 million in damages. Mexico challenged the award before the Supreme Court of British Columbia (which had jurisdiction on the basis that Vancouver, British Columbia, had been the place of arbitration and on British Columbia's International Arbitration Act 1996). The Supreme Court annulled that part of the award relating to Article 1105, on the ground that by incorporating principles and obligations concerning transparency under Chapter 18 into Article 1105, the Tribunal had made a decision which went beyond the scope of the submission to arbitration (limited to Chapter 11).⁴⁴ The Supreme Court found that the tribunal's analysis of Article 1105 infected its analysis of Article 1110, so that by relying on transparency to conclude that there had been an expropriation the tribunal had also gone beyond the scope of the submission to arbitration.⁴⁵ The Supreme Court did not, however, consider that the tribunal's decision on the effects of the 1997 Ecological Decree had been infected by its analysis of Article 1105. It noted that the tribunal had given 'an extremely broad definition of expropriation for the purposes of Article 1110', but that the definition of expropriation was a question of law which the Supreme Court was not entitled to interfere with under section 34 of the International Commercial Arbitration Act, from which it derived its jurisdiction, and concluded that any error by the tribunal in relation to its decision on the Ecological Decree was not 'patently unreasonable'.⁴⁶ Consequently, that part of the arbitral award was upheld.

The broad definition of expropriation applied by the *Metalclad* arbitral tribunal has not been utilised or adopted in other awards.⁴⁷ In addition, the tribunal's finding that it need not consider the motive or intent behind the Ecological Decree places the *Metalclad* decision at odds with subsequent decisions of NAFTA tribunals. In *Methanex v. United States*,⁴⁸ a Canadian investor brought proceedings challenging Californian legislation restricting the use of MTBE, a methanol-based source of octane and oxygenate for gasoline, on the grounds that it 'presents a significant risk to the environment' by contaminating drinking water. Methanex claimed that the Californian legislation was discriminatory, arbitrary and went beyond what was necessary to protect a legitimate public interest, violating Articles 1102, 1105 and 1110 of NAFTA.

Methanex's discrimination claim alleged that the Californian ban on MTBE was intended to favour domestic ethanol producers and to harm producers of methanol. The tribunal adopted a two-fold test for breach of the national treatment provision in Article 1102: Methanex would have to demonstrate: (1) that California intended to favour domestic investors by discriminating against foreign investors; and (2) that Methanex and the domestic investor were in like circumstances.⁴⁹ This claim failed, on the ground that the measures taken by California did not

⁴⁴ 2 May 2001, [2001] *British Columbia Trial Cases* 664; 5 ICSID Reps 236, paras. 68–76.

⁴⁵ Paras. 77–80. ⁴⁶ Paras. 99–103.

⁴⁷ Awards finding no violation of Art. 1110 include: *S. D. Myers Inc. v. Canada*, note 27 above; *Pope and Talbot v. Canada*, Interim Merits Award, 26 June 2000, paras. 96–105 (the test is whether the interference is sufficiently restrictive to support a conclusion that the property has been 'taken' from the 'owner' (para. 102)); *Marvin Feldman v. Mexico*, Award, 9 December 2002, paras. 96 *et seq.* (noting that 'the ways in which governmental authorities may force a company out of business, or significantly reduce the economic benefits of its business, are many . . . At the same time, governments must be free to act in the broader public interest through protection of the environment . . . imposition of zoning restrictions and the like': para. 103).

⁴⁸ Final Award, 3 August 2005 (<http://ita.law.uvic.ca/documents/MethanexFinalAward.pdf>).

⁴⁹ Final Award, Part IV, Chapter B, para. 12.

discriminate between foreign investors and MTBE producers in California.⁵⁰ The Article 1105 claim was rejected on the ground that the provision did not preclude differentiation between nationals and aliens.⁵¹ In relation to Article 1110, Methanex claimed that the Californian legislation would end sales of methanol for use in MTBE in California and contribute to an extended closure of a plant, which was a prohibited measure ‘tantamount . . . to expropriation’. The tribunal rejected Methanex’s claim under Article 1110, on the ground that the measure was a non-discriminatory regulation for a *public purpose* that was enacted in accordance with due process, and it had not been shown that specific commitments were given by the regulating government that it would refrain from such regulation.⁵² In reaching its decision, the tribunal noted that:

Methanex entered a political economy in which it was widely known, if not notorious, that governmental environmental and health protection institutions at the federal and state level, operating under the vigilant eyes of the media, interested corporations, non-governmental organizations and a politically active electorate, continuously monitored the use and impact of chemical compounds and commonly prohibited or restricted the use of some of those compounds for environmental and/or health reasons.⁵³

In reaching this conclusion, the tribunal noted that the scientific evidence supporting the ban of MTBE was sound and the ban was not intended to harm a foreign investor since it was enacted

with a view to protecting the environmental interests of the citizens of California, and not with the intent to harm foreign methanol producers. Faced with widespread and potentially serious MTBE contamination of its water resources, California ordered a careful assessment of the problem and thereafter responded reasonably to independent findings that large volumes of the state's ground and surface water had become polluted by MTBE and that preventative measures were called for. The evidential record establishes no ill will towards Methanex or methanol.⁵⁴

The finding of the tribunal in *Methanex* places it in conflict with *Metalclad*. The two cases occupy extreme ends of the spectrum when it comes to considering whether an environmental measure (or any other regulatory measure, for that matter) will constitute a measure tantamount to expropriation within the meaning of Article 1110 of NAFTA, or whether the measure constitutes a legitimate regulatory measure which falls outside the protections in Article 1110. At one end of the spectrum, there is a line of investment treaty case law (which includes *Metalclad*), which suggests that arbitral tribunals may disregard the intentions (environmental or otherwise) behind the measures. This is demonstrated by the following passage in the *Tecmed* case, in which the tribunal found

⁵⁰ Final Award, Part IV, Chapter B, paras. 21 and 22.

⁵¹ Final Award, Part IV, Chapter C, para. 14.

⁵² Final Award, Part IV, Chapter D, para. 7.

⁵³ Final Award, Part IV, Chapter D, para. 9.

⁵⁴ Final Award, Part IV, Chapter E, para. 20.

no principle stating that regulatory administrative actions are per se excluded from the scope of the [applicable BIT], even if they are beneficial to society as a whole – such as environmental protection –, particularly if the negative economic impact of such actions on the financial position of the investor is sufficient to neutralize in full the value, or economic or commercial use of its investment without receiving any compensation whatsoever.⁵⁵

At the other end lie decisions such as *Methanex*, which exclude non-discriminatory, regulatory measures from the scope of indirect expropriation. The *Methanex* reasoning was followed by an UNCITRAL tribunal in the *Saluka* award, where the tribunal held that:

the principle that a State does not commit an expropriation and is thus not liable to pay compensation to a dispossessed alien investor when it adopts general regulations that are 'commonly accepted as within the police powers of States' forms part of customary international law today.⁵⁶

Following this last approach, the permissibility of the measure adopted will determine whether the measure will be deemed expropriatory or permissible and thus not requiring compensation. The key issue here is being able to identify the delimitation between indirect expropriation and legitimate regulatory action which does not give rise to compensation – in *Metalclad*, the tribunal considered the environmental measure to amount to indirect expropriation whereas the tribunal in *Methanex* considered that the measure adopted fell outside the scope of Article 1110 of NAFTA since it was for a public purpose. However, investment dispute case law does not offer a generally applicable test to determine between the two. In *Saluka*, the tribunal considered that:

international law has yet to identify in a comprehensive and definitive fashion precisely what regulations are considered 'permissible' and 'commonly accepted' as falling within the police or regulatory power of States and thus, non-compensable. In other words, it has yet to draw a bright and easily distinguishable line between non-compensable regulations on the one hand and, on the other, measures that have the effect of depriving foreign investors of their investment and are thus unlawful and compensable in international law.⁵⁷

As a result, the determination is left for the tribunal to decide on a case-by-case basis. While this is not a satisfactory position for the foreign investor to be in, it does demonstrate that this is an area of international law where the parties' choice of arbitrator (and that arbitrator's views on the law relating to expropriation) is of vital importance. In addition, it

⁵⁵ *Tecnicas Medioambientales Tecmed SA v. United Mexican States*, ARB(AF)/00/2, Award, 29 May 2003, 43 ILM 133 (2004), para. 121.

⁵⁶ *Saluka Investments BV (The Netherlands) v. Czech Republic*, UNCITRAL Partial Award, 17 March 2006, para. 262 (<http://ita.law.uvic.ca/documents/Saluka-PartialawardFinal.pdf>).

⁵⁷ *Ibid.*, para. 263.

should be noted that the approach adopted in *Methanex* has not been without controversy. As one commentator notes:

It is too early to say whether legitimate regulatory purposes will in the future serve as an easily available escape from a potential finding of regulatory expropriation. It should be noted, however, that some investment tribunals have voiced concern over the appropriateness of a public purpose as a (sole) criterion to remove government action from the scope of indirect expropriation. For instance, the ICSID tribunal in the *Azurix* case, without openly referring to *Methanex* or *Saluka*, found that 'the issue was not so much whether the measure concerned is legitimate and serves a public purpose, but whether it is a measure that, being legitimate and serving a public purpose, should give rise to a compensation claim'.⁵⁸

The *Methanex* case is important for another reason: it made a significant contribution to the participation rights of non-state actors. In January 2001, the tribunal ruled that it had the power pursuant to Article 15(1) of the UNCITRAL rules (governing the proceedings) to accept *amicus* written submissions from the International Institute of Sustainable Development (IISD) and a number of other non-governmental organisations.⁵⁹ This appears to have been the first time that the possibility of an *amicus* submission was recognised in international arbitral proceedings. In its Final Award, the tribunal referred to arguments made by IISD in relation to Methanex's claim under Article 1102.

The issue of whether environmental measures adopted (again by California) amounted to unfair treatment or were tantamount to expropriation in violation of Articles 1105 and 1110 of NAFTA arose in *Glamis Gold Ltd v. United States*.⁶⁰ Glamis was a Canadian company that had been granted mining rights for gold in southeastern California, near a Native American cultural site. Subsequent to the grant of mining rights, the California legislature enacted measures that would have required Glamis to backfill all excavations. The purpose of these measures was, *inter alia*, to protect Native American sacred sites from the adverse environmental effects of the proposed mining operations, and to prevent irreparable damage to sites sacred to the Quechan Indian Tribe.⁶¹ Glamis claimed that the measures violated the obligations of the United States to provide fair and equitable treatment pursuant to Article 1105 of NAFTA on the grounds that they unfairly targeted the area in which Glamis was operating, denied Glamis a transparent and predictable legal framework within which to operate, and were arbitrary in not protecting cultural resources and possibly contributing to environmental degradation. Applying a standard under customary international law, the tribunal concluded that the obligation to afford 'fair and equitable treatment' would be violated only by an act that is:

⁵⁸ A. Reinisch, 'Expropriation', in P. Muchlinski, F. Ortino and C. Schreuer (eds.), *The Oxford Handbook of International Investment Law* (2008), Chapter 11, pp. 437–8.

⁵⁹ Order, 15 January 2001 (www.state.gov/documents/organization/6039.pdf).

⁶⁰ *Glamis Gold Ltd v. United States*, Award, NAFTA Chapter 11 Arbitral Tribunal, 8 June 2009. ⁶¹ Para. 174.

sufficiently egregious and shocking – a gross denial of justice, manifest arbitrariness, blatant unfairness, a complete lack of due process, evident discrimination, or a manifest lack of reasons – so as to fall below accepted international standards and constitute a breach of Article 1105. Such a breach may be exhibited by a 'gross denial of justice or manifest arbitrariness falling below acceptable international standards'; or the creation by the State of objective expectations in order to induce investment and the subsequent repudiation of those expectations.⁶²

The tribunal ruled that California's measures did not violate Article 1105. In relation to the cultural and environmental reasons behind the measures, the tribunal found that Glamis had not proved that the objective of the measures was not rationally related to the measures themselves.⁶³ The tribunal rejected Glamis' claim under Article 1110 of NAFTA, on the ground that the measures did not 'cause a sufficient economic effect' on Glamis' mining rights.⁶⁴

Beyond the NAFTA system, in *Compania del Desarrollo de Santa Elena SA v. Costa Rica*, an ICSID tribunal applying a Costa Rica–US bilateral investment treaty had to determine the amount of compensation to be paid to the investor for the expropriation of its property in Costa Rica. The property in question had been acquired in 1973 for the purpose of building a tourist resort, and comprised tropical dry forest that was 'home to a dazzling variety of flora and fauna' and located next to the Santa Rosa National Park.⁶⁵ The property was expropriated in 1978 for the purpose of adding to the area of the Santa Rosa National Park and to conserve flora and fauna, including the protection of jaguars, pumas and sea turtles.

The parties were not in dispute that the object of the expropriation was lawful and for a public purpose, namely, to protect biodiversity; they disagreed as to the amount of compensation to be paid. In presenting its claim, Costa Rica invited the tribunal to have regard to the environmental objectives of the expropriation, and the concern that setting too high an amount would provide a disincentive for states, in particular developing states, to adopt legitimate environmental objectives such as the establishment and extension of national parks. Costa Rica also claimed that its expropriation was taken pursuant to and in accordance with its obligations under various international environmental agreements, including the 1940 Western Hemisphere Convention.⁶⁶ The tribunal did not accept that the standard of compensation (applying the principle of full compensation for fair market value) could be affected by environmental considerations. It ruled:

While an expropriation or taking for environmental reasons may be classified as a taking for a public purpose, and thus may be legitimate, the fact that the Property was taken for this reason does not affect either the nature or the measure of the compensation to be paid for the taking. That is, the purpose of protecting the environment for which the Property was taken does not alter the legal character of the taking for which adequate compensation must be paid. The international source of the obligation to protect the environment makes no difference. Expropriatory environmental measures – no matter how laudable and beneficial to society as a whole – are, in this respect, similar to any other expropriatory measures that a state may take in order to implement its policies: where property is expropriated, even for environmental purposes, whether domestic or international, the state's obligation to pay compensation remains.⁶⁷

⁶² Para. 627. ⁶³ Paras. 803 and 818. ⁶⁴ Para. 536.

⁶⁵ Award of 17 February 2000, 39 ILM 1317 (2000), paras. 15–18.

⁶⁶ On the 1940 Convention, see Chapter 10, p. 484, above. ⁶⁷ Award of 17 February 2000, 39 ILM 1317 (2000), paras. 71–2.

The tribunal accordingly declined to analyse the detailed evidence regarding what Costa Rica referred to as 'its international legal obligation to preserve the unique ecological site that is the Santa Elena property'.⁶⁸

In *Parkerings-Compagniet AS v. Republic of Lithuania*,⁶⁹ an ICSID tribunal applying a bilateral investment treaty between Lithuania and Norway had to decide whether differentiation between a Norwegian investor and a Dutch investor in relation to matters of environmental protection violated Article IV(1) of the treaty, that provided for most-favoured-nation treatment.⁷⁰ The tribunal ruled that the two foreign projects were not in *like circumstances*, because the archaeological and environmental impacts of the two projects were different. The tribunal concluded that:

the refusal . . . to authorize [the Norwegian investor's] project in Gedimino was justified by various concerns, especially in terms of historical and archaeological preservation and environmental protection. These concerns are peculiar to the extension of [the Norwegian investor's] project in the Old Town and thus could justify different treatment with [the Dutch investor].⁷¹

Finally, in the first ICSID case applying the Energy Charter Treaty at the merits stage, the tribunal in *Plama Consortium Ltd v. Republic of Bulgaria* had to consider whether a change in Bulgarian environmental laws (that excluded state liability for past environmental damage) violated Article 10(1) of the Energy Charter Treaty on the ground that the amended law violated provisions relating to fair and equitable treatment.⁷² The tribunal found that the claim was inadmissible because the investment violated Bulgarian domestic law. It nevertheless considered each of Plama's substantive claims, concluding that they would have all failed even if the claim had been validly brought. The tribunal dismissed the claims based on the fair and equitable treatment standard, noting that:

The [Energy Charter Treaty] does not protect investors against any and all changes in the host country's laws. Under the fair and equitable treatment standard the investor is only protected if (at least) reasonable and justifiable expectations were created in that regard. It does not appear that Bulgaria made any promises or other representations to freeze its legislation on environmental law to the Claimant or at all.⁷³

INSURANCE

With a view to encouraging direct foreign investment, various national and international governmental arrangements have been established to insure foreign investors (and provide

⁶⁸ *Ibid.* ⁶⁹ ICSID Case No. ARB/05/8, Award, 11 September 2007.

⁷⁰ Agreement Between the Government of the Kingdom of Norway and the Government of the Republic of Lithuania on the Promotion and Mutual Protection of Investments, 16 August 1992, Art. IV(1).

⁷¹ *Parkerings-Compagniet AS v. Republic of Lithuania*, ICSID Case No. ARB/05/8, Award, 11 September 2007, para. 396.

⁷² ICSID Case No. ARB/03/24, Award, 27 August 2008. ⁷³ Para. 219.

other guarantees) against certain risks that may befall their investments. The approach of the Multilateral Investment Guarantee Agency (MIGA) draws upon that applied at the national level, including in particular the approach of the United States' Overseas Private Investment Corporation.⁷⁴

Increasingly, such arrangements require prior environmental assessment of the project in order to ensure that financial support is not provided to projects that are harmful to the environment.

The leading international scheme is that provided by MIGA, which is part of the World Bank family.⁷⁵ MIGA provides investment guarantees against certain non-commercial risks (i.e. political risk insurance) to eligible foreign investors for qualifying investments in developing member countries. MIGA's coverage is against the following risks: transfer restrictions, expropriation, breach of contract, and war and civil disturbance. MIGA has an environmental assessment policy (Annex B to its Operational Regulations), which requires environmental assessment of proposed projects to help ensure that it provides guarantees only to projects that are environmentally sound and sustainable.⁷⁶ It also applies various other environmental and social performance standards – similar to the World Bank's Operational Policies – in reviewing projects under consideration for political risk insurance from MIGA.⁷⁷

CONCLUSIONS

This growing area of international environmental law is constantly evolving but it is clear from the not altogether consistent jurisprudence that it is yet to find its centre of gravity. A number of broad conclusions may be drawn. First, it has been confirmed that national environmental regulations (and their application) are susceptible to challenge on the ground that they might interfere inappropriately with the property rights of foreign investors, either because they are expropriatory in character (where there is not a consistent line of case law), or because they fail to treat the foreign investor fairly, or they discriminate as between a domestic entity and a foreign investor. Second, it appears from the case law thus far that foreign investors may have a greater degree of protection than nationals, whose property is protected by human rights conventions.⁷⁸ Too great a gulf between the two systems should be avoided. Third, in the one decided case on point there has been a reluctance to have regard to international environmental obligations in determining the level of compensation to be paid for a lawful expropriation: the *Santa Elena v. Costa Rica* decision does not indicate a willingness to address environment and development in an integrated manner, as the requirements of sustainable development

⁷⁴ For details of the United States' Overseas Private Investment Corporation (OPIC), see www.opic.gov.

⁷⁵ www.miga.org.

⁷⁶ Annex B, 'MIGA's Policy on Social and Environmental Sustainability', Operational Regulations (as amended by the Board of Directors up to 4 February 2011), www.miga.org/documents/Operations-Regulations.pdf. The Policy is effective for all new projects to be underwritten after 1 July 2007, and supersedes in its entirety MIGA's Environmental Assessment Policy of July, 1999, and MIGA's issue-specific Safeguard Policies adopted on an interim basis in May 2002.

⁷⁷ On the World Bank's environmentally related operational policies, see Chapter 16, pp. 669–71, above. MIGA applies performance standards in relation to: social and environmental assessment and management system; labour and working conditions; pollution prevention and abatement; community health, safety and security; land acquisition and involuntary resettlement; biodiversity conservation and sustainable natural resource management; indigenous peoples; and cultural heritage.

⁷⁸ See Chapter 18 above.

require⁷⁹ and as the jurisprudence of the WTO Appellate Body has done.⁸⁰ Fourth, the cases indicate that the relationship between the protection of investments and the protection of the environment touches upon the delicate issue of subsidiarity or federalism, namely, the level of government and decision-making at which environmental decisions (for example, on the siting of hazardous facilities) are to be taken.⁸¹ International adjudicators will need to be alert to the possibility of undermining support for foreign investment by inadvertently upsetting the delicate balance which many states have achieved, or are struggling with, in relation to this aspect.

These conclusions coalesce around a broad theme, which suggests the broad challenge for the next phase of this lively area of the law. There is a need for balance: between the domestic, the regional and the global; between the legitimate interests of investors and legitimate environmental and other social interests; and between the state and its constituent parts.⁸²

⁷⁹ Chapter 6, pp. 206 *et seq.*, above. ⁸⁰ Chapter 19, pp. 829–30, above.

⁸¹ See, in this regard, the approach taken by the 1998 Aarhus Convention to rights of public participation in decision-making; Chapter 15, pp. 652–5, above.

⁸² P. Sands, 'Searching for Balance', 11 *New York University Environmental Law Journal* 198 (2003).

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Future developments

INTRODUCTION

The Stockholm Conference is widely regarded as the moment of ‘birth’ of modern international environmental law,¹ so its fortieth anniversary is an apt time to reflect on what international environmental law has since achieved, as well as the challenges that lie in the future.² Since the first edition of this book was published in 1994, international environmental law has become an important disciplinary area within the broader field of international law. Its focus is regulation of ‘the environment’, which encompasses both the natural world and human interactions with it, and is characterised by a complex system of interconnections.³ The interdependence of environmental issues poses a constant challenge for international law: how to develop and apply a comprehensive and effective set of legal requirements that will prevent environmental damage by addressing the sources, without taking measures that will cause harm elsewhere.

Over the past four decades, significant steps have been made towards the development of a comprehensive and effective legal framework to address environmental issues. In the field of international law-making and regulation by states – still the principal actors in international environmental law – notable achievements include: the development and progressive tightening of controls on the production and consumption of ozone-depleting substances under the 1987 Montreal Protocol, credited with reversing the trend towards depletion of the ozone layer;⁴ the establishment by UNEP of a network of regional seas conventions and protocols covering the world’s oceans;⁵ the elaboration of a regime for the conservation and sustainable use of biodiversity incorporating two major protocols (on biosafety and access to genetic resources) as well as a supplementary liability protocol to the biosafety regime;⁶ the introduction of landmark rules in the 1998 Aarhus Convention to promote greater public involvement in decision-making, through information, participation and access to justice in environmental

¹ L. B. Sohn, ‘The Stockholm Declaration on the Human Environment’, 14(3) *Harvard International Law Journal* 423 (1973); M. Pallemarts, ‘International Environmental Law from Stockholm to Rio: Back to the Future?’, 1(3) *Review of European Community and International Environmental Law* 254 (1992); J. Brunnée, ‘The Stockholm Declaration and the Structure and Processes of International Environmental Law’, in A. Chircop and T. McDorman (eds.), *The Future of Ocean Regime Building: Essays in Tribute to Douglas M. Johnston* (2008), 41.

² 2012 will also be the twenty-year anniversary of UNCED. A Rio+20 Summit is planned for 4–6 June 2012 in Rio de Janeiro, Brazil.

³ Chapter 1, p. 13, above. ⁴ Chapter 7, pp. 265–74, above. ⁵ Chapter 9, pp. 352–60, above.

⁶ Chapter 10, pp. 453–66, above.

matters;⁷ and the growing willingness of international courts to address environmental issues, even if they often reflect a cautious, timid approach.

International organisations have also made a substantial contribution to international environmental regulation. In the absence of a 'global environment organisation' of similar standing to economic bodies such as the WTO,⁸ multilateral environmental agreements and their supporting institutions have emerged as major sites for the development of innovative environmental rules and practices. Moratoria introduced by international treaty organisations on the commercial harvesting of whale species⁹ and the dumping of radioactive wastes at sea¹⁰ retain their standing as seminal moments for international environmental law, catalysing later regulatory efforts. International organisations outside of the environmental sphere have also played a major role in developing international environmental legal principles and techniques. UN organisations lacking a direct environmental mandate, such as the IMO, have been at the forefront of legal developments, putting in place liability and compensation regimes to address the effects on humans and the environment of spills of oil and other hazardous and noxious substances.¹¹ The International Law Commission has made a significant contribution to the area, most particularly through its general Articles on State Responsibility,¹² but also through more specific work on topics such as the Prevention of Transboundary Harm from Hazardous Activities.¹³ Economic organisations such as the World Bank have also played an important role: the Bank's environmental impact assessment requirements,¹⁴ procedures for inspection and review,¹⁵ and, more recently, its policies on access to information,¹⁶ have often led the way for other international organisations, including multilateral environmental agreements.

Courts and tribunals have proven willing, especially over the last decade, to begin to engage with environmental issues. Cases such as the ICJ's decision in *Pulp Mills*,¹⁷ the jurisprudence of ITLOS including its recent Advisory Opinion on *Responsibilities and Obligations in the Area*,¹⁸ the WTO Appellate Body's ruling in *Shrimp/Turtle*, together with long-standing arbitral findings in seminal cases such as *Trail Smelter* and *Pacific Fur Seal*, have played an important role in establishing and elaborating some of the fundamental principles that underlie the discipline of international environmental law, even if judicial bodies have been more hesitant to give these principles a strong legal bite.

International environmental law has also seen significant evolution in its regulatory techniques for the implementation of obligations. Environmental impact assessment is now established as a requirement of general international law,¹⁹ although the precise details of what this obligation imposes is open to debate.²⁰ In the last decade, new instruments have been developed in the area of access to environmental information, such as the 2003 Protocol on Pollutant Release and Transfer Registers to the Aarhus Convention.²¹ There has also been a

⁷ Chapter 15, pp. 652–5, above. See also the 2003 Protocol on Pollutant Releases and Transfer Registers, Chapter 15, pp. 655–7, above.

⁸ In respect of proposals for a 'GEO', see D. C. Esty, 'Revitalizing Global Environmental Governance for Climate Change', 15 *Global Governance* 427 (2009).

⁹ Chapter 9, pp. 426–7, above.

¹⁰ Chapter 4, p. 109, above; and Chapter 13, p. 563, above. ¹¹ Chapter 17, pp. 745–56, above.

¹² Chapter 17, p. 705, above. ¹³ Chapter 6, pp. 200–1, above.

¹⁴ Chapter 14, pp. 617–9, above. ¹⁵ Chapter 5, pp. 167–8, above.

¹⁶ Chapter 15, p. 649, above. ¹⁷ Chapter 8, pp. 330–3, above.

¹⁸ Chapter 17, pp. 731–3, above. ¹⁹ *Pulp Mills*, para. 204.

²⁰ See Chapter 14 above. ²¹ Chapter 15, pp. 655–7, above.

significant strengthening of arrangements for achieving compliance with international environmental obligations, with a focus on the elaboration of non-compliance mechanisms,²² and civil liability regimes of strict liability.²³

Finally, the potential promise of sustainable development has been fulfilled in some respects as environmental issues are increasingly treated as an important aspect of international economic activity. For better or for worse, a high degree of integration of environmental concerns with international economic law has been achieved in the past two decades as evidenced by legal developments within the field of international trade law,²⁴ the provision of financial resources²⁵ and the law pertaining to foreign direct investment.²⁶ There is also an increasing degree of interconnection between environmental law and other fields of international law, particularly international human rights law,²⁷ competition law,²⁸ intellectual property law and laws relating to the protection of the traditional knowledge of indigenous peoples.²⁹

Yet these significant developments cannot hide the fact that environmental protection remains on the margins of international policy, and that the norms of international environmental law have not yet radically or significantly changed human behaviour in ways that many would want. The challenges are very real, as finite resources are subject to ever increasing demands. Some challenges lie in developing rules to cover new forms of environmental risk that are not regulated – either well or at all – by existing international law; examples include the health and environmental effects of nanotechnologies,³⁰ geo-engineering options for climate change mitigation,³¹ or putting in place a coherent regulatory framework for natural disaster management.³² The area of climate change regulation – where the progress of international negotiations concerning long-term co-operative action has been painfully slow and manifestly inadequate in the face of scientific consensus³³ – is emerging as a litmus test for the capacity of international law to respond effectively to complex environmental and social problems. It is particularly disturbing that, despite considerable strengthening of scientific knowledge regarding climate change since the initial ‘precautionary’ regulations were introduced in 1992,³⁴ and a global consensus on the need to limit warming to (at most) 2°C above pre-industrial levels,³⁵ states are still some way from agreement on binding, effective and enforceable measures to reduce emissions of greenhouse gases. Increasingly, the sense is that – as with other areas such as ozone depletion and nuclear accidents – nothing less than the occurrence of a major disaster will cause the law to embrace a more pro-active role.

²² Chapter 5, pp. 163–7, above. ²³ Chapter 17, pp. 737–71, above.

²⁴ Chapter 19, above. ²⁵ Chapter 6, above. ²⁶ Chapter 20, above.

²⁷ See Chapter 18 above. ²⁸ Chapter 19, pp. 861–6, above. ²⁹ Chapter 16, pp. 686–97, above.

³⁰ D. Leary and B. Pisupati, ‘Emerging Technologies: Nanotechnology’, in D. Leary and B. Pisupati (eds.), *The Future of International Environmental Law* (2010), 227.

³¹ House of Commons, Science and Technology Committee, *The Regulation of Geoengineering*, Fifth Report of Session 2009–10, 18 March 2010, available at www.publications.parliament.uk/pa/cm200910/cmselect/cmsstech/221/221.pdf.

³² International Federation of Red Cross and Red Crescent Societies, *Law and Legal Issues in International Disaster Response: A Desk Study* (2007).

³³ Chapter 7, pp. 274–99, above.

³⁴ IPCC, WG I, ‘Climate Change 2007: The Physical Scientific Basis’, in *Fourth Assessment Report: Climate Change 2007* (2007).

³⁵ Decision 1/CP.16, Report of the Conference of the Parties on Its Sixteenth Session, Cancún, 29 November–10 December 2010, FCCC/CP/2010/7/Add.1 (Convention Agreement); Decision 1/CMP.6, Conference of the Parties serving as the Meeting of the Parties on its Sixth Session, 29 November–10 December 2010, FCCC/KP/CMP/2010/12/Add.1 (Kyoto Agreement).

Right now the law-making instinct has ground to a halt, and no new major treaty regimes appear on the horizon. With the era of law-making over, the next stage seems to be more concerned with implementing and strengthening what is already on the statute books. International environmental law thus appears to be in a phase of consolidation and extension of existing regimes rather than rapid legal development, as characterised the years following the Stockholm Conference. In this context, the following sections of this chapter consider some of the other, broader challenges international environmental law faces as we move ahead into the second decade of the twenty-first century.³⁶ These challenges can be grouped under distinct but interrelated headings: governance; implementation and enforcement of obligations; and the future for environmental regulatory development. The latter considers the tension between multilaterally based, comprehensive approaches to international environmental law-making and regulation versus approaches that are regionally based and focused on particular sectoral issues or problems.

GOVERNANCE CHALLENGES

We have used the notion of ‘governance’ to describe the actors that participate in the legislative, administrative and adjudicative processes of international environmental law, as well as the structures and rules that enable (or, in some cases, hinder) their participation. Some see governance as a – if not the – critical issue, facing the future of international environmental law.³⁷ These authors suggest that environmental governance in the future will need to do more to accommodate the needs and aspirations of peoples from both developed and developing countries and will have to be based on participation by a vast range of actors and stakeholders extending beyond the state that has been the traditional subject of international environmental law. They point to interlinkage with other areas of international law, particularly international human rights, as a way of furthering these goals.³⁸

There are recent signs in international environmental law of a greater openness to participation by non-state actors, particularly NGOs and business entities. In respect of NGOs, developments of note include: the establishment of a non-compliance mechanism in 2002 under the Aarhus Convention to which NGOs may nominate members,³⁹ and bring communications relating to non-compliance;⁴⁰ and the January 2001 ruling of the *Methanex* arbitral tribunal that it had the power pursuant to relevant UNCITRAL rules to accept *amicus* written submissions from various NGOs.⁴¹ Business involvement in international environmental legal processes is often less obvious than that of NGOs, but increasingly potent in shaping outcomes, particularly in determining the practical implementation of international environmental rules.

³⁶ On the history of the development of international environmental law, see Chapter 2 above. See also the discussion of challenges for international environmental law in Chapter 1, pp. 15–16, above.

³⁷ See D. Leary and B. Pisupati (eds.), *The Future of International Environmental Law* (2010), 292. ³⁸ *Ibid.*, 293–4.

³⁹ Decision I/7, Review of Compliance, Annex I.4 (2002). Of the nine current members of the committee, three are drawn from NGOs and public interest legal organisations. The nomination process for the compliance committee under the 2003 Protocol on Pollutant Release and Transfer Registers is narrower, providing for nomination by states, ‘taking due account of any proposal for candidates made by . . . non-governmental organizations qualified or having an interest in the fields to which the Protocol relates’: Decision I/2, Annex, I.4 (2010).

⁴⁰ Of the fifty-one communications received by the Committee as of June 2010, fifty were communications originated from members of the public: see www.unece.org/press/pr2010/10env_p19e.htm.

⁴¹ Order, 15 January 2001 (www.state.gov/documents/organization/6039.pdf).

Examples include initiatives under the UN Global Compact to enhance the contribution of business to sustainable development;⁴² the involvement of the insurance industry in negotiations for the Protocol to the Industrial Accidents and Transboundary Watercourses Conventions to agree on 'practical' measures relating to limits on liability;⁴³ and the compact between six major biotechnology companies to develop 'A Contractual Mechanism for Response in the Event of Damage to Biological Diversity Caused by the Release of a Living Modified Organism', which elaborates specific legal standards regarding issues of causation and limitations on liability.⁴⁴

Another category of non-state actors playing an increasing, albeit not always effective, role in international environmental law is the scientific community. Several recent treaties, such as the 2001 POPs Convention and the 2009 Ships Recycling Convention, demonstrate a trend towards greater reliance on expert committees and technical processes of assessment in identifying and evaluating environmental risks.⁴⁵ Multilateral processes of scientific assessment, modelled on the work of the IPCC, are also becoming a feature of other areas of international environmental activity such as biodiversity conservation and evaluation of the effects of ecosystem change.⁴⁶ At the same time, the treatment of expert evidence in other areas of international environmental law, particularly in dispute settlement, is generating significant disagreement as the *Pulp Mills* judgment of the ICJ made clear.⁴⁷

The role of individuals is often obscured in international environmental law even though it is clear that international regulation in this field is having an increasing impact on the daily lives of individuals and communities.⁴⁸ Some communities are gaining an increasing voice in international environmental legal processes, for instance indigenous and local communities as holders of traditional knowledge pursuant to the 2010 Nagoya Protocol on Access to Genetic Resources and Benefit-Sharing,⁴⁹ and individuals able to avail themselves of global and regional human rights complaints mechanisms to press environmental concerns.⁵⁰ However, in other areas the concerns of the individual are drowned out as a result of the tendency of international environmental law to focus on state concerns. This is particularly evident in the area of climate change adaptation where no adequate international legal regime currently exists to deal with persons who may be displaced from their homeland by climate change.

In terms of structures for enabling participation by diverse actors, an area of concern remains that of ensuring the participation of developing countries – particularly least developed countries and small island states – in the negotiation and implementation of international environmental obligations. Achieving better results in this respect is closely tied to the fulfilment of commitments by developed countries around financial resources and technology transfer, and associated loosening of intellectual property restrictions.⁵¹ Climate change is

⁴² Chapter 3, p. 89, above. ⁴³ Chapter 17, p. 771, above. ⁴⁴ Chapter 17, pp. 766, above.

⁴⁵ 2001 POPs Convention, Arts. 8 and 19(6)(a); 2009 Ships Recycling Convention, Art. 18 and Annex, Regulations. 6 and 7.

⁴⁶ See e.g. the Millennium Ecosystem Assessment (2005) initiated by former UN Secretary General, Kofi Annan.

⁴⁷ *Pulp Mills* case, paras. 165–8, at para. 167; Joint Dissenting Opinion of Judges Al-Khasawneh and Simma, paras. 2–25 (especially para. 14); also P. Sands, 'Water and International Law: Science and Evidence in International Litigation', 22 *Environmental Law and Management* 15 (2010). The use of expert evidence and the applicable standard of review to be applied by panels has also been a major topic of discussion in the case law under the WTO SPS Agreement: see Chapter 19, pp. 830–47, above.

⁴⁸ M. Zürn, 'Global Governance and Legitimacy Problems', 39(2) *Government and Opposition* 260 (2004).

⁴⁹ Chapter 16, pp. 684–5, above. ⁵⁰ Chapter 18, above. ⁵¹ See Chapter 16 above.

emerging as a particularly critical test for the capacity of international environmental law and international organisations to develop effective modes of capacity-building. The endorsement of mechanisms for Reducing Emissions from Deforestation and Forest Degradation in Developing Countries (REDD) under the international climate change regime may emerge as a potentially positive example in this regard.⁵²

Structures to enable meaningful participation by non-state actors, particularly NGOs and individuals, are still at a rudimentary stage of development. The United Nations Economic Commission for Europe (UNECE) has led the way with the 1998 Aarhus Convention, but there is little indication that these initiatives will be taken up more widely. Major obstacles to effective participation by non-state actors in international environmental law remain, such as restrictions on the release of commercial-in-confidence information, the absence of avenues for participation in decision-making, and the manifestly inadequate implementation of treaty obligations at the domestic level in many states.

IMPLEMENTATION AND ENFORCEMENT CHALLENGES

Ensuring adequate and effective implementation and enforcement of international environmental obligations is a long-standing and continuing challenge for international environmental law. Limitations imposed by the principle of territorial sovereignty continue to pose significant hurdles for global environmental protection efforts, particularly in respect of shared natural resources or global commons issues. Some indications of a move to embrace rights of *actio popularis* – in the ILC’s Articles on State Responsibility and most recently in the ITLOS Advisory Opinion on *Responsibilities and Obligations in the Area* – are encouraging but are hardly a panacea for reconciling the established international legal order and the ‘inherent and fundamental interdependence of the world environment’.⁵³ The inadequacy of domestic implementation efforts is also a critical element, particularly as international environmental law moves to put in place ever more detailed regulatory requirements. In the past decade, there has been a greater focus on issues of monitoring, reporting and verification (MRV), as well as the associated development of non-compliance procedures in a number of treaty regimes.⁵⁴ To achieve real advances in domestic implementation and compliance, however, it will be necessary for these procedures to work closely with treaty bodies and other international organisations concerned with facilitating technology transfer and ensuring the provision of financial resources to assist developing countries with compliance.

At the international level, a related aspect of implementation (and, indeed, international environmental governance) is the need for co-ordination between different international environmental treaties with connected or overlapping mandates.⁵⁵ Increased co-ordination is

⁵² See M. L. Brown, ‘Limiting Corrupt Incentives in a Global REDD Regime’, 37(1) *Ecology Law Quarterly* 237 (2010); K. Levin, C. McDermott and B. Cashore, ‘The Climate Regime as Global Forest Governance: Can Reduced Emissions from Deforestation and Forest Degradation (REDD) Initiatives Pass a “Dual Effectiveness” Test?’, 10(3) *International Forestry Review* 538 (2008).

⁵³ P. Allott, *Eunomia: A New Order for a New World* (1990), para. 17.52.

⁵⁴ Chapter 15, pp. 644 *et seq.*, above; and Chapter 5, pp. 163–7, above.

⁵⁵ M. A. Young, *Trading Fish, Saving Fish: The Interaction Between Regimes in International Law* (2011); M. A. Young, ‘Protecting Endangered Marine Species: Collaboration Between the Food and Agriculture Organization and the CITES Regime’, 11(2) *Melbourne Journal of International Law* 441 (2010); W. Bradnee Chambers, *Interlinkages and the Effectiveness of Multilateral Environmental Agreements* (2008); G. Kristin Rosendal, ‘Impacts of Overlapping International Regimes: The Case of Biodiversity’, 7 *Global Governance* 95 (2001).

often called for as a means of easing the problem of ‘treaty congestion’ in international environmental law generated by a multiplicity of ‘separate negotiating fora, separate secretariats and funding mechanisms, overlapping provisions and inconsistencies between agreements, and severe demands on local capacity to participate in negotiations, meetings of parties and associated activities’.⁵⁶ The tendency for international environmental law to treat environmental matters on a sectoral basis (e.g. separate laws for fisheries, marine pollution, climate change regulation and so on) rather than in an integrated fashion has aggravated this problem. The result is a fragmented international legal response to a particular environmental issue, sometimes with contradictory, or at least differing, positions adopted by or within different treaty bodies. The absence of a single, overarching organisation – à la the WTO – only serves to exacerbate the problem, allowing those who seek to minimise international environmental developments to divide and rule within the fragmented structure.

The question of whether international law should permit ocean iron fertilisation is an acute example of the difficulties that can arise. While ocean iron fertilisation is being investigated in some quarters as a potential measure for climate change mitigation,⁵⁷ parties to the 1996 London Protocol in 2008 adopted a resolution stating that ‘ocean fertilization activities other than legitimate scientific research should not be allowed’.⁵⁸ The approach taken by the Biodiversity Convention was more robust. In 2008, the Conference of the Parties requested parties

in accordance with the precautionary approach, to ensure that ocean fertilization activities do not take place until there is an adequate scientific basis on which to justify such activities, including assessing associated risks, and a global, transparent and effective control and regulatory mechanism is in place for these activities; with the exception of small scale scientific research studies within coastal waters.⁵⁹

More broadly, the relationship between the international climate change regime under the Climate Change Convention and UNCLOS, the principal treaty governing the oceans, remains unclear,⁶⁰ despite the intimate connection between oceans and the world’s climate, and the severe impacts on ocean ecosystems predicted as a consequence of climate change.⁶¹

⁵⁶ E. Brown Weiss, ‘New Directions in International Environmental Law’, Paper presented on 15 March 1995 to the United Nations Congress on Public International Law, New York, 13–15 March 1995, reprinted in *United Nations Congress on Public International Law, New York, 13–15 March 1995: Proceedings of the Congress*, UN Sales No. E.95.V.9 (1995).

⁵⁷ M. MacCracken, ‘Beyond Mitigation: Potential Options for Counter-Balancing the Climatic and Environmental Consequences of the Rising Concentrations of Greenhouse Gases’, World Bank Policy Research Working Paper Series, No. 4938, available at <http://ideas.repec.org/p/wbk/wbrwps/4938.html>.

⁵⁸ LC-LP.1 (2008), Third Meeting of the Contracting States to the London Protocol, 27–31 October 2008. See also IMO, Interim Report on Ocean Fertilization Science Overviews, LC33/4, 4 September 2009.

⁵⁹ Decision XI/16, C.4 (2008).

⁶⁰ See generally M. Doelle, ‘Climate Change and the Use of the Dispute Settlement Regime of the Law of the Sea Convention’, 37(3/4) *Ocean Development and International Law* 319 (2006). The need for greater interaction between the Climate Change Convention and UNCLOS was recognised by the World Ocean Conference, held in Manado, Indonesia, 11–14 May 2009.

⁶¹ IPCC, *Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* (2007), Chapter 5, ‘Observations: Oceanic Climate Change and Sea Level’; P. J. Mumby, R. Iglesias-Prieto, A. J. Hooten *et al.*, ‘Revisiting Climate Thresholds and Ecosystem Collapse’, 9(2) *Frontiers in Ecology and the Environment* 94 (2011).

In other areas of international environmental law there are positive signs of increased co-ordination between different treaty bodies covering similar subject matter. A good example in this regard is the joint meeting of the Conferences of the Parties to the 1998 Chemicals, 2001 POPs and 1989 Basel Conventions held in Bali, Indonesia, in 2010.⁶² This might provide a useful precedent for developing closer co-operation between other treaty organisations addressing different aspects of the same or related environmental problems. Less propitious is the continued wrangling between countries participating in negotiations under the WTO Doha Declaration over establishing ‘procedures for regular information exchange between [multilateral environmental agreement] secretariats and the relevant WTO committees, and the granting of observer status’.⁶³ Political obstacles have prevented agreement on rules for allowing the grant of reciprocal observer rights as between WTO institutions and secretariats of multilateral environmental agreements (MEA), such as the Climate Change and Biodiversity Conventions.⁶⁴ Instead, *ad hoc* and informal arrangements exist to allow selected MEA secretariats to participate in WTO committee meetings, such as those of the Committee on Trade and the Environment.

New tools for the implementation of international environmental obligations may also assist in easing the burden of compliance, and thereby contributing to better environmental outcomes. This has been the promise of economic instruments, included most prominently in the 1997 Kyoto Protocol’s flexibility mechanisms. However, the voluminous texts of the Marrakesh Accords negotiated to elaborate ‘modalities’ for the operation of the flexibility mechanisms illustrate the gap between economic theory and the practical implementation of market measures in international legal arrangements.⁶⁵ The sheer complexity of the rules surely cannot assist in their application and enforcement. Equally challenging, but potentially more rewarding, are nascent efforts to develop mechanisms for integrated pollution control or integrated environmental management in international environmental law.⁶⁶ Instruments such as the 1999 Gothenburg Protocol to the LRTAP Convention (in force 2005) allow several air pollutants and their environmental impacts to be addressed in an integrated fashion that maps more closely to the underlying interdependence of affected ecosystems.

FUTURE REGULATORY DEVELOPMENT

One of the most difficult issues confronting international environmental law concerns the adequacy of its law-making process, both in substantive and procedural terms. Two principles have generally guided the legislative process to date. The first is a commitment to multilateral co-operation to deal with shared environmental problems.⁶⁷ The second is the principle of sovereign equality, which posits all states as having an equal right to participate in

⁶² Simultaneous extraordinary meetings of the Conferences of the Parties to the Basel, Rotterdam and Stockholm Conventions were held in the Bali International Convention Centre in Nusa Dua, Bali, Indonesia, from 22 to 24 February 2010, in co-ordination with the eleventh special session of the Governing Council/Global Ministerial Environment Forum (GC/GMEF) of the United Nations Environment Programme which was held at the same venue from 24 to 26 February 2010.

⁶³ Doha Declaration, para. 31(ii).

⁶⁴ A broader geopolitical conflict concerning the Arab League’s application to qualify for observer status at the WTO has seen proposals for the grant of observer status to MEA secretariats consistently blocked: see R. Eckersley, ‘The Big Chill: The WTO and Multilateral Environmental Agreements’, 4(2) *Global Environmental Politics* 24 at 34 (2004).

⁶⁵ Chapter 7, pp. 287–91, above. ⁶⁶ Chapter 4, pp. 131–3, above. ⁶⁷ E.g. Rio Declaration, Principle 12.

international law, and predisposes legislative processes towards a consensus decision-making approach. The difficulties that this poses are highlighted by the point made in Chapter 1: whereas just two states negotiated the nineteenth-century fishery conservation conventions, more than 150 states negotiated the 1992 Climate Change Convention and the 2000 Biosafety Protocol, and the current climate change negotiations under the auspices of the Climate Change Convention are taking place amongst its 194 states parties. As the number of states participating in international environmental law has increased, the task of securing broad agreement on the basis of consensus decision-making has become progressively harder, particularly where environmental protection objectives come into conflict with clear economic interests of states. In recent years, it has proved increasingly difficult to realise ambitious regulatory goals in the environmental field. The 2010 Nagoya–Kuala Lumpur Supplementary Liability Protocol to the Biosafety Protocol is a pertinent example: although it is commendable that the 161 states parties to the Biosafety Protocol were able to agree rules on the complex topic of liability for environmental damage caused by living modified organisms (LMOs), the liability regime itself is essentially ‘a text allowing Parties to address LMO damage through existing civil liability systems or through newly developed civil liability mechanisms’,⁶⁸ and as such leaves critical questions about the standard of liability, exemptions from liability, limits on the extent of liability and the need for operators to maintain some form of financial security to be resolved in domestic law. In short, there is an evident need for law-making to be achieved through the development of new systems of qualified majority decision-making.

It does not seem that enforcement actions through international courts and tribunals will provide a remedy to weaknesses of the legislative process. Although courts and tribunals have shown greater willingness to engage with environmental issues in the past decade, their record when it comes to giving real meaning and effectiveness to environmental rules and principles has been less than impressive. There are now a number of environmental and sustainable development principles – with the notable exception of the precautionary principle – that international courts and tribunals have recognised as customary or general international principles.⁶⁹ However, rarely is that recognition translated into a robust finding that challenges the *status quo* of allowing economic development despite its potential for harmful impacts on health or the environment. At some point these courts and tribunals will have to get off the fence, and impose interpretations and decisions that give real and effective primacy to environmental norms.

The failure of the Copenhagen climate change negotiations and ongoing difficulties in agreeing on post-2012 arrangements have brought into focus a wider challenge facing international environmental law: is a regulatory approach based on universal participation, consensus decision-making and desire to articulate comprehensive rules governing a particular subject matter still feasible in the context of a vast increase in the number of states and greater divergence of their interests? There are certainly many commentators in the climate change field at present who advocate a future course of environmental regulation that is targeted to

⁶⁸ A. Telesetsky, ‘The 2010 Nagoya–Kuala Lumpur Supplementary Protocol: A New Treaty Assigning Transboundary Liability and Redress for Biodiversity Damage Caused by Genetically Modified Organisms’, 14(41) *ASIL Insights*, 10 January 2011.

⁶⁹ See Chapter 6 above.

fostering regulatory development at the regional (or even national) level on particular aspects of the broader climate change problem.⁷⁰ Applied more widely, this approach might see the role of *international* environmental regulation decrease in favour of a ‘kaleidoscopic’ model in which law-making activities take place at multiple levels.⁷¹ However, before embracing such an approach it is important to consider what might be lost in departure from a multilateral approach: the potential that the interests of smaller, less economically powerful states and their peoples will not receive sufficient consideration,⁷² adherence to principles of equity, and the capacity to take a holistic view of an environmental issue which is often a prerequisite for integrated forms of environmental management.

Questions over the best approach to regulatory development in the environmental field are difficult questions to resolve, especially in the abstract, as the answer will often depend on the nature of the particular environmental issue being addressed. Nevertheless, it is noteworthy that, in the last decade, many of the more progressive developments in international environmental law have taken place in regional fora, such as the UNECE or regional seas conventions. If international environmental law in the future does move to embrace a ‘kaleidoscopic’ mode of environmental regulatory development, this is likely to offer more avenues for participation by actors beyond states, including NGOs, corporations and intergovernmental organisations. At the same time, it would present new challenges in ensuring that different areas of international law are complementary rather than conflictual and achieve overall goals of environmental protection.

CONCLUSION

In summary, it is plain that much has been achieved over the past four decades, and the landscape of international environmental law is scarcely recognisable as compared with that which pertained in the post-Second World War period. It is equally plain, however, that the new norms and principles have not yet significantly changed human behaviour: with limited exceptions, the threat to the global environment and to shared natural resources is greater today than before the advent of the modern system that was catalysed by the Stockholm Conference in 1972. The next generation of lawyers and policy-makers in international environmental law has even more to do than those who contributed to the developments that were described in the first edition of the book. This is not a time for complacency, or celebration of achievement. Quite the contrary.

⁷⁰ G. Prins and S. Rayner, ‘Time to Ditch Kyoto’, 449 *Nature* 973 (2007); G. Prins, I. Galiana, C. Green *et al.*, ‘The Hartwell Paper: A New Direction for Climate Policy after the Crash of 2009’, Institute for Science, Innovation and Society, University of Oxford and LSE Mackinder Programme, May 2010; C. Okereke, H. Bulkeley and H. Schroeder, ‘Conceptualising Climate Governance Beyond the International Regime’, 9 *Global Environmental Politics* 58–78 (2009); E. Ostrom, ‘A Polycentric Approach for Coping with Climate Change’ (a Background Paper to the 2010 World Development Report), Policy Research Working Paper 5095, World Bank, Washington (2009).

⁷¹ E. Brown Weiss, ‘International Law in a Kaleidoscopic World’, 1 *Asian Journal of International Law* 21 (2011).

⁷² One of the criticisms levelled against the Copenhagen climate change conference from a process viewpoint was the ‘Friends of the Chair’ negotiating process that was said to exclude many states: L. Rajamani, ‘The Making and Unmaking of the Copenhagen Accord’, 59 *International and Comparative Law Quarterly* 825 (2010); D. Bodansky, ‘The Copenhagen Climate Change Conference: A Postmortem’, 104(2) *American Journal of International Law* 230 at 238 (2010).

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