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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 18, 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 is not a well-developed area of international law, which law has to date played a limited role in preventing the generation of waste. Other than the special rules which are applicable in the Antarctic[2] and the EC,[3] there is no regional or global legal framework for 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 industrialisation, 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, which 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

[1] E.g. *Lopez Ostra* v. *Spain* (1995) 20 EHRR 277 (Judgment 41/1993/436/515 of 9 December 1994); and *Guerra and Others* v. *Italy* (1998) 26 EHRR 357 (Judgment 116/1996/735/932 of 19 February 1998); see chapter 7, pp. 301–2 above.

[2] Chapter 14, pp. 716–18 below. [3] Chapter 15, pp. 786–93 below.

[4] See pp. 684–5 below. [5] See pp. 686–7 below. [6] See pp. 685–6 below.

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 in Agenda 21 with the development of proposals, including targets and timetables, for the management of hazardous and other wastes and radioactive wastes.[7] 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'.

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.[8] 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.[9] 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.[10]

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.[11] 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.[12] 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'.[13] Subsequent principles address generation and management (Principles 7 and 8); disposal (Principles 9 to 18); monitoring, remedial action and record-keeping (Principles 19 and 20); safety and contingency planning (Principles 21 to 23); transport (Principles 24 to 28);

[7] See pp. 705–8 below. [8] OECD C(76) 155 Final (1976).
[9] Annex, paras. 2 to 6. [10] Para. 7.
[11] UNEP/GC.14/17 (1987), Annex II, UNEP GC/dec./14/30, UNEP ELPG No. 8.
[12] Principle 2. [13] Principles 3 to 6.

and liability and compensation (Principle 29). In 1990, the EC adopted a framework, the Community Strategy for Waste Management,[14] to guide waste management policy for member states. Following a Commission review of the Strategy, in 1997 the EC Council adopted a revised Community Strategy for Waste Management.[15]

Defining and treating waste

International legal regulation of waste began in the early 1970s with the adoption of two treaties which prohibited the disposal at sea of certain types of waste. This raised the difficulty of defining waste, a matter which continues to cause legal difficulties today. Human activity generates waste in solid, liquid or gaseous form, 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 ultra-hazardous). 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'.[16] 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'.[17] 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 EC 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'.[18] 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 ECJ broadened the definition of waste under Directive 75/442/EEC by interpreting Article 1(a) as not 'excluding substances and objects which are capable of economic re-utilisation'.[19] The following year the definition was further amended to mean 'any substance or

[14] Chapter 15, pp. 786–7 below.

[15] Council Resolution of 24 February 1997 on a Community strategy for waste management, OJ C076, 11 March 1997, 1.

[16] Art. III(4). The 1976 Barcelona Dumping Protocol adopted the same definition: Art. 3(2).

[17] Art. 2(1). The 1991 Bamako Convention adopts a similar definition: Art. I(1).

[18] Council Directive 75/442/EEC, Art. 1(a).

[19] 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.

object . . . which the holder discards or intends or is required to discard' and which falls into one of the categories set out in Annex 1 to the amended Directive.[20] The Directive does not, however, apply to atmospheric emissions of gases and certain wastes covered by other legislation.[21] 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,[22] and the 1996 Protocol to the 1972 London Convention defines wastes and other matters as 'material and substance of any kind, form or description'.[23] It remains to be seen whether this approach will clear up the matter and permit 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, plastics, metals, organic matters and putrescible materials. The generation of municipal wastes is closely related to levels of industrialisation and income: by the early 1990s, in industrialised countries each person generated between 2.75 and 4 kg of waste per day, but in least-developed countries each person generated on average only 0.5 kg per day.[24] Rapid industrialisation has resulted in large increases in the generation of waste paper and plastic.[25] The two main techniques for disposal of municipal waste are landfill (accounting for over 70 per cent in most OECD countries) and incineration.[26] The main environmental problems related to landfill are

[20] Council Directive 75/442/EEC, as amended by Council Directive 91/156/EEC, OJ L78, 26 March 1991, 32, Art. 1(a). On the meaning of 'discard', the ECJ has tended to take an expansive approach: see Cases C-206/88 and C-207/88, *Vessaso and Zanetti* [1990] ECR I-1461; Joined Cases C-242/94, C-304/94, C-330/94, C-224/95, *Criminal Proceedings Against Tombesi and Others* [1997] ECR I-3561 (the concept of 'waste' is not to be understood as excluding substances and objects which are capable of economic re-utilisation, even if the materials in question may be the subject of a transaction or quoted on public or private commercial lists); Case C-129/96, *Inter-Environnement Wallonie ASBL* v. *Region Wallonne* [1997] ECR I-7411; and Case C-9/00, *Palin Granit Oy and Vehmassalon Kansanterveystyon Kuntayhtyman Hallitus* [2002] ECR I-3533 (the holder of leftover stone resulting from stone quarrying which is stored for an indefinite length of time to await possible use discards or intends to discard that leftover stone, which is accordingly to be classified as waste within the meaning of Council Directive 75/442/EEC; the place of storage of leftover stone, its composition and the fact, even if proven, that the stone does not pose any real risk to human health or the environment are not relevant criteria for determining whether the stone is to be regarded as waste).

[21] Art. 2(1). Annex I lists sixteen categories of waste.

[22] Art. 1(o); waste does not include human remains, offshore installations, offshore pipelines, and unprocessed fish and fish offal.

[23] Art. 1(8). [24] UNEP, *Environmental Data Report* (1991, 3rd edn), 334.

[25] *Ibid.*, and Table 8.2. [26] *Ibid.*, 336–7 and Table 8.6.

the generation of methane (a greenhouse gas), and the production of leachates which may contaminate surface or groundwaters. Incineration contributes to air pollution by generating dust, acidic and greenhouse gases, vaporised metals, metal salts, and dioxins and furans.[27]

Hazardous and toxic wastes (industrial, agricultural and mining waste and sewage sludge)[28]

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 sludges, 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, storage or containment, and recycling.[29] Large quantities of organic waste, including sewage sludge, animal slurries and silage effluents, are applied to agricultural land.[30]

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 category 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.[31] 'Other wastes', also subject to certain requirements under the 1989 Basel Convention, are those which belong to any category contained in Annex II.[32] The 1989 Basel Convention does not apply to radioactive wastes which 'are

[27] *Ibid.* [28] *Ibid.*, 335–6. [29] *Ibid.*, 348 and Table 8.7. [30] *Ibid.*, 338–9.

[31] 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-six 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, www.basel.int/misclinks/waigani.html, Art. 2.

[32] Art. 1(2); Annex II lists household wastes and residues from the incineration of household wastes.

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'.[33] 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'.[34] The Convention applies to radioactive wastes which are subject to any international control systems applying to radioactive materials, but does not apply to ship wastes.[35]

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.[36] 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'.[37] Under EC law, hazardous wastes are redefined by Directive 91/689/EEC as non-domestic wastes which: (a) feature on a list to be 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;[38] and (b) any other waste which is considered by a

[33] Art. 1(3) and (4).

[34] Art. 2(1)(a) to (c). 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.unepmap.gr/pdf/hazardous.pdf, 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).

[35] Art. 2(2) and (3). [36] Art. 39(3).

[37] Art. 1(2). But cf. the 1986 Canada–US Hazardous Waste Agreement, Ottawa, 28 October 1986, in force 8 November 1986, TIAS 11099: Art. 1(b).

[38] 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. On the Directive, see chapter 15, pp. 789–91 below.

member state to display any of the properties listed in Annex III and notified to the EC Commission.[39] 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.[40]

Radioactive waste

C. A. Mawson, *Management of Radioactive Wastes* (1985); E. Moisé, *International Regulations on Radioactive and Toxic Wastes: Similarities and Differences* (1991).

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.[41] Radioactive wastes have been defined by the IAEA Code and by EC law.[42]

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.[43] These treaties, however, are exceptional, and are characterised by the few industrial countries, in regional terms, which are bound by their substantive provisions. The EC has, however, recently adopted legislation

[39] *Ibid.*

[40] These properties include whether the wastes are explosive; oxidising; highly flammable; flammable; irritant; harmful; toxic; carcinogenic; corrosive; infectious; teratogenic; mutagenic; and ecotoxic; as well as substances and preparations which release toxic or very toxic gases, capable of yielding a leachate.

[41] UNEP, *Environmental Data Report* (1991, 3rd edn), 338 and Table 8.11.

[42] See p. 697 and n. 220. p. 704 below.

[43] See generally chapter 8 above, nn. 92–6 below.

establishing quantitative restrictions on the generation of certain categories of waste.[44]

Recent acts of international organisations and international agreements have set forth general commitments to limit and prevent waste generation. They usually 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 technology.[45] The EC Treaty requires EC environmental action to be based upon objectives and principles which ensure a 'prudent and rational utilisation of natural resources' based on 'preventive action'.[46] 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.[47] 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'.[48] 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.[49] 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 clear technologies'.[50]

[44] See Council Directive 94/62/EC on packaging and packaging waste, OJ L365, 31 December 1994, 10; and Council Directive 2000/76/EC on the incineration of waste, OJ L322, 28 December 2000, 91. See further, chapter 15, pp. 791–2 below.

[45] 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.

[46] Art. 174(1) and (2) (formerly Art. 130r(1) and (2)); see also Council Directive 75/442/EEC, as amended by Council Directive 91/156/EEC and 96/350/EC, chapter 15, pp. 786–9 below; Council Directive 91/689/EEC, as amended by Council Directive 94/31/EC, chapter 15, p. 792 below; Council Directive 94/62/EC, chapter 15, pp. 790–1 below; Council Directive 99/31/EC, chapter 15, p. 792 below; and Council Directive 2000/76/EC, chapter 15, p. 765 below.

[47] Art. 4(2)(a) and (c).

[48] 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).

[49] Art. 10(2)(c).

[50] 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.

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 hazardous waste generation is 'reduced to a minimum taking into account social, technological and economic aspects'.[51] 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.[52] 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'.[53] '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.[54]

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).[55] 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. When it comes into force, the 2001 POPs Convention will require 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.[56] States parties will also be required to restrict the use of other harmful chemicals, such as DDT, listed in Annex B.[57]

Apart from EC 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

[51] 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).

[52] Art. 4(3)(b) and (e).

[53] 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).

[54] *Ibid.*

[55] Convention on Persistent Organic Pollutants, Stockholm, 22 May 2001, not yet in force, 40 ILM 532(2001); chapter 12, p. 628 above.

[56] Art. 3(1)(a)(i). [57] Art. 3(1)(b).

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. 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'.[58] Other treaties promote safe disposal of asbestos;[59] 'appropriate' disposal of wastes during the demolition of buildings or structures;[60] and appropriate disposal of chemicals.[61] Even the use of certain wastes as packing materials is to be avoided.[62] With the exception of the EC rules, international regulation of landfill is non-existent.[63]

Disposal at sea[64]

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.[65] As described in chapter 9 above, the disposal of hazardous wastes at sea is subject to regulation by six 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,[66] and has been addressed by international organisations for many years.[67] It is prohibited

[58] UNGA Res. 43/75 (1988). [59] 1986 Asbestos Convention, Art. 19.
[60] 1988 Convention Concerning Safety and Health in Construction, Art. 24.
[61] 1990 ILO Chemicals Convention, Art. 14.
[62] 1959 Plant Protection Agreement, Art. VI.
[63] See Council Directive 99/31/EC on the landfill of waste, p. 792 below.
[64] See generally chapter 9, pp. 415–27 above.
[65] See e.g. UNEP Council Decision, Precautionary Approach to Marine Pollution, including Waste Dumping at Sea, 25 May 1989, UNEP/GC/dec./15/27.
[66] 1958 Convention on the High Seas, Art. 25(1).
[67] 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.

by treaty in the South Pacific[68] and in Africa,[69] and states have prohibited the dumping of radioactive wastes at sea in the North-East Atlantic.[70] The 1972 London Convention now prohibits the dumping of all radioactive wastes or matter, following a 1985 non-binding moratorium.[71]

Additionally, the disposal of industrial waste at sea has been prohibited in the North Sea since 31 December 1989,[72] and the other waters of the former 1974 Oslo Convention area after 31 December 1995,[73] and in Africa.[74] Since December 1998, the disposal of sewage sludge has been prohibited in the North Sea[75] and in the former 1974 Oslo Convention area.[76] The disposal of dredged materials at sea is also now a matter of international concern and is likely to be the subject of international regulatory action.[77] 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 sources[78]

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

[68] 1985 Rarotonga Treaty, Art. 7; 1986 Noumea Convention, Art. 10(1).

[69] 1991 Bamako Convention, Art. 4(2), which also prohibits disposal in the seabed and subseabed. See also OAU Council of Ministers Resolution, Dumping of Nuclear and Industrial Waste in Africa, 23 May 1988, 28 ILM 567 (1989).

[70] Chapter 9, pp. 425–6 above.

[71] Chapter 9, pp. 420–1 above.

[72] 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).

[73] 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.

[74] OAU Council of Ministers Resolution, Dumping of Nuclear and Industrial Waste in Africa, 23 May 1988, 28 ILM 567 (1989).

[75] 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).

[76] OSPAR Convention, Art. 3(2)(c).

[77] 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).

[78] Chapter 10, pp. 462–5 [illegible].

sources of pollution.[79] The EC has adopted specific legislation on the treatment and disposal of urban waste water and municipal waste.[80]

Incineration

The incineration of wastes is limited by treaty and acts of international institutions in several regions and, in the case of the EC, subject to conformity with stringent technical standards. Incineration of marine waste at sea has been banned in the North Sea since 31 December 1991,[81] and in the former 1974 Oslo Convention area by the same date.[82] The 1992 OSPAR Convention prohibits incineration at sea.[83] 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'.[84] 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.[85] 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 wastes.[86] The 1996 Protocol to the 1972 London Convention prohibits the incineration of wastes at sea, though this agreement is yet to come into force. The 1991 Bamako Convention prohibits the incineration of hazardous waste at sea.[87]

Land-based incineration of waste is currently dealt with only by EC legislation,[88] although it is considered to be a sufficiently hazardous activity to warrant mandatory environmental impact assessment under the relevant

[79] Chapter 9, pp. 427–38 above.

[80] Chapter 15, pp. 776–8 below; see also UNEP Environmental Guidelines for Domestic Wastewater Management, 1988 UNEP EMG No. 14.

[81] See Third North Sea Ministerial Declaration, para. 23 (1990).

[82] See chapter 9, pp. 423–5 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.

[83] Chapter 9, pp. 425–6 above.

[84] 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, 1978 London Amendments on Incineration of Wastes and Other Matter at Sea, 12 October 1978, not yet in force.

[85] Para. 2. [86] Annex I, para. 10. [87] Art. 4(2).

[88] Directive 2000/76/EC on the incineration of waste, chapter 15, pp. 765–6 below.

regional arrangements.[89] 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'.[90] The EC's recent legislation on the limitation of air pollution from new and existing waste incineration plants provides a model which could be followed by other regions.[91]

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,[92] nitrogen oxide,[93] volatile organic compounds,[94] and carbon dioxide and other greenhouse gases,[95] are regulated. Limits have also been placed on the generation of waste gases by combustion from motor vehicles and aircraft.[96]

Landfill and other land disposal and storage

There is no international regulation of standards for domestic landfill, other than the recent EC Council Directive 99/31/EC establishing minimum standards for the design and management of landfill waste.[97] This Directive, which was to be implemented by 16 July 2001, details stringent rules on the landfill of solid waste with the dual aims of improving the sound environmental management of landfills and reducing the amount of landfill waste.[98] The Directive incorporates the 'polluter-pays principle' requiring member states to ensure that all of the set-up and operating costs of landfills are covered by the price charged by operators.[99] Member states are also required to establish a national strategy providing for the reduction of the landfill of biodegradable waste.[100] The strategy must ensure that the amount of biodegradable municipal waste going to landfill is reduced progressively across fifteen years compared to a 1995 baseline. A reduction to 75 per cent of the 1995 baseline must be achieved within five years of implementation; 50 per cent within eight years; and 35 per cent within fifteen years.[101] Under the 1985 EC Environmental Impact Assessment Directive, all landfill of toxic and dangerous wastes must be subjected to an environmental impact assessment,[102] and 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

[89] 1985 EC EIA Directive, Annex I, para. 9; 1991 Espoo Convention, Appendix 1, para. 10.
[90] Annex III, Art. 3.
[91] Chapter 15, pp. 764–6 below.
[92] Chapter 8, p. 327 above.
[93] Chapter 8, pp. 328–9 above.
[94] Chapter 8, pp. 329–32 above.
[95] Chapter 8, pp. 357–81 above.
[96] Chapter 8, pp. 324 and 341–2 above.
[97] Council Directive 99/31/EC on the landfill of waste, OJ L182, 16 July 1999, 1.
[98] Art. 1.
[99] Art. 10.
[100] Art. 5(1).
[101] Art. 5(2).
[102] Chapter 16, pp. 807–13 below; Art. 4(1) and Annex I, para. 9.

effective consultation.[103] The Antarctic area is subject to more detailed rules. Here, the disposal of radioactive waste has been prohibited since 1959.[104] The 1991 Environmental Protection Protocol prohibits disposal of wastes on to 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.[105] Wastes to be removed from the Antarctic Treaty area should also be stored to prevent their dispersal into the atmosphere.[106] 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.[107] When it comes into force, the 2001 POPs Convention will require 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.[108] 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.[109] 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 reuse or alternative uses of POPs.[110]

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,[111] and the OECD has adopted recommendations on re-use and recycling of beverage containers and on recovery of waste

[103] Chapter 16, pp. 814–17 below; Arts. 2(2), 3(1) and 5, and Appendix 1, para. 10.
[104] Antarctic Treaty 1959, Art. V(1). [105] Annex III, Art. 4.
[106] Annex III, Art. 6. [107] Art. 11. [108] Art. 6(d)(ii).
[109] *Ibid.* The conference of the parties of 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).
[110] Art. 6(d)(iii).
[111] 1974 Agreement on an International Energy Programme, Art. 42(c).

paper.[112] 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,[113] but does not establish targets for recovery or recycling.[114] The 1989 Basel Convention may provide a basis for future international legislation by identifying disposal operations which may lead to recovery, recycling and re-use.[115] 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.[116]

EC 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.[117] EC law also permits national recycling legislation to limit, in certain circumstances, the free movement of goods between member states,[118] and the grant of government subsidies to encourage recycling and re-use.[119] In 1994, the European Parliament and Council adopted a Directive on packaging and packaging waste which established national targets for waste recovery of certain substances (including cardboard, plastic and glass), thereby creating a strong incentive for manufacturers to re-use packaging.[120]

[112] 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 1002.

[113] Art. 9(1)(a), as amended by the 1990 amendments.

[114] 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 8, pp. 345–57 above.

[115] 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.

[116] Art. 10(2). See also the 1991 Bamako Convention, Art. 10.

[117] Council Directive 75/442/EEC, as amended by Council Directive 91/156/EEC, Art. 3(1), Council Directive 91/692/EEC and Commission Decision 96/350/EC; Council Directive 91/689/EEC, Art. 4, as amended by Council Directive 94/31/EC and Commission Decisions 2000/532/EC and 2001/118/EC.

[118] *Danish Bottles* Case, chapter 19, pp. 987–90 below. [119] Chapter 19, pp. 1011–15 below.

[120] European Parliament and Council Directive 94/62/EC of 20 December 1994 on packaging and packaging waste, OJ L365, 31 December 1994, 10. The Directive required states to meet quantified targets for recovery and recycling of packaging wastes by mid-2001 with a view to increasing these targets significantly in a second phase to be achieved by mid-2006. See chapter 15, p. 792 below.

International movement (including trade) in waste

M. Forster, 'Hazardous Waste: Towards International Agreement', 12 *Environmental Policy and Law* 64 (1984); 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 RGDIP 899 (1989); V. Sebek (ed.), 'Marine Transport, Control and Disposal of Hazardous Waste', 14 *Marine Policy* (1990) (special issue); W. L. Long, 'Economic Aspects of Transport and Disposal of Hazardous Wastes', 14 *Marine Policy* 199 (1990); L. Gilmore, 'The Export of Nonhazardous Waste', 19 *Environmental Law* 879 (1989); A. Kiss, 'The International Control of Transboundary Movement of Hazardous Waste', 26 *Texas International Law Journal* 521 (1991); H. Smets, 'Quelques problèmes relatifs aux mouvements transfrontières de déchets dangereux', 21 *Environmental Policy and Law* 141 (1991); N. Van Aelstyn, 'North–South Controversy Mounts Around the International Movement of Hazardous Waste', 1 RECIEL 340 (1992); B. Kwiatowska and A. Soons (eds.), *Transboundary Movements and Disposals of Hazardous Wastes in International Law: Basic Documents* (1993); 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 transfrontieres de dechets dangereux selon la Convention de Bale* (1997); J. L. Gudofsky, 'Transboundary Shipments of Hazardous Waste for Recycling and Recovery Operations', 34 *Stanford Journal of International Law* 219 (1998); T. Scovazzi, 'The Transboundary Movement of Hazardous Waste in the Mediterranean Regional Context', 19 *UCLA Journal of Environmental Law and Policy* 231 (2001).

International law on waste has focused primarily on the permissibility of international movement and trade in waste. This follows several notorious incidents which occurred in the mid-1980s involving the unlawful dumping in developing countries of hazardous wastes produced in industrialised countries.[121] Among the tensions between different members of the international community one stood out in particular: the desire of many developing countries, particularly in Africa, to ban international trade in wastes, and the opposition to such an approach by many industrialised countries wanting to keep open their waste disposal options. 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

[121] *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).

been addressed by binding and non-binding acts of various international organisations, including the EC, the OECD[122] and the UN.[123] International trade in waste has also been addressed by UN bodies as a human rights issue.[124] Transboundary movements of hazardous and other wastes are now regulated by three regional or global treaties, each of which establishes different rules: the 1989 Basel Convention, the 1990 Lomé Convention and the 1991 Bamako Convention.[125] Other instruments include the 2001 POPs Convention, bilateral treaties such as the 1986 Canada–US Hazardous Waste Agreement and the 1986 Canada–Mexico Hazardous Waste Agreement, as well as OECD Acts and the increasingly complex EC rules established by legislation and by the jurisprudence of the ECJ.

The 1989 Basel Convention

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* (1995); A. Sanders and P. Bowal, 'International Trade in Hazardous Wastes and the Basel Convention', 11 *Journal of Environmental Law and Practice* 143 (2001).

[122] 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 Moments of Hazardous Wastes, OECD €(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 Tranfrontier Movements of Waste, OECD C(94)154 Final, 28 July 1994.

[123] UNGA Res. 42/183 (1987); UNGA Res. 44/226 (1989).

[124] 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 7, pp. 294–7 above.

[125] Several other regional agreements have been adopted but are not yet in force: 1995 Waigani Convention to Ban the Importation into Forum Island Countries of Hazardous Radioactive Wastes and to Control Transboundary Movement and Management of Hazardous Wastes Within the South Pacific Region, Waigani, 16 September 1995, in force 21 October 2001, www.basel.int/misclinks/waigani.html; 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.unepmap.gr/pdf/hazardous.pdf; 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, not yet in force.

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 of international trade in hazardous and other wastes.[126] It was negotiated under the auspices of UNEP on the basis of texts produced by a working group which 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 where they were generated (this has come to be known as the 'proximity principle'). The Convention has attracted broad support, although 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'.[127]

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.[128] Parties may prohibit the import of such wastes and must consent in writing to any specific imports which they have not prohibited.[129] 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.[130] 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.[131] Traffic which 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.'[132]

[126] Basel, 22 March 1989, in force 24 May 1989, 28 ILM 657 (1989); 155 states and the EC are party. On the definition of hazardous and other wastes under the Basel Convention, see pp. 677–8 above.

[127] K. Kummer, 'The International Regulation of Transboundary Traffic in Hazardous Wastes: The 1989 Basel Convention', 41 ICLQ 530 at 560 (1992).

[128] 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).

[129] Art. 4(1)(a) and (c). [130] Art. 4(2)(f) and (g).

[131] Art. 4(5) and (6). [132] Arts. 4(3) and 9.

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.[133] 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.[134] 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 transport, and take account of relevant internationally recognised practices, and be accompanied by a movement document until disposal.[135]

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).[136] 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.[137] 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.[138] 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.[139] Importing states and transit states which are parties may require the wastes to be covered by insurance or other guarantee.[140] 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.[141]

[133] Art. 4(9). [134] Art. 4(10) and (11). [135] Art. 4(7).

[136] 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.

[137] Art. 6(2) and (3). [138] Art. 6(4). [139] Art. 6(6) to (8).

[140] Art. 6(11). [141] Art. 8.

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 which are no less environmentally sound than the Convention.[142] The Convention will 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.[143] The parties are subject to detailed reporting requirements, and the Convention provides for consultations on liability to be held as soon as possible.[144]

The Convention is kept under review by a conference of the parties and a secretariat.[145] At the fifth conference of the parties, held in December 1999, the parties adopted a Protocol on Liability and Compensation.[146] 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 movements.[147] 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.[148] 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 the dispute, it was proposed at the third conference of the parties, in September 1995, that the Basel Ban be formally incorporated in the Basel Convention as an amendment.[149] 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,

[142] Art. 11(1). Two such regional agreements or arrangements may fall within this provision: the 1991 Bamako Convection, and the 1993 EC 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).

[143] Art. 11(2). [144] Arts. 12 and 13; on liability, see chapter 18, pp. 924–6 below.

[145] Arts. 15 and 16. Five meetings of the conference of the parties have been held to date with a sixth meeting scheduled for 9–13 December 2002 in Geneva.

[146] Chapter 18, p. 924 below. [147] Art. 16.

[148] Decision II/12, Report of COP-2, UNEP/CHW.2/30, 25 March 1994.

[149] 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).

OECD and Liechtenstein) to non-Annex VII parties.[150] The Basel Ban has not yet entered into force as only twenty-nine of the required sixty-two ratifications have so far been received.[151]

1989 Lomé Convention

The 1989 Lomé Convention is now of historical interest only, since it has been replaced by the 2000 Cotonou Agreement between ACP countries and the EC. However, it is still noteworthy as reflecting a different approach from the regulated waste trade rules established by the 1989 Basel Convention: the EC was subject to a blanket prohibition on all direct or indirect exports of hazardous waste and radioactive waste from the EC to the ACP states, and ACP states must prohibit the direct or indirect import of such waste from the EC or from any other country.[152] These obligations were stated to be 'without prejudice to specific international undertakings to which the contracting parties have subscribed or may subscribe in the future in these two areas within the competent international fora', and they did not prevent processed waste being returned from the EC to the ACP state of origin.[153]

1991 Bamako Convention

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', AFDI 871(1992).

The Convention on the Ban of Imports into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes within Africa

[150] Art. 4A and Annex VII, Basel Ban Amendment. The amendment will also insert a new preambular para. 7*bis* 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 . . .'.

[151] The Basel Ban Amendment has to be ratified by three-quarters of the parties present at the time of the adoption of the amendment in order to enter into force: Art. 17.

[152] Lomé, 15 December 1989, in force 1 September 1991; 29 ILM 783 (1990), Art. 39(1). 'Hazardous waste' covers 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).

[153] 1989 Lomé Convention, Art. 39(1).

(1991 Bamako Convention) was adopted by African governments following negotiations under the auspices of the Organization of African Unity.[154] 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.[155] 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, 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.[156] 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.[157] Thirdly, the definition of hazardous waste adopted by the Bamako Convention is broader than that in the Basel Convention.[158] 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.[159] Moreover, parties may not decide not to require prior written consent; parties must not allow use of general notifications;[160] 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,[161] and illegal traffic may be returned only to the exporter.[162] The Bamako Convention is administered by its own conference of the parties and secretariat, the functions of which are carried out on an interim basis by the OAU and the UN Economic Commission for Africa.[163] 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.[164] Moreover, it provides for the apparently compulsory jurisdiction of an *ad hoc* dispute settlement organ, or the ICJ.[165]

[154] Bamako, 29 January 1991, in force April 1998, 30 ILM 775 (1991); eighteen states are party.

[155] 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).

[156] Art. 4(1); since only member states of the OAU may become parties to the Convention (Arts. 22 and 23), it effectively prohibits imports from outside Africa.

[157] Art. 4(3)(i) and (m)(i). [158] See above. [159] Art. 5(4).

[160] Art. 6(6); cf. Art. 6(6) of 1989 Basel Convention.

[161] Art. 7; cf. Art. 7 of the 1989 Basel Convention.

[162] Art. 9(3) and (4); cf. Art. 9(3) and (4) of the 1989 Basel Convention.

[163] Arts. 15 and 16. [164] Art. 19 [165] Art. 20.

North America

The 1986 Mexico–US 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.[166] The exporting country must re-admit any shipment that may be returned for any reason by the country of import.[167] 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.[168]

1990 IAEA Code of Conduct on Radioactive Waste and 1997 Joint Convention on Spent Fuel and Radioactive Waste

The IAEA Code of Practice on the International Transboundary Movement of Radioactive Waste establishes a set of non-binding principles designed to serve as guidelines.[169] 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'.[170] 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

[166] 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).

[167] Art. IV. [168] Ottawa, 28 October 1986, in force 8 November 1986, TIAS 11099.

[169] 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 RECIEL 113 (1999).

[170] 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.*

transboundary movement.[171] Spent nuclear fuel is not, for the purposes of the Code, considered to be radioactive waste.[172] Instead, this is dealt with by the recently adopted Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (1997 Joint Convention).[173]

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: states 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.[174] 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.[175] 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.[176] 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.[177]

In contrast to the Code, the 1997 Joint Convention contains more stringent regulation of the transboundary movement of spent nuclear fuel or radioactive waste. 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.[178] 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.[179] Where a transboundary movement cannot be completed in conformity with the requirements of Article 27, and

[171] *Ibid.* [172] *Ibid.*

[173] See the 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.

[174] Section III, paras. 1 and 2. [175] Section III, paras. 3 and 4.

[176] Section III, paras. 5 to 7. [177] Section III, paras. 8 and 9.

[178] Art. 27(1)(i). [179] Art. 27(1)(iii) and (iv).

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.[180]

EC Law

In their efforts to update the 1984 EC legislation on the supervision and control of shipments of hazardous waste, the EC member states had a difficult balancing act to perform. The EC had to establish rules governing the movement of waste within individual member states, between member states, and between member states and third countries. For the latter, the rules had to be sufficiently flexible to allow implementation of the 1989 Lomé Convention rules and the 1989 Basel Convention, to which the EC became a party in 1994. In February 1992, the EC adopted Directive 92/3/EURATOM on the supervision and control of shipments of radioactive waste between member states and into and out of the EC,[181] and in February 1993 the EC Council adopted Regulation (EC) No. 259/93 on the supervision and control of shipments of waste within, into and out of the EC.[182]

Regulation (EC) No. 259/93: waste shipment

Apart from the international agreements to which the EC was a party or intended to become a party, the Regulation also sought to integrate the provisions of an OECD Council Decision on the control of transfrontier movements of wastes designed for recovery operations,[183] and to take account of the ruling of the ECJ in the *Wallonian Waste* case, which had defined waste as a 'good' within the meaning of the EC rules on free movement of goods and permitted restrictions on its free movement partly in application of the 'proximity principle' and the environmental rules of the EC Treaty.[184]

Regulation (EC) No. 259/93 applies to shipments of waste within, into and out of the EC.[185] Five categories of waste are excluded from the application of

[180] Art. 27(1)(v). [181] Directive 92/3/EURATOM, OJ L35, 12 February 1992, 24.

[182] Council Regulation (EC) No. 93/259, OJ L30, 6 February 1993, 1, as amended by Commission Regulation (EC) No. 120/97, OJ L22, 24 January 1997, 14; Commission Decision 816/99/EC, OJ L316, 10 December 1999, 45; and Commission Regulation (EC) No. 2557/2001, OJ L349, 31 December 2001, 1. The Regulation replaces Directive 84/631/EEC, OJ L326, 13 December 1984, 31.

[183] The Regulation, as amended, integrates the provisions of the latest OECD Council Decision on the control of transfrontier movements of wastes designed for recovery operations, Decision C(2001)107 of the OECD Council on the Revision of Decision C(92)39 Final.

[184] Chapter 19, pp. 990–2 below. The ECJ has, however, ruled that the principles of self-sufficiency and proximity are not applicable to shipments of waste for recovery: Case C-203/96, *Chemische Afvalstoffen Dusseldorp BV and Others* v. *Minister van Volkshuisvesting* [1998] ECR I-4075.

[185] Art. 1. The definition of waste is that in Directive 75/442; see chapter 15, n, 398, p. 788 below.

the Regulation,[186] as are certain wastes destined for recovery only and listed in Annex II to the Regulation.[187] The Regulation establishes rules of control to govern four different situations: (1) shipments of wastes between member states; (2) shipment of wastes within member states; (3) export of wastes; and (4) imports of wastes. Additional rules are established for transit and in respect of provisions common to each of the four types of shipment.

Shipments of waste between member states The Regulation distinguishes between waste for disposal and waste for recovery.[188] As a general rule, waste may be shipped between member states for disposal subject to the rules governing prior notification and authorisation by competent national authorities, including any conditions applied.[189] There are, however, three general grounds on which a shipment may be stopped. First, to implement the principles of proximity, priority for recovery, and self-sufficiency at Community and national levels in accordance with Directive 75/442/EEC, member states may object to the shipment of waste and may prohibit generally or partially, or object systematically to, shipments of waste.[190] Secondly, reasoned objections may be raised to planned shipments by competent authorities of dispatch and destination if either the shipments are not in accordance with the principle of self-sufficiency, or where the installation has to dispose of priority waste from a nearer source or in order to ensure that shipments are in accordance with waste management plans.[191] Thirdly, reasoned objections may be raised to the planned shipment by competent authorities of dispatch, destination and transit if either the shipment is not in accordance with national laws relating to environmental protection, public order, public safety or health protection, or the notifier or consignee was guilty of illegal trafficking or the shipment conflicts with obligations resulting from international conventions.[192]

The shipment of waste for recovery listed in Annex III ('amber waste') is subject to a system of prior notification and authorisation, including possible conditions.[193] The competent authorities of dispatch and destination may raise reasoned objections to the planned shipment under Directive 75/442; either if it is not in accordance with national laws relating to environmental

[186] Art. 1(2)(a) (certain ship and offshore platform waste; civil aviation waste; radioactive waste as defined in Art. 2 of Directive 92/3/EURATOM; wastes mentioned in Art. 2(1)(b) of Directive 75/442; and waste under the 1991 Antarctic Environment Protocol).

[187] Art. 1(3).

[188] 'Disposal' and 'recovery' are defined by Art. 1(e) and (f) of Directive 75/442.

[189] Arts. 3 to 5.

[190] Art. 4(3)(a)(i). This provision will not apply, however, in the case of hazardous waste produced in a member state of dispatch 'in such a small quantity overall per year that the provision of new specialised disposal installations within that state would be uneconomic': Art. 4(3)(a)(ii).

[191] Art. 4(3)(b). [192] Art. 4(3)(c). [193] Arts. 6 to 8.

protection, public order, public safety or health protection, or if the notifier or consignee was guilty of illegal trafficking, or if the shipment conflicts with obligations resulting from international conventions, or if the ratio of the recoverable and non-recoverable waste, the estimated value of the materials to be finally recovered, or the cost of the recovery and the cost of the disposal of the non-recoverable fraction, do not justify the recovery under economic and environmental considerations.[194] The Regulation allows competent authorities to object to shipments of certain types of waste to a specific recovery facility.[195] Shipments of waste for recovery listed in Annex IV ('red list') are generally subject to the same procedures as for the amber list.[196] Finally, with regard to shipments between member states, the Regulation also provides for certain information requirements and for transit via non-member states.[197]

Shipment of wastes within member states The provisions on shipment between member states (Title II of the Regulation), on common provisions (Title VII), and on other provisions (Title VIII) do not apply to shipments within a member state, although member states may decide, and are free, to apply those provisions.[198] At a minimum, member states must establish an 'appropriate system' for the supervision and control of shipments of waste within their jurisdiction.[199]

Export of wastes All exports to ACP countries are prohibited, except that a member state may return to an ACP state waste which that state has chosen to have processed in the EC.[200] For all states other than ACP states, the Regulation distinguishes between wastes for disposal and waste for recovery. With regard to waste for disposal, the Regulation bans all exports of waste except to EFTA countries which are also parties to the 1989 Basel Convention.[201] Exports to EFTA countries are allowed, subject to the notification and authorisation provisions,[202] or may be banned where the EFTA country prohibits imports of wastes or has not given its written consent to the specific import, or the authorities of the dispatch state in the EC believe that the waste will not be managed in accordance with environmentally sound methods.[203] The Regulation sets forth the conditions for exports of waste for recovery in respect of wastes under Annex II ('green list'), Annex III ('amber list') and Annex IV ('red list').[204]

Article 16(1) of the Regulation deals with exports of waste for recovery. This provision was substantially amended in 1997 to bring it into line with

[194] Art. 7(4)(a). The competent authorities of transit may also raise certain reasoned objections: Art. 7(4)(b).
[195] Art. 9. [196] Art. 10. [197] Arts. 11 and 12.
[198] Art. 13(1) and (4). [199] Art. 13(2). [200] Art. 18.
[201] Art. 14(1). [202] Art. 15. [203] Art. 14(2). [204] Art. 17.

the export bans agreed under the Basel Convention.[205] In its amended form, Article 16(1) prohibits all exports of waste for recovery listed in a new Annex V except those to countries to which the OECD Decision applies and to other countries which are parties to the Basel Convention and/or parties to agreements under Article 11(2) of the Basel Convention, or with which individual EC member states have concluded bilateral agreements and arrangements prior to the Regulation and which are compatible with EC legislation and in accordance with Article 11(2) of the Basel Convention.[206] Such exports, however, were banned completely from 1 January 1998.[207] The EC Commission must keep Annex V under review and amend it as required to take into full consideration the lists of wastes adopted under Directive 91/689/EEC and any lists of wastes characterised as hazardous for the purposes of the Basel Convention. Annex V was reviewed and substantially amended in 1999 and again in 2001.[208] In its current form, Annex V consists of three parts, with the latter two parts applying only where Part 1 is not applicable. Part 1 is itself divided into two subsections: List A, which enumerates wastes classified as hazardous for the purposes of the Basel Convention and covered by the Article 16(1) export ban (this list corresponds to that under Annex VIII to the Basel Convention), and List B, which sets out wastes not covered by the export ban (this list corresponds to Annex IX to the Basel Convention). Wastes not listed in Part 1 but which are included in Parts 2 or 3 to Annex V are also covered by the export ban. Part 2 lists wastes classified as hazardous under Directive 91/689/EEC whereas Part 3 corresponds to the list of amber wastes under the OECD Decision.

Imports of wastes The Regulation distinguishes between waste for disposal and waste for recovery. With regard to waste for disposal, the Regulation bans all imports of waste except from EFTA countries which are also parties to the 1989 Basel Convention and from other countries which are parties to the Basel Convention or with which certain bilateral agreements or arrangements are concluded with the EC or the EC and its member states.[209] For those countries, the Regulation establishes a system of prior notification and authorisation.[210]

With regard to waste for recovery, the Regulation prohibits all such imports except those from countries to which the OECD Decision applies and other countries which are parties to the Basel Convention and/or parties to agreements under Article 11(2) of the 1989 Basel Convention or with which individual EC member states have concluded bilateral agreements and arrangements

[205] See Commission Regulation (EC) No. 120/97, OJ L22, 24 January 1997, 14.
[206] Art. 16(1) and (2). [207] Art. 16(3).
[208] See Commission Decision 816/99/EC, OJ L316, 10 December 1999, 45; and Commission Regulation (EC) No. 2557/2001, OJ L349, 31 December 2001, 1.
[209] Art. 19(1). [210] Art. 20.

prior to the Regulation and which are compatible with EC legislation and in accordance with Article 11(2) of the Basel Convention, or with which individual member states have concluded authorised bilateral agreements or arrangements.[211] The Regulation applies different control procedures for the import of wastes for recovery from countries to which the OECD Decision applies and those to which the Decision does not apply.[212]

Other provisions The Regulation establishes rules on the transit of waste from outside and through the EC for disposal or recovery outside the EC.[213] It also contains other provisions which are common to all shipments of waste relating to: non-completion of shipments in accordance with consignment notes or contracts and their return; the conditions in which traffic will be deemed to be illegal and the consequences of such illegality; the requirement that all shipments of waste must be subject to a financial guarantee; the circumstances and conditions for a general notification procedure; the obligation not to mix wastes which are subject to different notifications; measures to ensure compliance with the Regulation, including inspections; and the appropriate form for consignment notes.[214]

Finally, the Regulation sets out a number of subsidiary provisions. These include: the express requirement that certain international transport conventions be complied with where they apply to the waste;[215] a provision on charging for administrative costs;[216] the obligation of the producer of waste to take all necessary steps to dispose of or recover the waste so as to protect the quality of the environment in accordance with Directives 75/442 and 91/689;[217] and the obligation to keep all documents in the EC for three years.[218] Given the complexity of the Regulation, it also requires each member state to designate a correspondent responsible for information or advising anyone who makes enquiries.[219]

Directive 92/3/EURATOM: radioactive waste shipment

The regulation of movements of radioactive waste in the EC is governed by EURATOM Directive 92/3, which applies to shipments of radioactive waste between member states and into and out of the EC whenever the quantities

[211] Art. 21(1) and (2). [212] Art. 22. [213] Arts. 23 and 24. [214] Arts. 25 to 31.

[215] Art. 32 and Annex I; the conventions are the 1957 ADR (road); 1985 COTIF and 1985 RID (rail); 1966 SOLAS (sea); IMDG Code (sea; incorporated in SOLAS since 1985); 1944 Chicago Convention (air); MARPOL 73/78 (sea); 1970 ADNR (Rhine river).

[216] Art. 33.

[217] Art. 34; this obligation is stated to be without prejudice to, *inter alia*, EC and national provisions concerning civil liability.

[218] Art. 35.

[219] Art. 37. At the time of writing, no correspondent had yet been designated in the United Kingdom.

and concentrations exceed the levels set by Directive 80/836.[220] The Directive distinguishes between three types of shipment: those between member states; those involving imports into and out of the EC; and reshipment operations. In respect of each, the Directive requires transport operations necessary for shipment to comply with EC and national provisions and international agreements on the transport of radioactive material.[221] The drafting of the Directive is less clear than the 1993 Regulation and is likely to require careful scrutiny in respect of the application of its provisions to the shipment of, for example, radioactive waste for processing and irradiated nuclear fuel for reprocessing.

With regard to shipments between member states the basic rule is that the shipment must be authorised by the country of origin and the country of destination, as well as any country of transit,[222] although the authorisation does not in any way affect the responsibility of the holder, the transporter, the owner, the consignee or anyone else involved in the shipment.[223] Applications may be made in respect of more than one shipment over a period of up to three years.[224] With regard to imports into the EC from third countries, the consignee must obtain authorisation from the authorities of the destination member state using standard documentation.[225] The Directive also establishes rules governing the situation where an EC member state is a transit state.[226]

With regard to exports out of the EC, the member states' authorities cannot authorise shipments to the Antarctic region or to a party to the 1989 Lomé Convention (unless, in respect of the latter, the waste is being returned after having been reprocessed), or to a third country which does not have the technical, legal or administrative resources to manage radioactive waste safely.[227] If radioactive waste is to be exported to a third country, the authorities of the EC member state are required to 'contact the authorities of the country of destination regarding such a shipment', and may authorise the shipment '[i]f all the conditions for shipment are fulfilled', whereupon they must inform the authorities of the country of destination about the shipment.[228] The holder of the radioactive waste must notify the competent authorities of the country of origin that the waste has reached its destination, and the notification must be accompanied by a declaration or certification of the consignee to that effect.[229]

[220] Art. 1(1); 'radioactive waste' is defined as 'any material which contains or is contaminated by radionuclides and for which no use is foreseen': Art. 2. On Directive 80/836/EEC and its successor, see chapter 15, pp. 793–4 below.

[221] Art. 3.

[222] Arts. 4, 6 and 7; see also Art. 20 for the standard documents. See also Council Regulation (EURATOM) No. 1493/93 of 8 June 1993 on shipments of radioactive substances between member states, establishing a system of prior declaration for all movements of radioactive substances, including wastes: OJ L148, 19 June 1993, 1.

[223] Art. 7. [224] Art. 5. [225] Art. 10(1). [226] Art. 10(2).

[227] Arts. 11 and 14. [228] Art. 12(1) and (2). [229] Art. 12(5) and (6).

With regard to reshipment operations, sealed sources containing non-fissile material do not fall within the scope of the Directive.[230] The Directive does not affect the right of a member state or a company in the member state to (a) return radioactive waste after processing to the country of origin, and (b) to return to the country of origin waste and/or other products of the reprocessing of irradiated nuclear fuel.[231] Where a shipment of radioactive waste cannot be completed, or if the conditions of shipment are not complied with, the member state is to ensure that the radioactive waste will be returned to the holder of the waste.[232]

In respect of imports and exports from third countries, the operational part of the Directive does not expressly require the prior informed consent of third countries before authorising the shipment. However, the Preamble makes it clear that this is required, stating that to protect human health and the environment account must be taken of risks occurring outside the EC and that accordingly in the case of radioactive waste entering and/or leaving the EC 'the third country of destination or origin and any third country or countries of transit must be consulted and informed and must have given their consent'.

UNCED

Agenda 21 signalled a more concerted effort to regulate waste internationally. It distinguishes between hazardous wastes, solid wastes (including sewage) and radioactive wastes.[233]

Hazardous wastes

Chapter 20 of Agenda 21 identifies 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'.[234] To that end,

[230] Art. 13. [231] Art. 14. [232] Art. 15.

[233] 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'.

[234] Agenda 21, Chapter 20 ('Environmentally Sound Management of Hazardous Wastes, Including Prevention of Illegal International Traffic in Hazardous Wastes'), para. 20.6.

the overall objectives include: 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.[235] Chapter 20 includes four programme areas: promoting the prevention and minimisation of waste; strengthening institutional capacities for management; strengthening international co-operation in management of transboundary movements; and preventing illegal traffic.

These programme areas are likely to form the basis for future international measures, including treaties and other international acts. Objectives include establishing intermediate goals to stabilise the quantity of hazardous waste generated, establishing long-term programmes and policies including targets for reducing the amount of hazardous waste produced per unit of manufacture, and qualitative improvement of waste streams.[236] Chapter 20 also calls for: an end to discrimination against environmentally sound recycled materials; the adoption of economic or regulatory incentives to support cleaner production, preventive or recycling technologies and waste minimisation; and recycling, re-use and disposal of waste at the source of generation or as close as possible to it (the 'proximity principle').[237] It supports ratification of the 1989 Basel Convention and the 1991 Bamako Convention, and calls for the expeditious elaboration of protocols on liability and compensation, and the elimination of exports to countries which prohibit them, including parties to the 1989 Basel Convention and the 1989 Lomé Convention.[238]

Other non-radioactive wastes

Chapter 21 of Agenda 21 identifies four interrelated programme areas for solid wastes and sewage. These are 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.[239] The specific waste minimisation objectives include 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.[240] A soft target is established which calls upon

[235] Para. 20.7(a). [236] Para. 20.12(c)–(e).
[237] Para. 20.13(a), (b) and (f). [238] Para. 20.7(b)–(d).
[239] Chapter 21 ('Environmentally Sound Management of Solid Wastes and Sewage-Related Issues'), paras. 21.5 and 21.6. 'Solid wastes' are 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 should be treated as hazardous wastes if they manifest 'hazardous characteristics': *ibid.*
[240] Para. 21.8(a).

industrialised countries to have put in place, by the year 2000, programmes to stabilise or reduce waste production destined for final disposal, including per capita waste production, at the levels which exist on that date.[241] Re-use and recycling objectives include national plans and the possible establishment by the year 2000 in industrialised countries of programmes with recycling and re-use targets.[242] Specific incentives which are encouraged include technical assistance, economic and regulatory incentives to support the principle that generators should pay for disposal, deposit/refunds systems, and developing markets.[243]

With regard to environmentally sound waste disposal and treatment, Agenda 21 calls for the establishment of waste treatment and disposal quality criteria and capacity in order to: undertake water-related pollution impact monitoring by the year 2000; ensure that at least 50 per cent of all sewage, waste waters and solid wastes are treated or disposed of in conformity with national or international guidelines by the year 1995 in industrialised countries and by the year 2005 for developing countries; and dispose of all sewage, waste waters and solid wastes in conformity with national or international guidelines by the year 2025.[244] The programme area to extend waste service coverage aims to provide all urban populations with adequate waste services by the year 2025, and to apply the polluter-pays principle by setting waste management charges at rates that reflect the cost of the service and ensure that those who generate the wastes pay the full cost of disposal.[245]

Radioactive wastes

Chapter 22 of Agenda 21, which has only one programme area, addresses the management of radioactive wastes, and takes as its basis for action the radiological and safety risk resulting from the 200,000 m^3 of low-level and intermediate-level radioactive waste and 10,000 m^3 of high-level radioactive waste which is produced annually.[246] The chapter on radioactive waste was among the most contentious of the forty chapters in Agenda 21, and, although it is the shortest, it includes provisions which are relatively precise. Four activities are 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,

[241] Para. 21.9(b). [242] Paras. 21.19(c) and 21.18(b).
[243] Para. 21.24. [244] Para. 21.29. [245] Paras. 21.39(b) and 21.40(b).
[246] Chapter 22 ('Safe and Environmentally Sound Management of Radioactive Wastes'), para. 22.1.

including environmental impact assessment where appropriate.[247] Specific international co-operation is 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;[248] not to promote or allow the storage or disposal of high-, intermediate- or low-level radioactive wastes near the marine environment;[249] and not to export radioactive wastes to countries that prohibit the import of such wastes, such as the parties to the 1991 Bamako Convention and the 1989 Lomé Convention; 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.[250]

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 extensive international law regulating or prohibiting the transboundary movement of hazardous and radioactive wastes and the disposal of such wastes into the marine environment. 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 EC and the Antarctic rules have recently 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 seems clear that limiting the avalanche of waste which is now threatening to engulf industrialised countries (and will presumably follow the same path over time for developing countries) requires the development of strategies and legal rules which 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

[247] Para. 22.4. [248] Para. 22.5(a) and (b).
[249] Para. 22.5(c); see chapter 9, pp. 429–37 above. [250] Para. 22.5(d) and (e).

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. Agenda 21 endorsed both approaches, and provides a useful framework against which future international waste management and prevention policies can be judged.

14

The polar regions: Antarctica and the Arctic

R. D. Hayton, 'The Antarctic Settlement of 1959', 54 AJIL 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); S. Lyster, *International Wildlife Law* (1985), 156–177; 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. Spectar, '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).

The Antarctic and the Arctic polar regions are subject to special regional rules of environmental protection. 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 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.

Introduction

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 fresh water. 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 climatic equilibrium, and deep ice cores provide an important source of information about greenhouse gas concentrations and atmospheric temperatures of hundreds and 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.

The Antarctic region is subject to a regime comprising five treaties: the 1959 Antarctic Treaty;[1] the 1972 Convention for the Conservation of Antarctic Seals (1972 Antarctic Seals Convention);[2] the 1980 Convention on the Conservation of Antarctic Marine Living Resources (1980 CCAMLR);[3] the 1988 Convention on the Regulation of Antarctic Mineral Resource Activities (1988 CRAMRA);[4] and the 1991 Protocol on Environmental Protection to the Antarctic Treaty

[1] Washington, 1 December 1959, in force 23 June 1961, 402 UNTS 71; forty-three states are party.

[2] London, 1 June 1972, in force 11 March 1978; 11 ILM 251 and 417 (1972); sixteen states are party.

[3] Canberra, 20 May 1980, in force 7 April 1982; 19 ILM 841 (1980); www.ccamlr.org; twenty-eight states and the EC are party.

[4] Wellington, 2 June 1988, not in force; Misc. 6 (1989), Cmnd 634; 27 ILM 868 (1988).

(1991 Antarctic Environment Protocol).[5] 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 which 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 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.[6] 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.

The Antarctic Treaty regime

1959 Antarctic Treaty

The 1959 Antarctic Treaty, which 'freezes' national claims to sovereignty in the continent,[7] was not primarily intended to establish rules of environmental

[5] Madrid, 4 October 1991, in force 14 January 1998; 30 ILM 1461 (1991); twenty-nine states are party.

[6] UNGA Res. 49/80 (1994). See also UNGA Res. 51/56 (1996) and UNGA Res. 54/45 (1999).

[7] 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.

protection.[8] 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'.[9]

The 1959 Antarctic Treaty did not establish a permanent secretariat (although in 2001 the twenty-fourth Antarctic Treaty Consultative Meeting agreed to establish such a body in Buenos Aires). Rather, regular consultative meetings of the parties are held to ensure consultation on matters of common interest, exchange information, and recommend measures to the parties. Twenty-seven parties have consultative status under the Treaty, which allows them to vote, while eighteen do not have such status.[10] 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.[11] The 1964 Agreed Measures designate the Antarctic region 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.[12] The 1964 Agreed Measures also create 'Specially Protected Areas' with even stricter authorisation requirements.[13]

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 which can be killed or captured, and grants complete protection to certain species.[14] For those seals which can be taken, the hunting season is limited to a specified

[8] The Antarctic Treaty applies to the area south of 60 South latitude, including all ice shelves: Art. VI.

[9] Art. IX(1)(f).

[10] Art. IX. Parties achieve consultative status by 'conducting substantial scientific research activity' in the region: Art. IX(2).

[11] 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).

[12] Preamble.

[13] 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 p. 725 below.

[14] Arts. 3 and 4 and Annex

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).[15] 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.[16]

1980 CCAMLR

D. Vignes, 'La Convention sur la Conservation de la Faune et de la Flore Marines de l'Antarctique', 26 AFDI 741 (1980).

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 which 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.[17]

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.[18] It also requires parties to observe, as

[15] Art. 5(1) and (2). [16] Arts. 6 and 7. [17] Art. II(3). [18] Art. IV(1).

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'.[19] 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.[20]

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.[21] The Commission has legal personality and wide-ranging powers, particularly to acquire and disseminate information and notify parties of activities which 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.[22] 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.[23] The Commission is assisted by a consultative Scientific Committee for the Conservation of Antarctic Marine Living Resources.[24]

Provisions on environmental impact assessment are 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'.[25] 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.[26]

[19] Art. V(1). [20] Art. VI. On the 1946 Convention, see chapter 10, pp. 592–5 above.

[21] Arts. VII to 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).

[22] Art. IX(1)(b), (c) and (d). Its catch documentation scheme for toothfish (Conservation Measure 170/XIX) came into force on 7 May 2000.

[23] 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; and Conservation Measure 118/XX, Scheme to Promote Compliance by Non-Contracting Party Vessels with CCAMLR Conservation Measures.

[24] Arts. XIV to XVI. [25] Art. XV(2)(d). [26] Art. XXIV.

1988 CRAMRA

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 AJIL 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 ICLQ 169 (1990); R. Wolfrum, *The Convention on the Regulation of Antarctic Mineral Resource Activities* (1991).

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 which go significantly beyond anything previously adopted in international law.[27] 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 makes it unlikely that it will ever be brought into force.[28] The adoption in October 1991 of the Protocol on Environmental Protection leaves 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 resource[29] activities were acceptable and, if so, under what conditions they could be carried out.[30] Antarctic mineral resource activities comprised

[27] 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).

[28] 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).

[29] 'Mineral resources' are defined as 'all non-living natural non-renewable resources, including fossil fuels, metallic and non-metallic minerals': Art. 1(6).

[30] 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

prospecting, exploration and development,[31] but did not include scientific research. CRAMRA recognised the dangers posed by mineral resource activities for the 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.[32] 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.[33] 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.[34] The operation of the assessment process is set out in some detail,[35] and applications for permits were to be accompanied by an assessment.[36]

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.[37] 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.[38] 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

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)).

[31] See pp. 718–20 below. [32] Art. 2(3)(a), (b), (d) and (g).

[33] 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).

[34] Arts. 2(1)(a) and 4(1) to (5). [35] Art. 26(2), (3) and (4).

[36] Arts. 37(7)(d), 39(2)(e), 44(2)(b) and 53(2)(b). [37] Art. 4(3) and (4). [38] Art. 13.

living resources, tourism, preservation of historic monuments, and navigation and aviation.[39]

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.[40] Membership in the Commission would be open to decision-making states[41] and its powers would include monitoring and the adoption of measures for the protection of the environment and dependent and associated ecosystems.[42]

CRAMRA would also have established Antarctic Mineral Resources Regulatory Committees for geographic areas identified by the Commission, and a Scientific, Technical and Environmental Advisory Committee.[43] 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 which assert rights or claims in the identified area.[44] 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.[45] CRAMRA would also require special meetings of the parties,[46] 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.[47]

Resource activities

CRAMRA would divide mineral resource activities into three categories: prospecting, exploration and development. Prospecting would be governed by Articles 37 and 38, and be conducted in compliance with CRAMRA but without a requirement of authorisation by any CRAMRA institution.[48] The sponsoring state would be subject to obligations to ensure the compliance by the operator with all provisions of the Convention, such as environmental

[39] Art. 15. [40] Arts. 18 to 22. [41] Art. 18(2).
[42] Art. 21(1)(a) and (c). [43] Arts. 23 to 27 and 29 to 32.
[44] Art. 29(2). [45] Art. 23(2). [46] Art. 28. [47] Art. 33.
[48] 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).

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.[49] Each operator would be responsible for the removal of all installations and equipment and site rehabilitation.[50] The Commission could be convened to consider whether prospecting was consistent with the CRAMRA, and would be able to take appropriate action.[51]

Exploration would be governed by Articles 39 to 52 (Chapter IV).[52] 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 which would have to be held within two months of the receipt of the notification.[53] 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 identification of an area by the Commission was compatible with CRAMRA, and adopt a report setting out its conclusions.[54] 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 parties, and taking full account also of the conclusions of the Advisory Committee.[55] The Commission may decide only by consensus that identification of an area was consistent with CRAMRA.[56]

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

[49] 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).

[50] Art. 37(6). [51] Art. 38(1).

[52] '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).

[53] Arts. 19(2)(a) and 39(3). [54] Art. 40.

[55] 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).

[56] Art. 41(2).

development.[57] Applications would be lodged with the Regulatory Committee by any party on behalf of an operator for which it was the sponsoring state.[58] 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 the 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.[59] Once the Management Scheme had been approved, exclusive exploration (and development) permits could be issued by the Regulatory Committee.[60] 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.[61] The Regulatory Committee would monitor compliance by operators and could under certain circumstances suspend, modify or cancel the Management Scheme and permits.[62]

Articles 53 and 54 (Chapter V) would 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.[63] 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.[64] Data and information would be made freely available, subject to rules on confidentiality of commercial information.[65] The Commission and an Advisory Committee would have powers to gather information, and both the Commission and the Advisory Committee would themselves be subject to the obligation

[57] Art. 43. [58] Art. 44. [59] Art. 47.
[60] Art. 48. [61] Art. 49. [62] Arts. 51 and 52.
[63] 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).
[64] Art. 12. [65] Art. 16.

to give advance public notice of matters on which advice from the Advisory Committee had been requested.[66] 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.[67] Finally, activities relating to prospecting, exploration and exploitation would be subject to additional information requirements.[68]

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.[69] Significant advances are envisaged for dispute settlement under CRAMRA, including detailed provisions on arbitration and the role of the ICJ.[70] 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.[71] 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.[72]

1991 Environment Protocol

J. P. Puissochet, 'Le Protocole au Traité sur l'Antarctique relatif à la Protection de l'Environnement', AFDI 755 (1991); C. C. Joyner, 'The 1991 Madrid Environmental Protocol: Rethinking the World Park Status for Antarctica', 1 RECIEL 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 ICLQ 599 (1994); L. Cordonnery, '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 JIWLP 291 (1999).

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. A fifth Annex was adopted shortly thereafter. The Protocol and Annexes, to which no reservations are permitted,[73] comprise

[66] Arts. 21(1) and 25(3). [67] Art. 34.
[68] Arts. 37, 47 and 53. [69] Chapter 18, pp. 896–901 below.
[70] Arts. 55 to 59, and Annex. [71] Art. 8(10). [72] Art. 47. [73] Art. 24.

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 ground 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'.[74] The 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.[75] 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.[76] They will only enter into force after ratification by three-fourths of the Antarctic Treaty consultative parties, including all states which were consultative parties at the time of the adoption of the Protocol.[77] 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.[78] 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.[79]

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

[74] 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.

[75] Art. 25(1). The relevant procedures in the Antarctic Treaty are set out in Art. XII(1)(a) and (b).

[76] Art. 25(2) and (3). [77] Art. 25(4). [78] Art. 25(5).

[79] Art. 25(6); withdrawal will take effect two years after the receipt of notice of withdrawal.

that such a goal is 'in the interest of mankind as a whole'.[80] 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.[81] The Protocol includes guiding principles to support environmental protection in the planning and conduct of the non-mineral resource activities which are permitted, principally scientific research and tourism, including research which is essential to the understanding of the global environment.[82] 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.[83]

Apart from Article 7, the Protocol requires co-operation, and includes provisions on environmental impact assessment,[84] together with four other Annexes which form an integral part of the Protocol.[85] Annex II, on 'Conservation of Fauna and Flora', 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.[86] Permits may be granted only in exceptional circumstances for the Specially Protected Species designated in Appendix A to Annex II.[87] Species of animal or plant which are not native to the Antarctic Treaty area may only be introduced by permit, and then only if they are listed in Appendix B.[88] Dogs are prohibited in the Antarctic Treaty area,[89] and precautions are to be taken to prevent the introduction of non-native micro-organisms.[90]

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.[91] Waste

[80] 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.

[81] Art. 2. [82] Art. 3(1) and (3).

[83] 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).

[84] Art. 8 and Annex I; on environmental impact, assessment, see chapter 16, pp. 818–19 below.

[85] Art. 9(1). The Annexes have their own rules on, *inter alia*, emergency situations, review and amendment.

[86] Annex II, Art. 3(1) and (2). This revises and updates the 1964 Agreed Measures.

[87] Annex II, Art. 3(4) and (5). [88] Annex II, Art. 4(1) and (3).

[89] Annex II, Art. 4(2). [90] Annex II, Art. 4(6) and Appendix C.

[91] Annex III, Art. 1(1) and (2).

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.[92] 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.[93] 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.[94] 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.[95] 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.[96] Finally, each party must establish a waste disposal classification system and prepare waste management plans and an inventory of locations of past activities.[97]

Annex IV, on 'Prevention of Marine Pollution', applies to ships of parties which are used to support their operations while operating in the Antarctic treaty area.[98] The Annex prohibits or 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.[99] 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.[100] 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.[101]

Annex V, on 'Area Protection and Management',[102] 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.[103] Antarctic Specially Protected Areas are designated to protect outstanding environmental, scientific, historic, aesthetic or wilderness values or scientific research, and entry to these

[92] Annex III, Art. 1(3) and (4). [93] Annex III, Art. 1(5).
[94] Annex III, Art. 2. [95] Annex III, Art. 3.
[96] Annex III, Arts. 4 to 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.
[97] Annex III, Art. 8. These are all subject to review by the Environment Committee: Art. 9.
[98] Annex IV, Art. 2. [99] Annex IV, Arts. 3 to 6. [100] Annex IV, Arts. 9 to 12.
[101] Annex IV, Art. 14; on MARPOL 73/78, see chapter 9, pp. 440–4 above.
[102] Annex V was adopted at the sixteenth Antarctic Treaty consultative meeting, Bonn, 18 October 1991.
[103] Annex V, Art. 2.

areas is prohibited except by permit.[104] Annex V redesignates Specially Protected Areas and Sites of Special Scientific Interests designated by Antarctic Treaty Consultative Meetings as Antarctic Specially Protected Areas.[105] 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.[106] Antarctic Specially Managed Areas may contain Antarctic Specially Protected Areas.[107] The Annex envisages Management Plans, designation procedures, the issuing of permits, the listing of historic sites and monuments, and information exchange and publicity.[108]

At the seventeenth Antarctic Treaty consultative meeting, in November 1992, five parties proposed a sixth Annex to cover tourism and other non-governmental 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.

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.[109] 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 EIA 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.[110] Each party is a member of the Committee, and observer status is open to any contracting party, to the President of SCAR and the Chair of the Scientific Committee of the CCAMLR, as well as other relevant scientific, environmental and technical organisations who have received the approval of the Antarctic Treaty consultative meeting.[111]

[104] Annex V, Art. 3(1) and (4).

[105] Annex V, Art. 3(3). There are currently fifty-nine Specially Protected Areas: www.era.gs/resources/apa/aspa/index.html.

[106] Annex V, Art. 4(1) and (3). [107] Annex V, Art. 4(4). [108] Annex V, Arts. 5 to 10.

[109] Art. 10(1). The meetings are to draw upon the advice and recommendations of the Committee, and the advice of SCAR: Art. 10(2).

[110] 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).

[111] Art. 11(3) and (4).

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.[112] 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 which affects implementation.[113] The Antarctic Treaty consultative meeting must draw to the attention of non-parties activities by it or those under its control, on any activity which affects implementation.[114] The Protocol also provides for inspections by observers in accordance with Article VII of the Antarctic Treaty, and for the formulation, 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.[115] The parties will elaborate procedures relating to liability which are consistent with the objectives of the Protocol for the 'comprehensive protection of the Antarctic environment and dependent and associated ecosystems'.[116] 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).[117]

Other treaty provisions

There are also a number of other international legal instruments of global application which 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,[118] and the 1989 Basel Convention which prohibits the export of hazardous wastes or other wastes for disposal within the Antarctic region.[119] Other treaties whose provisions apply to the Antarctic marine environment include the 1972 London Convention and MARPOL 73/78.

[112] Art. 13(1). Each party is to provide an annual report on its implementation: Art. 17.
[113] Art. 13(2) and (4). [114] Art. 13(5). [115] Art. 15.
[116] Art. 16. The seventeenth Antarctic Treaty consultative meeting, in November 1992, agreed to create a legal working group to consider this subject. Discussion of liability rules commenced in 1993, but the complexity of the issue and the differences of view has led to slow progress: see chapter 18, p. 932 below.
[117] Arts. 18 to 20; a Schedule to the Protocol defines an Arbitral Tribunal.
[118] Part XII, Protection and Preservation of the Marine Environment, Arts. 192 to 237; M. Peterson, 'Antarctic Implications of the New Law of the Sea', 16 *Ocean Development and International Law* 137 (1986).
[119] Art. 4(6).

The Arctic

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 AJIL 712 (1999).

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 which could not 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'. 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.

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.[120] Membership of the Council is restricted to the eight Arctic states. In addition, the Association of Indigenous Minorities of the North, Siberia and the Far East of the Russian Federation, the Inuit Circumpolar Conference, the Saami Council, the Aleutian International Association, the

[120] Declaration on the Establishment of the Arctic Council, Ottawa, 19 September 1996, reprinted in 35 ILM 1382 (1996).

Arctic Athabaskan Council and the Gwich'in Council International are granted status as 'permanent participants' in the Council.[121] There is also provision for non-Arctic states, global and regional intergovernmental and interparliamentary organisations and non-governmental organisations to be granted observer status.[122] The Council normally meets at the ministerial level biennially. The Chair and Secretariat of the Council rotates every two years among the members, beginning with Canada in 1996.[123]

AEPS

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.[124] 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 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.[125]

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.[126] To

[121] Para. 2. [122] Para. 3. [123] Paras. 4 and 5.
[124] AEPS, para. 2.1. [125] Para. 2.2. [126] Para 5.1.

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.[127] With regard to heavy metals, it is agreed to undertake a programme of co-ordinated monitoring and research and to implement measures to control conditions that allow the release of heavy metals, including the implementation of best available technology.[128] 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.[129] 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.[130] 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 USSR, these measures of the Strategy 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'.[131]

Programmes of general application are also established. The Arctic countries agreed: to develop an Arctic Monitoring and Assessment Programme (AMAP) to measure levels of anthropogenic pollutants and assess their effects;[132] 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;[133] and to adopt measures for emergency prevention, preparedness and response.[134] 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

[127] 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.
[128] Para. 5.3. [129] Para 5.4. [130] Para. 5.5. [131] Para. 5.6.
[132] Para. 6. [133] Para. 7. [134] Para. 8.

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.[135]

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. The resulting Arctic Council Action Plan to Eliminate Pollution of the Arctic (ACAP) establishes a framework for co-operation and an accompanying Action Plan which is intended to evolve dynamically in response to changing priorities for action in the region.[136] 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.[137]

Conclusions

The Antarctic Treaty system has served 'as a microcosm for the evolution of international environmental law and policy', with environmental policies being put in place before there were 'environmentalists', and rules of a substantive, procedural and institutional nature being developed and put in place, on which other international agreements have frequently drawn.[138] The various treaties adopted under the Antarctic system have provided important precedents which 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 which forms part of the global commons, although its precedential value extends also to areas which 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

[135] Para. 9.1.

[136] Arctic Council Action Plan to Eliminate Pollution of the Arctic, Barrow, October 2000.

[137] 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.

[138] L. Kimball, 'Environmental Law and Policy in Antarctica', in P. Sands (ed.), *Greening International Law* (1993), 122 at 138–9.

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 introduce novel elements to international law. The challenge over the coming few years will be 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, 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 liability, 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 fisheries.

The adoption of the Arctic Environmental Protection Strategy and the establishment of the Arctic Council provide 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.

15

European Community environmental law

Introduction

E. Rehbinder and R. Stewart, *Environmental Protection Policy* (1985); J. Charpentier (ed.), *La Protection de l'environnement par les Communautés Européennes* (1988); S. P. Johnson and G. Corcelle, *The Environmental Policy of the European Communities* (1989); E. Haagsma, 'The European Community's Environmental Policy: A Case Study in Federalism', 12 *Fordham International Law Journal* 311 (1989); R. B. Stewart, 'Environmental Law in the United States and the European Community: Spillovers, Co-operation, Rivalry, Institutions', 1992 *University of Chicago Legal Forum* 41; R. Wagenbaur, 'Regulating the European Environment: The EC Experience', 1992 *University of Chicago Legal Forum* 17; M. Wheeler, 'Greening the EEC Treaty', in P. Sands (ed.), *Greening International Law* (1993), 85; G. Bennett, *Conserving Europe's Natural Heritage* (1994); S. Johnson and G. Corcelle, *The Environmental Policy of the European Communities* (1995); S. Ercmann, *Pollution Control in the European Community* (1996); J. Holder (ed.), *The Impact of EC Environmental Law in the United Kingdom* (1997); A. Kiss and D. Shelton, *Manual of European Environmental Law* (1997, 2nd edn); J. Scott, *EC Environmental Law* (1998); R. Revesz, 'Environmental Regulation in Federal Systems', 1 *Yearbook of European Environmental Law* 1 (2000); J. Jans, *European Environmental Law* (2000, 2nd edn); L. Krämer, *EC Environmental Law* (2000, 4th edn); L. Krämer, *Casebook on EU Environmental Law* (2002).

On EC law generally see T. C. Hartley, *Foundations of European Community Law* (1998, 4th edn); *Wyatt and Dashwood's European Union Law* (2000, 4th edn); P. Craig and G. de Burca, *EU Law: Text, Cases and Materials* (2002, 2nd edn).

The EC has the most extensive developed body of regional rules of international environmental law, with practical experience of developing and applying principles and rules which set standards, implement procedures and operate institutional arrangements. The experience includes the integration of environmental considerations into economic obligations, particularly in relation to the rules governing trade, competition, subsidies and intellectual property rights. EC environmental law is currently applicable to the fifteen member states. The 1992 European Economic Area (EEA) Agreement extends EC environmental rules to

the three EFTA countries that are not EC members.[1] The Europe Agreements between the EC and central and eastern European states and the Association Agreements with Cyprus and Malta have led to the transposition of EC environmental rules into domestic law in preparation for membership of the EC which is due to take place from 1 May 2004.

In this context, it is appropriate to consider the relevance for international environmental law of developments in the EC. The rules of EC environmental law constitute a regional regime of international environmental law: they currently bind fifteen states, and after 1 May 2004 they will apply directly to twenty-five European states. EC rules also provide a possible model for other regions, including those which are establishing free trade arrangements (such as the NAFTA, the African Economic Community and the Free Trade Agreement of the Americas) as well as the Caribbean and the South Pacific regions which are committed to developing their regional environmental laws. Although the EC member states are relatively homogenous, many of the problems faced by the international community as a whole also exist in the EC, such as economic disparities (the North–South issue) and legal and political differences on the adoption, implementation and interpretation of international rules. Moreover, the EC is itself an actor in international environmental law-making, and is party to more than thirty regional and global environmental agreements.[2] The active role played by the EC in the negotiations leading to the adoption of these instruments, within the framework of its competence, has required changes to the processes of international law-making and enforcement that may enable other regional groupings to participate more effectively in international fora.[3] Finally, the integration of EC environmental law into economic arrangements

[1] See p. 747 below.

[2] On early developments, see J. Temple Lang, 'The Ozone Layer Convention: A New Solution to the Question of Community Participation in "Mixed" International Agreements', 23 *Common Market Law Review* 157 (1986); A. Nollkaemper, 'The European Community and International Environmental Co-operation: The Legal Aspects of External Community Powers', 2 *Legal Issues of European Integration* 55 (1987); A. Kiss and M. Brusasco-MacKenzie, 'Les Relations exterieures des Communautés Européennes en matière du protection de l'environnement', 35 AFDI 702 (1989); P. Demaret, 'Trade-Related Environmental Measures (TREMs) in the External Relations of the European Community', in M. Marescea (ed.), *The European Community's Commercial Policy after 1992* (1992), 285; N. Haigh, 'The European Community and International Environmental Policy', in A. Hurrell and B. Kingsbury (eds.), *The International Politics of the Environment: Actors, Institutions and Interests* (1992), 228.

[3] See e.g. the 1991 Espoo Convention (chapter 16, pp. 814–17 below), which expressly provides for: the participation of regional economic integration organisations (Arts. 16 and 17(1)); the allocation of responsibilities between each organisation and its respective member states (Art. 17(4)); and special voting rules for those occasions in which regional integration organisations participate at the same time as some, or all, of their members (Art. 18(2)).

illustrates many of the legal difficulties which arise in the integration of environmental and economic concerns.

Like international environmental law, the rules of EC environmental law fall to be considered in the context of the EC's overall legal and political structure. Although EC law is a part of the old order of public international law from which it grew,[4] it is also a specialised legal order of international law, rather like the European Convention on Human Rights' regional human rights law,[5] and similar to the special order of rules of international law applied by international administrative tribunals.[6]

The EC legal order is innovative and has shifted the 'goalposts' of traditional international law. It has changed perceptions of how international law can work as a dynamic and effective force: by expanding the formal membership of the legal community to which it applies directly beyond states to include companies, environmental groups and associations, granting to them rights that they can enforce before national courts as well as the ECJ;[7] by applying the doctrines of direct effect, supremacy and implied powers; by creating mechanisms for international enforcement; and by instituting a decision-making process based on qualified majority, rather than unanimous, voting. While each of these doctrines existed under traditional international law, the EC legal system has expanded their application.

Sources and institutions

The European Communities were established by three separate treaties. The European Coal and Steel Community (ECSC) was originally established by representatives of France, Germany, Italy, Belgium, Holland and Luxembourg,[8] with the primary objective of creating a common market for coal and steel. In 1957, the same six states signed two further treaties establishing the European Community of Atomic Energy (EURATOM),[9] to develop and distribute nuclear energy within the Community, and the European Economic Community (EEC).[10]

[4] The ECJ has called the Community 'a new legal order of international law': Case 26/62, *Van Gend and Loos* [1963] ECR 3.

[5] Chapter 7, pp. 291–4 above.

[6] See *De Merode* v. *World Bank*, WBAT Rep., Decision No. 1, at 12–13 (1981) ('the Tribunal, which is an international tribunal, considers that its task is to decide internal disputes between the Bank and its staff within the organised legal system of the World Bank and that it must apply the internal law of the Bank as the law governing the conditions of employment').

[7] Chapter 5, pp. 222–5 above; and chapter 18, pp. 926–30 below.

[8] Treaty Establishing the European Coal and Steel Community, 18 April 1951, 261 UNTS 140.

[9] Treaty Establishing the European Atomic Energy Community, 25 March 1957, in force 1 January 1958, 298 UNTS 167; see below.

[10] Treaty Establishing the European Economic Community, Rome, 25 March 1957, in force 1 January 1958 298 UNTS 267.

Currently, the EEC and the other two communities have fifteen members: the original six, and the United Kingdom, Denmark, Ireland,[11] Greece,[12] Spain, Portugal[13] and most recently Sweden, Austria and Finland.[14] Besides Turkey (which has been accepted as a candidate country but has not been accepted into negotiations), accession negotiations commenced with Hungary, Poland, Estonia, the Czech Republic, Slovenia and Cyprus in March 1998. In October 1999, the Commission recommended member states to open negotiations with Romania, the Slovak Republic, Latvia, Lithuania, Bulgaria and Malta. In 2002, the EC members agreed that all these states (except Bulgaria and Romania) could join from 1 May 2004, as reflected in the Nice Treaty, thus bringing EC membership to twenty-five states.[15]

The EEC's original objectives were the establishment of a common market and the progressive approximation of the economic policies of the member states, to be achieved by adherence to four fundamental principles, which remain applicable:[16] (1) the free movement of goods between the member states;[17] (2) a common agricultural policy;[18] (3) the free movement of persons,[19] services[20] and capital based on the right of establishment and the principle of non-discrimination;[21] and (4) a common transport policy.[22] These foundations were supplemented by a number of policies (which did not originally include an environmental policy) including in relation to competition[23] and state aids granted by member states which distort or threaten to distort competition.[24] While the EC does not at present have the objective of creating a uniform system of taxation among the member states, it prohibits the imposition

[11] Acceded to membership on 1 January 1973.

[12] Acceded to membership on 1 January 1981.

[13] Acceded to membership on 1 January 1986.

[14] Acceded to membership on 1 January 1995. A referendum in Norway resulted in a vote against membership.

[15] Conclusions of the EU Council, 12–13 December 2002; Treaty of Nice, OJ C80, 10 March 2001, 1. Negotiations with Bulgaria and Romania will continue, and accession negotiations with Turkey could begin after December 2004.

[16] The EC Treaty has been amended, and the 1997 Treaty of Amsterdam (2 October 1997) renumbered the Articles of the 1957 EEC Treaty; old Article numbers are indicated in brackets after the new ones. A consolidated version of the Treaty on European Union is at OJ C340, 10 November 1997, 145–72; a consolidated version of the EC Treaty is at OJ C340, 10 November 1997, 173–308.

[17] EC Treaty, as amended, Arts. 23–31 (formerly Arts. 9–37); see further chapter 19, pp. 985–7 below.

[18] Arts. 32–38 (formerly Arts. 38–47).

[19] Arts. 39–42 (formerly Arts. 48–51).

[20] Arts. 49–55 (formerly Arts. 59–66).

[21] Arts. 43–48 and 56–69 (formerly Arts. 52–58 and 67–73).

[22] Arts. 70–80 (formerly Arts. 74–84).

[23] Arts. 3(8) and 81–86 (formerly Arts. 3(f) and 85–90); chapter 19, pp. 985–97 below.

[24] Arts. 87–89 (formerly Arts. 92–94); chapter 19, pp. 985–97 below.

of taxes which might prevent the free movement of goods.[25] The 1957 Treaty left to each member state the direction of its national economic policy, subject to an obligation to pursue policies which would ensure an equilibrium of overall balance of payments and the maintenance of confidence in the currency, high levels of employment and stable prices. Such economic policies are stated, however, to be of common concern.[26] The EEC also had a common commercial policy, on the basis of uniform principles in tariff rates, the conclusion of tariff and trade agreements, export policy, and the protection of trade.[27] By a 1965 Merger Treaty, the separate institutions of the ECSC, EURATOM and the EEC were merged.[28]

The principal EC institutions are the Commission, the Council, the Parliament (formerly known as the Assembly), the European Court of Justice (ECJ) (including the Court of First Instance (CFI)) and the Court of Auditors.[29] The Commission, based in Brussels, is composed of twenty Commissioners 'chosen on the grounds of their general competence and whose independence is beyond doubt'.[30] The Commissioners hold office for five years, having been chosen by mutual agreement between the members,[31] and they have under their direction some thirty Directorates, encompassing the executive arms of the EC. The Commission is the EC's civil service, the body which represents the interests of the EC. It has been described as 'an initiator and co-ordinator of Community policy; it is the executive agency of the Communities; it is the guardian of the Community Treaties'.[32] The Commission's functions include proposing environmental and other legislation and ensuring that the environmental and other provisions of the EC Treaty and secondary legislation are applied,[33] including where necessary taking cases to the ECJ. The Environment Directorate General (formerly known as Directorate General XI) of the EC Commission is responsible for the environment.

The Council is composed of one representative from each member state. The particular minister attending from each member state will vary depending on the subject matter to be discussed and the decisions to be made. Meetings of the Council of Ministers occur periodically in one of the member states.

[25] Arts. 90–92 (formerly Arts. 95–98). [26] Arts. 99–111 (formerly Arts. 103–109).
[27] Arts. 131–135 (formerly Arts. 110–116).
[28] Treaty Establishing a Single Council and a Single Commission of the European Communities, 8 April 1965, 4 ILM 776 (1965).
[29] 1997 Amsterdam Treaty, Art. 7 (formerly Art. 4).
[30] 1965 EC Merger Treaty, Art. 10. By the Treaty of Nice, from 2005 the Commission will be composed of one commissioner per member state; and once the EU Reaches twenty-seven member states there will be fewer Commissioners than there are member states.
[31] The Treaty of Nice also provides for changes to the procedure to nominate the members of the Commission. From 2004, the nomination will be voted by a qualified majority.
[32] D. Lasok and J. Bridge, *An Introduction to the Law and Institutions of the European Economic Communities* (1976, 2nd edn), 112.
[33] Art. 211 (formerly Art. 155).

The actual powers of the Council vary with each Treaty, 'but in effect the Council expresses the political will of the members and exercises a legislative or regulatory function'.[34] Environmental issues are generally addressed by the Environment Council (ministers responsible in each member state for the environment portfolio), although increasingly environmental issues are also addressed by ministers for trade, finance and energy. Environment ministers meet at least twice a year.

The European Parliament is the parliamentary organ for the three Communities. It comprises 626 members elected by direct universal suffrage and meets in Brussels or Strasbourg.[35] After the reforms adopted in 1997, the Parliament has three main roles: it exercises democratic control over all the Community institutions, in particular the Commission; it shares legislative power with the Council; and it plays a decisive role in the adoption of the budget.

The ECJ and the CFI sit in Luxembourg. Each has fifteen judges and, in the case of the ECJ, eight Advocates General.[36] The ECJ's primary function is to ensure respect for the rule of law in the application and interpretation of the Treaties and of acts made by the EC institutions.

The sources of EC law comprise the Treaties, general principles of law, international obligations binding upon the EC, and secondary legislation. Secondary legislation is adopted under the EC Treaty, which provides in Article 249 (formerly Article 189) that:

> in order to carry out their task and in accordance with the provisions of this Treaty, the European Parliament acting jointly with the Council, the Council and the Commission shall make regulations and issue directives, take decisions, make recommendations or deliver opinions.

While recommendations and opinions have no binding force *per se*, much of the secondary legislation (Regulations, Directives and Decisions) creates rights and obligations which can, in certain circumstances, be relied upon by legal and natural persons before the courts of the member states, known as 'direct effect'.[37] Moreover, in the event of a conflict between a rule of EC law and

[34] P. Sands and P. Klein, *Bowett's Law of International Institutions* (2001, 5th edn), 180.

[35] By the Treaty of Nice, the maximum number of European Members of Parliament will be set at 732 (currently 700), and the number of seats allocated to the existing fifteen members will be reduced from 626 to 535.

[36] See chapter 5, p. 224 above. With the Treaty of Nice, the ECJ will continue to be composed of one judge from each member state, and the CFI will have at least one judge from each member state.

[37] See e.g. Case 26/62, *Van Gend and Loos*. In Case C-72/95, *Kraaijeveld* [1996] ECR I-5403, the Court held that, where a Directive has no direct effect and entails discretionary action by the national authority, national courts can act only *ex post* by evaluating the action and its conformity with the procedural rules imposed by the relevant Directives. See also Case C-236/92, *Comitato di Difesa della cava* [1994] ECR I-483, and Case C-168/95, *Arcaro* [1996] ECR I-4705, where the ECJ refused to apply the doctrine of direct effect in favour of a state in a criminal procedure against a polluter.

a rule of national law, EC law will prevail.[38] The failure of member states to implement all their EC environmental obligations has led the Commission to exercise its enforcement with great regularity, and since 1985 the ECJ has heard a large number of cases concerning the non-implementation by member states of their environmental obligations.[39]

The ECJ derives its jurisdiction from each of the Treaties. Cases reach the ECJ in a variety of ways. The ECJ is empowered to give preliminary rulings on references from national courts of the member states on the interpretation of the EC Treaty, and on the validity and interpretation of environmental and other acts of the institutions.[40] The CFI and the ECJ may also review the legality of the acts adopted jointly by the Parliament and Council, the Council and Commission's binding acts, or failures to act, in actions brought by member states, the Council and the Commission and, subject to the rules on standing, by legal or natural persons.[41] The ECJ may also decide matters brought by the Commission or a member state against a member state which is alleged to be failing to fulfil an obligation under the Treaty[42] and hear matters alleging the non-contractual liability of the EC.[43] The ECJ's jurisprudence has contributed greatly to the development of a coherent and effective legal system, and has extended the powers of the Community and the influence of EC law into the legal systems of the member states.[44] As this chapter indicates, the ECJ and

[38] On the supremacy of Community law, see Case 106/77, *Simmenthal* [1978] ECR 629, paras. 17 and 18. In two recent decisions, the ECJ has extended the effect of Directives beyond the limit of direct effect. See Case C-287/98, *Luxembourg* v. *Berthe Linster EA* [2000] ECR I-6917, and Case C-443/98, *Unilever* [2000] ECR I-7535, where the Court held that national courts may take under consideration Directives imposing procedural requirements on state authorities or otherwise imposing vague, undefined obligations which need to be specified by regulatory actions of state authorities. Those procedural or undefined provisions can be taken under consideration for the limited purpose of assessing the action of the national administrative bodies and their consistency with the Directives. Pursuant to the principle of supremacy of EU law, where found inconsistent with a Directive lacking direct effect, the national measures/regulations will be disapplied by the national courts. However, in Case C-129/96, *Inter-Environment Wallonie* [1997] ECR I-7411, the Court stated that, where the member state has failed to transpose the Directive or has issued conflicting national rules before the expiration date for transposing the Directive, national courts cannot apply the Directive, either as directly effective, or as a parameter for assessing the acts of national authorities.

[39] On enforcement and the role of the ECJ, see chapter 5, pp. 222–4 above.

[40] 1997 Amsterdam Treaty, Art. 234 (formerly Art. 177).

[41] Arts. 230–232 (formerly Arts. 173–175).

[42] Arts. 226–227 (formerly Arts. 169–170); see further chapter 5, pp. 222–4 above.

[43] Arts. 235 and 288 (formerly Arts. 178 and 215).

[44] P. Sands, 'European Community Environmental Law: Legislation, the European Court of Justice and Common-Interest Groups', 53 MLR 685 (1990); R. Wagenbaur, 'The European Community's Policy on Implementation of Environmental Directives', 14 *Fordham International Law Journal* 455 (1990); L. Krämer, 'The Implementation of Environmental Laws by the European Economic Communities', 34 *German Yearbook of International Law* 9 (1991); R. Macrory, 'The Enforcement of Community Environmental Law: Some Critical

CFI have also contributed materially to the development of environmental jurisprudence.

In 1986, the EEC Treaty was amended by the Single European Act (1986 SEA) which committed the Community to 'concrete progress towards European unity' by taking measures to establish an 'internal market' by 31 December 1992 which would remove the remaining physical, technical and fiscal barriers to trade.[45] The SEA introduced important institutional changes, including the creation of a Court of First Instance and a 'co-operation' procedure giving the European Parliament greater influence in the legislative process.[46] The SEA also introduced qualified majority voting under the then new Article 100a for internal market measures, removing the power of the veto, and making use of the new co-operation procedure. It also added, for the first time, express provisions on environmental protection. In 1992, the Maastricht Treaty on European Union adopted further institutional and environmental amendments.[47] For the first time, the term 'environment' was referred to in Articles 2 and 3 of the Treaty among the objectives and activities of the European Union. This was followed by the adoption of the Treaty of Amsterdam in 1997 which enshrines the principle of sustainable development as one of the European Communities' aims, together with integrating environmental requirements into community policies and activities. The 2001 Nice Treaty, which came into force on 1 February 2003, introduces institutional and procedural reforms, but does not amend the susbtantive environmental rules of the EC.[48]

European Environment Agency

In 1990, the EC created the European Environment Agency,[49] and it became operational in 1994. The Agency provides the EC and the member states with information at the European level to enable environmental protection measures to be taken, to assess the results of such measures, and to ensure that the public

Remarks', 20 *Common Market Law Review* 347 (1992); European Commission, Communication on Implementing Community Environmental Law, COM (96) 0500; R. Macrory and R. Purdy, 'Enforcement of EC Environmental Law Against Member States', in J. Holder (ed.), *Impact of EC Environmental Law in the UK* (1997); L. Borzsak, 'Punishing Member States or Influencing Their Behaviour or Iudex (Non) Calculate?', 13 JEL 244 (2001).

[45] Single European Act, 17 February 1986, in force 1 July 1987, 25 ILM 503 (1986), Arts. 1(1) and 13.

[46] *Ibid.*, Arts. 6, 8 and 11.

[47] See pp. 745–6 below.

[48] Treaty of Nice Amending the Treaty on European Union, the Treaties Establishing the European Communities and Certain Related Acts, Nice, 26 February 2001, OJ C80, 10 March 2001, 12. On the amendments to the political institutions of the EU made by the Treaty of Nice, see René Barents, 'Some Observations on the Treaty of Nice', 8 *Maastricht Journal of European and Comparative Law* 121 at 124 (2001).

[49] Council Regulation (EEC) No. 1210/90, OJ L120, 11 May 1990, 1, amended by Council Regulation (EC) No. 933/1999, OJ L117, 5 May 1999, 1; D. A. Westbrook, 'Environmental Policy in the European Community: Observations on the European Environment Agency', 15 *Harvard Environmental Law Review* 257 (1991).

is properly informed.[50] The Agency is an autonomous entity having separate legal personality, and is run by a management board, an Executive Director and a scientific committee.[51]

The Agency's principal task is to monitor, gather information, establish the European environment information and observation network,[52] provide the EC and member states with objective information, and record, collate and assess data on the state of the environment.[53] Additionally, the Agency seeks to: ensure that environmental data at the European level are comparable; provide European environmental information to international bodies; ensure broad dissemination of reliable information (including a tri-annual report on the state of the environment); and stimulate the development of environmental forecasting techniques and methods for assessing environmental costs.[54] The Agency's assessment functions relate to the pressures on and quality and sensitivity of the environment including placing these in the context of sustainable development, and address priority areas, including 'transfrontier, plurinational and global phenomena' and the socio-economic dimension.[55] Subject to certain conditions, the Agency may publish information and make it available to the public.[56] It is open to countries which are not members of the EC,[57] and may be a model for international environmental monitoring arrangements in other regions and globally.[58]

Historical development[59]

EC environmental law has developed over five distinct periods: the first is from 1957 to 1972, prior to the Stockholm Conference. The second runs from 1973 to 1986, prior to the SEA amendments to the 1957 EEC Treaty. The third period

[50] Art. 1. [51] Arts. 7 to 10.

[52] The European environment information and observation network comprises the main component elements of national information networks, national focal points and topic centres: Art. 4(1).

[53] Art. 2(i)–(iii). [54] Art. 2(iv)–(viii).

[55] Art. 3(1) and (2). The priority areas are air and water quality, soil, fauna and flora, biotopes, land use and natural resources, waste management, noise emissions, hazardous chemicals and coastal protection.

[56] Art. 6.

[57] In June 2001, Hungary, Poland, Estonia, the Czech Republic, Slovenia, Cyprus, Romania, the Slovak Republic, Latvia, Lithuania, Bulgaria, Turkey and Malta concluded Agreements with the EC concerning their participation in the European Environment Agency and the European environment information and observation network.

[58] Art. 19.

[59] P. Sands, 'European Community Environmental Law: The Emergence of a Regional Regime of International Environmental Protection', 100 *Yale Law Journal* 2511 (1991); D. McGillivray and J. Holder, 'Locating EC Environmental Law', 20 *Yearbook of European Law* 139 (2001); L. Krämer, '30 Years of European Environmental Law', 2 *Yearbook of European Environmental Law* 155 (2002).

covers 1987 to 31 October 1993. A fourth period began with the entry into force on 1 November 1993 of the amendments introduced by the 1992 Maastricht Treaty until May 1999. The fifth and current phase began with the entry into force of the 1997 Treaty of Amsterdam, in May 1999.

Until 1986, the EEC Treaty had no express provisions on environmental protection, although this did not prevent the EC from adopting legislation on environmental matters. During the first two periods, until 1986, two EEC Treaty provisions were utilised: Article 100 (now Article 94), which empowers the EC Council to issue Directives to harmonise such laws, regulations or administrative actions in member states 'as directly affect the establishment or functioning of the common market'; and Article 235 (now Article 308) which empowers the EC Council to adopt measures which are necessary to attain 'one of the objectives of the Community' and for which the Treaty has not provided the necessary powers. In 1967, with the adoption of a Directive on the classification, packaging and labelling of dangerous substances,[60] the EC began to address environmental issues. In 1970, the EC Commission declared the necessity of drawing up a Community Action Programme on the Environment, and the following year adopted a formal communication on the matter.[61] The 1972 Stockholm Conference was a major catalyst for the development of EC environmental law, which is one of the most tangible outcomes of the Stockholm Conference. A Declaration on the Environment was adopted by the heads of state and governments of the then nine EC member states in October 1972. The following year, the first EC Action Programme on the Environment was adopted, and three further Action Programmes on the Environment were adopted in the period to 1987.[62]

By July 1987, when the SEA amendments to the EEC Treaty came into effect, the EC had adopted more than 150 Regulations, Directives and Decisions on the environment, and had prepared its fourth Action Programme on the Environment. Between 1973 and 1987, an extensive body of substantive environmental rules had been adopted on water, air, noise, the management of waste and hazardous substances, and the protection of flora, fauna and the countryside. The EC had also introduced a number of important environmental protection procedures, including the first example of international legislation on environmental impact assessment. Four environmental research programmes had been adopted, together with scientific and technical co-operation agreements with third countries, a fund for EC environmental action, and a Recommendation

[60] Council Directive 67/548/EEC, OJ L196, 16 August 1967, 1, as amended; chapter 12, pp. 620 and 626 above.

[61] Commission SEC (71) 2616 final (22 July 1971).

[62] First Programme (1973–6), OJ C112, 20 December 1973, 1; Second Programme (1977–81), OJ C399, 13 June 1977, 1; Third Programme (1982–6), OJ C46, 17 February 1983, 1; Fourth Programme (1987–92), OJ C328, 7 December 1987, 1.

on the polluter-pays principle.[63] The EC had also become a party to a number of environmental treaties during this period,[64] and its approach to the development of regional rules of environmental protection began to attract attention in other regions. In 1980, the ECJ confirmed the legality of using Article 100 (now Article 94) to legislate on environmental matters.[65]

EC environmental law during this period was legally premised on the justification that it removed non-tariff barriers to intra-Community trade by harmonising the national environmental laws of the member states.[66] It was therefore based on the original intent of the EEC Treaty to regulate trade and competition, and did not develop from the desire to regulate environmental protection as an end in itself. By 1985, however, with a large body of EC environmental rules already adopted, the ECJ ruled that, even in the absence of express reference in the EEC Treaty, the protection of the environment was one of the Community's 'essential objectives' and that it justified certain limitations on the principle of free movement of goods, although the ECJ stressed that these limitations must not 'go beyond the inevitable restrictions which are justified by the pursuit of the objective of environmental protection'.[67] The 1986 SEA amendments formalised environmental protection as an EC objective.

Single European Act (1986)[68]

The changes introduced by the SEA added to the momentum of an area of EC law and policy which was still relatively discrete and self-contained. The SEA transformed an extensive but marginal body of environmental policy and law into one of central and growing importance, bringing environmental considerations to bear on areas which were previously beyond the bounds of environmental legislation, including corporations, tax, financial services, broadcasting and civil procedure. Article 25 of the 1986 SEA added a new Title VII on 'Environment' to the EEC Treaty, consisting of Articles 130r, 130s and 130t

[63] Chapter 6, pp. 279–85 above.

[64] The first environmental treaty to which the EC became a party was the 1974 Paris Convention (see chapter 9, pp. 430–4 above): Council Decision 75/437/EEC, OJ L194, 25 July 1975, 5.

[65] Cases 91 and 92/79, *Commission of the European Communities* v. *Italian Republic* [1980] ECR 1099 and 1115.

[66] Council Directive 80/778/EEC, OJ L229, 30 August 1980, 11 (relating to quality of water intended for human consumption) which provides in the Preamble that a 'disparity between provisions . . . in the various Member States relating to the quality of water for human consumption may create differences in the conditions of competition and, as a result, directly affect the operation of the common market'.

[67] Case 240/83, *Procureur de la République* v. *Association de Défense des Bruleurs d'Huiles Usagées* [1985] ECR 531 at 549.

[68] L. Krämer, 'The Single European Act and Environment Protection: Reflections on Several New Provisions in Community Law', 24 *Common Market Law Review* 659 (1987); D. Vandermeersch, 'The Single European Act and the Environmental Policy of the European Economic Community', 12 *European Law Review* (1987).

(now Articles 174–176). It went beyond the codification of existing environmental law, and established a firm legal basis for its future development, in effect bringing the whole of the EC's economic activities within the potential scope of environmental law-making. Article 130r(1) (now Article 174(1)) provided that EC action related to the environment must have the following objectives:

1. to preserve, protect and improve the quality of the environment;
2. to contribute towards protecting human health; and
3. to ensure a prudent and rational utilisation of natural resources.

As amended, the EEC Treaty also provided that EC action was to be preventive, that environmental damage should as a priority be rectified at source, that the polluter should pay for damage, and that environmental protection should be a component of other EC policies.[69] The EEC Treaty now expressly provided that the EC could participate in international environmental agreements.[70] Under Article 130r(3) (now Article 174(3)), environmental action had to take account of: available scientific and technical data; environmental conditions in the Community as a whole; potential benefits and costs of action or lack of action; and the economic and sound development of the Community as a whole and the balanced development of its regions. Former Article 130r(4) (now Article 174(4)) established the principle of 'subsidiarity', requiring action to be taken at the Community level only when objectives could be better obtained than at the level of individual member states. Environmental actions taken under Article 130r (now Article 174) were to be taken by the EC Council acting unanimously, unless otherwise agreed by the Council.[71] Significantly, where measures are taken under Title VII (now Title XIX), member states could maintain or introduce 'more stringent protective measures compatible with this Treaty'.[72]

On the basis of these amendments, since 1987 environmental legislation in the EC has become increasingly broad in its scope and ambitious in its intent: the EC adopted legislation prohibiting television advertisements which encouraged behaviour prejudicial to the protection of the environment,[73] on eco-labelling[74] and on environmental audits.[75] New legislation was proposed on, *inter alia*, civil liability for damage caused by waste,[76] and on an energy/carbon tax.[77]

[69] Art. 174(2) (formerly Art. 130r(2)). [70] Art. 174(4)(ii) (formerly Art. 130r(5)).

[71] Art. 175 (formerly Art. 130s); see W. Wils, 'Subsidiarity and EC Environmental Policy: Taking People's Concerns Seriously', 6 JEL 85 (1994).

[72] Art. 176 (formerly Art. 130t). This formulation left open the question of which measures would be compatible with the EEC Treaty, leaving the matter to be decided in the event of a dispute by the ECJ.

[73] Council Directive 89/552/EEC, OJ L298, 17 October 1989, 23, at Art. 12(e).

[74] Chapter 17, pp. 860–2 below. [75] Chapter 17, pp. 865–6 below.

[76] Proposal for a Council Directive on Civil Liability for Damage Caused by Waste, COM (89) 282 final, OJ C251, 4 October 1989, 3; Amended Proposal, COM (91) 219 final, OJ C192, 23 July 1991, 6; see chapter 18, pp. 926–30 below.

[77] Chapter 4, p. 161 above.

Under the SEA, the EC adopted legislation creating the European Environment Agency and adopted a Directive on access to information on the environment.[78] It also began work to study the harmonisation of citizen suit provisions in member states' environmental laws. Under Article 130s (now Article 175), the EC established its first financial instrument dedicated to environmental matters (LIFE).[79]

However, even after the SEA came into force, environmental law-making under Title VII required the unanimous support of all member states, resulting in protracted negotiations and watered-down provisions. As the Commission, with the support of the Parliament, proposed increasingly ambitious legislation, particularly in relation to enforcement measures, the legislative process slowed down as certain member states sought to limit or prevent the adoption of new rules. The SEA's new Article 100a (now Article 95) in the EEC Treaty provided a means to overcome this institutional foot-dragging. For measures 'which have as their object the establishment and functioning of the internal market', Article 100a(1) allowed qualified majority voting, rather than unanimous voting. Furthermore, it required environmental measures to take as a base a high level of environmental protection.[80] These two provisions in Article 100a created the opportunity for environmental legislation to be adopted by qualified majority voting, by-passing the requirement of unanimity.[81] In the context of the right of states to exercise the veto under Article 130s (now Article 175), it was not surprising that the EC Commission proposed environmental legislation on the basis of Article 100a, which is primarily concerned with removing barriers to trade, rather than Article 130.

In 1989, the EC Commission commenced a legal action against the EC Council, challenging its use of Article 130s (now Article 175) of the EEC Treaty as the legal basis for the adoption of a Directive on titanium dioxide waste, rather than Article 100a (now Article 95) as originally proposed by the Commission and supported by the Parliament.[82] The ECJ found in favour of the Commission and declared the Directive to be void.[83] The Court considered that the goal and content of the Directive pursued the double objective of environmental protection and improvement of competition, but that reliance on the double legal

[78] Chapter 17, pp. 854–6 below.
[79] Chapter 20, pp. 1036–7 below.
[80] Art. 100a(3) (now Art. 95(3)).
[81] Art. 100a also allows a member state to adopt national provisions for environmental protection which are more stringent than the Community's harmonisation measures as long as the member state can demonstrate a major need referred to in Art. 36: Art. 100a(4). Art. 100a(5) allows harmonisation measures to include a safeguard clause authorising the member states to take provisional measures for one or more of the non-economic reasons referred to in Art. 36, subject to a Community control procedure.
[82] Council Directive 89/428/EEC, OJ L201, 14 July 1989, 56.
[83] Case C-300/89, *EC Commission* v. *Council* [1991] ECR I-2687.

base of Articles 100a and 130s was excluded because it would defeat the purpose of ensuring the use of the co-operation procedure to strengthen the participation of the European Parliament in the legislative process. The Court justified reliance on Article 100a rather than on Article 130s on three grounds: first, Article 130r(2) provided that environmental protection was to be a component of the Community's other policies, which implied that a Community measure did not have to be based on Article 130s solely because it pursued environmental aims; secondly, that this environmental protection measure affected conditions of production in a given industry with the aim of eliminating distortions of competition and came within Article 100a; and, thirdly, the requirements under Article 100a(3) that proposals take as a base a high level of environmental protection indicated that the objectives of environmental protection of Article 130r could be effectively pursued by means of a harmonisation measure adopted under Article 100a. The judgment opened the door to the Commission's increased use of Article 100a. However, in March 1993 the ECJ appeared to reverse itself, holding that the Council had been justified in basing Directive 91/156 on waste on Article 130s, and rejecting the Commission's arguments favouring the use of Article 100a.[84] By then, however, the Maastricht Treaty had introduced qualified majority voting for many environmental matters.

Maastricht Treaty on European Union (1992)[85]

In February 1992, the then twelve EC member states signed the Treaty on European Union (1992 Maastricht Treaty) which introduced further amendments to the EEC Treaty, including the provisions on environment, with the objective of establishing European Monetary and Political Union.[86] The Maastricht Treaty establishes a *European Community*, which had as its objectives, by establishing a common market and monetary union and by implementing common policies and activities:

> to promote throughout the Community a harmonious and balanced development of economic activities, sustainable and non-inflationary growth respecting the environment, a high degree of convergence of economic performance, a high level of employment and of social protection, the raising of

[84] Case C-155/91, *EC Commission* v. *Council* [1993] ECR I-939.

[85] D. Wilkinson, 'Maastricht and the Environment: The Implications for the EC's Environment Policy of the Treaty on European Union', 4 JEL 222 (1992); M. Hession and R. Macrory, 'Maastricht and the Environmental Policy of the Community: Legal Issues of a New Environment Policy', in D. O'Keeffe and P. Twomey, *Legal Issues of the Maastricht Treaty* (1994), 151–70.

[86] 7 February 1992, in force 1 November 1993, 31 ILM 247 (1992).

the standard of living and quality of life, and economic and social cohesion and solidarity among member states.[87]

The Maastricht Treaty thus elevated environmental protection to one of the fundamental objectives of the Community.

The environmental provisions of the EEC Treaty (introduced by the 1986 SEA) were amended by the Maastricht Treaty. Under the old Article 130r(1), Community policy was to promote international measures to deal with regional or worldwide environmental problems, and under the old Article 130r(2) environmental policy was to aim at 'a high level of protection taking into account the diversity of situations in the various regions of the Community'.[88] The precautionary principle was added to the list of guiding principles, and environmental protection requirements were henceforth to be 'integrated into the definition and implementation of other Community policies', rather than simply being a 'component', as required by the SEA.[89] Further provision was made for the inclusion, where appropriate, of a 'safeguard clause' in EC harmonisation measures to allow member states to take 'provisional measures, for non-economic environmental reasons, subject to a Community inspection procedure'.[90] The amendments also introduced qualified majority voting as the norm for measures under Article 130r (now Article 174).[91] Unanimity voting remained the rule, however, for provisions which were primarily of a fiscal nature, measures concerning town and country planning, land use (not waste management or general measures) and management of water resources, as well as measures which significantly affect choice between different energy sources and the general structure of a member state's energy supply.[92] These amendments also laid the groundwork for a distinction to be drawn between measures of a Community nature and those which might be considered to be more specific to the member states, with the latter being financed and implemented by the member states.[93] Recognising that certain measures could impose disproportionate costs on public authorities, provision was also made for temporary derogations by member states and for financial support from the proposed new Cohesion Fund.[94] The principle of 'subsidiarity', previously limited to environmental measures, was extended by the Maastricht Treaty to all EC action.[95] The Maastricht Treaty therefore set the basis for the further extension and development of environmental policy and law in the EC.

[87] Amended Art. 2; see Art. 3, requiring the EC to adopt 'a policy in the sphere of the environment'.

[88] See 1997 Amsterdam Treaty, Art. 174. [89] Amended Art. 130r(2) as it then was.

[90] *Ibid.*

[91] Amended Art. 130s(1) and (3) as they then were. Now see Art. 175 of the 1997 Amsterdam Treaty.

[92] Amended Art. 130s(2) as it then was. [93] Amended Art. 130s(4) as it then was.

[94] Amended Art. 130s(5) as it then was. The Cohesion Fund was established under amended Art. 130d (now Art. 161); chapter 20, p. 1037 below.

[95] New Art. 3(b) as it then was.

Agreement on the European Economic Area (1992)

In May 1992, the EC member states and the then seven EFTA states signed the Agreement on the European Economic Area (1992 EEA Agreement) to promote a strengthening of trade and economic relations between the parties with 'equal conditions of competition, and the respect of the same rules, with a view to creating a homogenous' European Economic Area.[96] These objectives are to be achieved by applying rules on the free movement of persons, goods, services and capital, as well as competition rules and closer co-operation on, *inter alia*, environmental matters.[97] The Preamble to the EEA Agreement reflects the determination of the parties to:

> preserve, protect and improve the quality of the environment and to ensure a prudent and rational utilisation of natural resources on the basis, in particular, of the principle of sustainable development, as well as the principle that precautionary and preventive action should be taken and to take a high level of environmental protection as a basis for the further development of rules.

The EEA Agreement includes rules on environmental protection, including provision for the formal incorporation of the most important acts of EC environmental law into the internal law of the EFTA states. Article 73 of the EEA Agreement uses the language of Article 130r(1) and (2) of the EEC Treaty as amended by the 1992 Maastricht Treaty, and its Article 74 and Annex XX identify thirty-two environmental Directives to be applied by the EFTA states, and six further acts of which they and the other parties to the EEA Agreement will 'take note'. For each of the thirty-eight instruments referred to, any reference in the provisions to 'member states' is to be understood as meaning all the parties to the EEA Agreement, and the rights conferred and obligations imposed upon the EC member states or their public entities, undertakings (companies) or individuals in relation to each other 'shall be understood to be conferred or imposed' upon the parties to the EEA Agreement, including their competent authorities, public entities, undertakings or individuals.[98] In effect, the provisions cited will be binding upon and become part of the law of the EFTA states, extending the application of these rules of EC environmental law to eighteen states.[99]

[96] OJ L1, 3 January 1994, 3; and Protocol Adjusting the EEA Agreement, Brussels, OJ L1, 3 January 1994, 572, Art. 1(1). The seven EFTA members were Austria, Finland, Iceland, Liechtenstein, Norway, Sweden and Switzerland (Switzerland did not become a party to the EEA Agreement following a majority vote against ratification by referendum in December 1992); Austria, Finland and Sweden became EC members in 1995.

[97] Art. 1(2). [98] Protocol 1 (Horizontal Adaptations), point 7, and Annex XX.

[99] Art. 7; the Treaty provides that Regulations shall as such become part of the internal legal order, and Directives shall leave to the authorities the choice of form and method of implementation.

Amsterdam Treaty (1997)[100]

In October 1997, the fifteen EC members adopted the Amsterdam Treaty, which introduced further amendments with its entry into force on 1 May 1999. The Amsterdam Treaty sought to simplify the decision-making procedures that applied to environment policy, and remove the conflict of legal basis between the 'environment procedure' (Article 175, formerly Article 130s) and the 'approximation of laws' procedure for the internal market (Article 95, formerly Article 100a). The co-operation procedure in environmental matters (Article 175, formerly Article 130s) is replaced with the co-decision procedure which already applied in relation to measures taken to approximate laws in connection with the internal market (Article 95, formerly Article 100a).

The Amsterdam Treaty enshrines the principle of 'sustainable development' in the Preamble and in the objectives of the Maastricht Treaty, and in Article 2 of the EC Treaty, laying down the tasks of the Community. A new Article 6 of the EC Treaty includes a provision calling for environmental protection requirements to be integrated into the definition and implementation of other policies (this was previously contained in Article 174 (formerly Article 130r)). The new Article 6 also cites such integration as one means of promoting sustainable development, and is to be seen in conjunction with the Declaration on environmental impact assessments, annexed to the Final Act of the Intergovernmental Conference which drafted the Treaty of Amsterdam, by which the Conference noted the Commission's undertaking to prepare environmental impact assessment studies when making proposals which may have significant environmental implications.

The Treaty of Amsterdam also strengthened the framework created by the 1986 SEA for free movement, reflecting the need to take account of issues of vital importance for society such as the environment, public health or consumer protection (Article 95(3), formerly Article 100a(3)). The EC Treaty now requires all proposals by the Commission to be based on a high level of environmental protection. Previously, after a harmonisation measure had been adopted by the Council, any member state could still apply different national provisions if warranted by major environmental protection requirements. The member state in question had to notify the Commission, which then verified that the provisions involved were not a means of arbitrary discrimination or a disguised restriction on trade between the member states. This approach has now been extended, drawing a distinction between two separate situations (Article 95, formerly Article 100a). After a Community harmonisation measure has been adopted, member states may either maintain existing national

[100] R. Macrory, 'The Amsterdam Treaty – An Environmental Perspective', in D. O'Keeffe and P. Twomey, *Legal Issues of the Amsterdam Treaty* (1999), 171–84; H. Sevenster, 'The Environmental Guarantee after Amsterdam: Does the Emperor Have New Clothes?', 1 *Yearbook of European Environmental Law* 291 (2000).

provisions to protect the environment, or introduce new national provisions to protect the environment. In the first case, the member state must notify the Commission and give its reasons for maintaining those national provisions. In the second case, the member state must again notify the Commission of the new national provisions and explain its reasons for introducing them. Moreover, those measures must be based on new scientific evidence and must be in response to a problem that specifically affects the member state in question and that arose after the harmonisation measure was adopted. In both cases, it is for the Commission to check whether or not the national measures involved are a means of arbitrary discrimination, a disguised restriction on trade between member states, or an obstacle to the functioning of the internal market. The Commission has six months to decide whether to approve or reject the measure. This may be extended by a further six months in certain circumstances. In the absence of a decision, the national provisions are deemed to have been approved.

Principles and rules

EC environmental law now comprises the general principles and rules set forth in the EC Treaty (and the EURATOM Treaty), as amended in 1986, 1992, 1997 and 2001, together with hundreds of Directives, Regulations and Decisions addressing environmental issues which have been adopted since 1967, and the obligations arising for the EC under the many international environmental agreements to which it is a party. The following sections identify the main provisions which have been adopted in relation to general policy, air quality, water quality, biodiversity and nature, noise, chemicals and other hazardous substances, waste, and radioactive substances (given the number of instruments the account which follows is intended to be illustrative of the approach taken by the Community, and is not intended to be comprehensive). Other chapters in this book consider EC provisions on environmental impact assessment,[101] environmental information (including eco-labelling and eco-audits),[102] the use of economic instruments (including the carbon tax),[103] trade and competition,[104] compliance[105] and liability.[106]

General policy and principles

The general objectives and principles of EC environmental law are set out in the EC Treaty, now contained in Articles 174 and 175 of the EC Treaty. Following the various amendments to the EC Treaty, Article 174 provides, in relevant part:

[101] Chapter 16, pp. 807–10 below.
[102] Chapter 17, pp. 860–6 below.
[103] Chapter 4, pp. 158–61 above.
[104] Chapter 19, pp. 985–7 below.
[105] Chapter 5, pp. 222–5 above.
[106] Chapter 18, pp. 878–81 below.

1. Community policy on the environment shall contribute to pursuit of the following objectives:
- preserving, protecting and improving the quality of the environment;
- protecting human health;
- prudent and rational utilisation of natural resources;
- promoting measures at international level to deal with regional or world-wide environmental problems.

2. Community policy on the environment shall aim at a high level of protection taking into account the diversity of situations in the various regions of the Community. It shall be based on the precautionary principle and on the principles that preventive action should be taken, that environmental damage should as a priority be rectified at source and that the polluter should pay . . .

3. In preparing its policy on the environment, the Community shall take account of:
- available scientific and technical data;
- environmental conditions in the various regions of the Community;
- the potential benefits and costs of action or lack of action;
- the economic and social development of the Community as a whole and the balanced development of its regions.

Community policy on the environment, including programmes for future legislation and action, has been progressively developed in six Action Programmes on the Environment proposed by the Commission and approved by the Council, of which the most recent are the Fifth Action Programme (covering the period 1993–7[107] and subsequently extended) and the Sixth Action Programme (for the period 2001–10).[108]

The Fifth Action Programme identified six issues that were to be addressed because of their seriousness, their Community-wide dimension, and because they were considered to have a crucial bearing on environmental quality and conditions in almost all regions of the Community. These were: climate change; acidification and air pollution; depletion and pollution of water resources; deterioration of the urban environment; deterioration of coastal zones; and waste.[109] Action on these issues was to emphasise the following priority fields of action:

- sustainable management of natural resources;
- integrated pollution control and prevention of waste;
- reduction in consumption of non-renewable energy;

[107] Fifth Environmental Action Programme, 'Towards Sustainability': A European Community Programme of Policy and Action in Relation to the Environment and Sustainable Development, OJ C138, 17 May 1993, 1.

[108] Sixth Environment Action Programme, 'Environment 2010: Our Future, Our Choice, COM (2001) 31, OJ C154 E, 29 May 2001, 218.

[109] Fifth Environmental Action Programme, 13, para. 16.

- improved mobility management;
- environmental quality in urban areas; and
- improvement of public health and safety.[110]

The five target sectors to be specifically addressed were industry, energy, transport, agriculture and tourism, and were to be regulated by a broader range of instruments and techniques, including legislative instruments (to set fundamental levels of protection), market-based instruments (to 'sensitise' producers and consumers and to internalise environmental costs), horizontal supporting instruments (relating to baseline and statistical data, public and consumer information, and education and training) and financial support mechanisms.[111] The Programme applied the principle of subsidiarity, as provided by Article 3(b) of the Maastricht Treaty, which provided that the EC 'will take action only if and insofar as the objectives of the proposed action cannot be sufficiently achieved by the member states and can therefore, by reason of the scale or effects of proposed action, be better achieved by the [EC]'.[112] The Programme set forth for each of the main issues a combination of long-term objectives and performance targets for the period up to the year 2000, together with a representative selection of actions to achieve those targets. The Programme envisaged further EC measures to allow individuals and public interest groups to have practicable access to the courts to ensure that their legitimate interests were protected and that prescribed environmental measures were enforced and illegal practices stopped.[113] The Commission also committed itself, as soon as practicable, to establish a mechanism whereby damage to the environment was restored by the person or body responsible for the damage incurred.[114] In 1995, the Commission reported on, and evaluated the implementation of the Programme.[115] The approach adopted in the Fifth Environmental Action Programme was confirmed in the Commission's 1998 strategy for integrating the environment into European Union policies.[116] The Council also called on the Commission to put forward a strategy for implementing the new Article 6 of the EC Treaty. A communication on the European strategy for sustainable development was approved in May 2001 prior to the 2002 World Summit on

[110] *Ibid.*, para. 17. [111] *Ibid.*, paras. 18 to 31.

[112] *Ibid.*, para. 32; the principle of subsidiarity was first introduced into EC law when the Title on environment was adopted by the 1986 SEA: see pp. 745–6 above.

[113] *Ibid.*, see chapter 9 above. [114] *Ibid.*

[115] Progress Report from the Commission on the Implementation of the EC Program of Policy and Action in Relation to the Environment and Sustainable Development, COM (95) 624 final. See Decision No. 2179/98/EC, OJ L275, 10 October 1998, 1, reviewing the Fifth Environmental Action Programme.

[116] Communication from the Commission to the European Council of 27 May 1998 on a partnership for integration: a strategy for integrating the environment into EU policies (Cardiff, June 1998), COM (98) 333 final.

Sustainable Development in Johannesburg, setting out the Community's long-term objectives for sustainable development.[117]

The Sixth Environmental Action Programme was approved by the European Parliament and Council in July 2002.[118] The Programme addresses 'the key environmental objectives and priorities based on an assessment of the state of the environment and prevailing trends including emerging issues that require a lead from the Community'.[119] It focuses on four priority areas for action:

- climate change (in particular reducing greenhouse gas emissions by 8 per cent by 2008–12 compared to 1990 levels);
- nature and biodiversity (with the object of halting biodiversity decline by 2010);
- environment and health and quality of life (including the objective of aiming to achieve within one generation (i.e. by 2020) that chemicals are produced and used only in ways that do not lead to a significant negative impact on health and the environment); and
- natural resources management (including the objective that by 2010 22 per cent of electricity be produced from renewable sources).

The Programme proposes five priority avenues of strategic action:

- improving the implementation of existing legislation;
- integrating environmental concerns into other policies;
- working closer with the market;
- empowering people as private citizens and helping them to change behaviour; and
- taking account of the environment in land-use planning and management decisions.

The Programme also sets out specific actions which are to be taken in relation to each of these avenues.

It is apparent that the integration of environmental concerns into all aspects of the European Union's activities – including in the field of external relations – is the fundamental objective of the Sixth Environmental Action Programme.[120] This objective takes account of the prospect of European Union enlargement and indicates close co-operation with the administrations in the candidate member countries on sustainable development, as well as establishing closer

[117] Communication from the Commission of 15 May 2001, A Sustainable Europe for a Better World: A European Union Strategy for Sustainable Development (Commission's Proposal to the Gothenburg European Council), COM (2001) 264 final.

[118] Decision No. 1600/2002/EC, OJ L242, 10 September 2002, 1.

[119] *Ibid.*, Art. 1(1).

[120] See also European Commission, Partnership for Integration: A Strategy for Integrating the Environment into EU Policies, COM (98) 333; D. Wilkinson, 'Steps Towards Integrating the Environment into other EU Policies', in T. O'Riordan and H. Voisey, *The Transition to Sustainability: The Politics of Agenda 21 in Europe* (1998).

cooperation with NGOs and businesses in these countries. The programme will be increasingly based on scientific and economic analyses and on environmental indicators, and to this end it is proposed that the Commission should work in closer co-operation with the European Environment Agency. The Programme identifies a number of priority areas for action on international issues, including:

- integrating environmental protection requirements into all the Community's external policies;
- strengthening international environmental governance by the reinforcement of multilateral co-operation and the institutional framework;
- aiming for swift ratification and effective compliance and enforcement of international conventions where the Community is a party;
- promoting sustainable environmental practices in foreign investments and export credits;
- intensifying efforts to arrive at a consensus on methods for the evaluation of risks to health and the environment, as well as approaches of risk management including the precautionary principle;
- achieving mutual supportiveness between trade and environmental needs, including by 'sustainability impact assessments' of multilateral trade agreements;
- promoting a world trade system that fully recognises multilateral and regional environmental agreements and the precautionary principle; and
- promoting cross-border environmental co-operation with neighbouring countries and regions.

The Community's Environmental Action Programmes and many of the instruments that it has adopted since the late 1960s, together with various regulatory techniques which are now commonplace in general international environmental law, were often first adopted internationally at the EC level. These included legislation on environmental impact assessment, the right of access to environmental information, and eco-labelling, environmental management and auditing, integrated pollution control, and financial instruments (such as the LIFE programme). While EC environmental legislation has generally followed a traditional 'command-and-control' approach to regulation, the EC is moving towards greater use of economic instruments and market-based techniques, for which the eco-labelling Directive and the recently adopted tradeable permits scheme, as well as the earlier carbon/energy tax proposal are examples.[121] The EC has also contributed to the development of general rules of international environmental law in international development assistance agreements, in particular the 1989 Lomé Convention[122] and its successor, the 2000 Cotonou

[121] Chapter 17, p. 861 below.
[122] See p. 792 below; and chapter 20, pp. 1022–3 below.

Agreement.[123] In relation to the prevention of pollution, the EC now has a comprehensive legal structure.

Integrated pollution prevention and control

After nearly three decades of seeking to prevent pollution of distinct environmental media, in 1996 the EC adopted Council Directive 96/61/EC on integrated pollution prevention and control (IPPC Directive) with a view to achieving a more integrated and horizontal approach.[124] The Directive is premised on the view that 'different approaches to controlling emissions into the air, water or soil separately may encourage the shifting of pollution between the various environmental media rather than protecting the environment as a whole' (Preamble), and aims to:

> achieve integrated prevention and control of pollution arising from the activities listed in Annex I. It lays down measures designed to prevent or, where that is not practicable, to reduce emissions in the air, water and land from the abovementioned activities, including measures concerning waste, in order to achieve a high level of protection of the environment taken as a whole.[125]

The integrated approach imposes basic obligations on the operator, in particular the obligation to ensure that: installations are operated so as to ensure that all appropriate preventive measures are taken against pollution (in particular through application of the best available techniques); no significant pollution is caused; waste production is avoided (in accordance with Council Directive 75/442/EEC) and waste which is produced is recovered or disposed of while avoiding or reducing any impact on the environment; energy is used efficiently; measures are taken to prevent accidents and limit their consequences; and measures are taken upon definitive cessation of activities to avoid pollution risk and return the site of operation to a satisfactory state.[126] The Directive establishes a detailed procedure for applying for, issuing and amending operating permits for industrial installations, and requires member states to ensure that the grant of permits and the conditions applying thereto guarantee 'an effective integrated approach' by national authorities.[127] In particular, all permits granted, and modified permits, must include details of the arrangements made for achieving a high level of protection for air, water and land, and must include emissions

[123] Cotonou, Benin, 23 June 2000, not yet in force.

[124] OJ L257, 10 October 1996, 26. The Directive will be amended by the passage of the proposed framework Directive for greenhouse gas emissions trading within the European Community (COM (2001) 581 final, OJ C75E, 26 March 2002, 33).

[125] Art. 1. Annex 1 lists categories of activities to which the Directive applies: energy industries, production and processing of metals, mineral industry, chemical industry, and waste management.

[126] Art. 3. [127] Arts. 6, 7, 12 and 13.

limit values for pollutants to air and water (in particular pollutants listed in Annex III), monitoring of discharges, and minimisation of long-distance or transboundary pollution.[128] Emissions limit values are to be based on best available techniques, taking into account the technical characteristics of the installation concerned, its geographical location and local environmental conditions.[129] The Directive requires member states to 'periodically reconsider and, where necessary, update permit conditions',[130] and includes provisions on compliance, access to and exchange of information, transboundary effects and transitional provisions governing entry into force.[131]

Air quality[132]

The EC has a range of legislative instruments aimed at the protection and improvement of air quality. Five regulatory techniques have been adopted in pursuance of this objective: equipment standards for certain activities and processes (cars, industrial plant, waste incinerators); standards relating to fuel content (diesel and other fuels); limits on atmospheric concentrations (lead); limits on the total emissions of member states of certain pollutants (nitrogen dioxide, sulphur dioxide); and reductions and prohibitions on the production and consumption of certain harmful substances (CFCs). More recently, the EC

[128] Arts. 8 and 9. Where the need for Community action has been identified, the Council will set emissions limit values for activities listed in Annex I (except landfills) and the polluting substances referred to in Annex III: Art. 18(1). Where no such emissions limit values are defined 'the relevant emission limit values contained in the Directives referred to in Annex II and in other Community legislation shall be applied as minimum emission limit values': Art. 18(2).

[129] Art. 9(4). This is without prejudice to Art. 10, which provides that '[W]here an environmental quality standard requires stricter conditions than those achievable by the use of the best available techniques, additional measures shall in particular be required in the permit, without prejudice to other measures which might be taken to comply with environmental quality standards'.

[130] Art. 13(1). Reconsideration is to be undertaken where: the pollution caused by the installation is of such significance that the existing emissions limit values of the permit need to be revised or new such values need to be included in the permit; substantial changes in the best available techniques make it possible to reduce emissions significantly without imposing excessive costs; the operational safety of the process or activity requires other techniques to be used; and new provisions of Community or national legislation so dictate: Art. 13(2).

[131] Arts. 14–17 and 20–21. On failure to transpose the Directive, see Case C-29/01, *Commission* v. *Spain* [2002] ECR I-2503; Case C-39/01, *Commission* v. *United Kingdom* [2002] ECR I-2513; and Case C-64/01, *Commission* v. *Greece* [2002] ECR I-2523.

[132] Fifth Environmental Action Plan, n. 107 above, 42–4 and Tables 7 to 9 (addressing climate change, acidification and air quality). The Sixth Environment Action Programme, n. 108 above, in its target area on environment and health, aims to achieve levels of air quality that do not give rise to unacceptable impacts on, and risks to, human health and the environment.

has adopted new Directives on air pollution, a new clean air strategy[133] and an integrated pollution prevention and control Directive.[134] In 2001, it adopted a 'Clean Air for Europe (CAFE) Programme' as the first of the thematic strategies announced in the Sixth Environmental Action Programme. The objectives of the CAFE Programme are, *inter alia*: to develop and collect scientific information on the effects of air pollution; to support the implementation and review the effectiveness of existing legislation and to develop new proposals; and to determine an integrated strategy (by 2004 at the latest) to include appropriate objectives and cost-effective measures. The objectives of the first programme phase include, tropospheric ozone, acidification and eutrophication.[135] The Commission has also signalled its intention to make greater use of economic instruments: its proposal in 1995 to establish a carbon/energy tax marked the first effort by a group of countries to consider the use of taxation policy as an international instrument of environmental protection.[136] More recently the Community has adopted a scheme for greenhouse gas emissions allowance trading in the Community.[137] The Community is a party to the 1992 Climate Change Convention and to its 1997 Kyoto Protocol,[138] and the EC has a new package of proposed legislation for implementing the Kyoto Protocol. There are also Programmes for energy conservation and energy technology, including a commitment to increase the use of renewable energies from its present 6 per cent to 12 per cent by 2010.[139]

Air framework

The Fifth Environmental Action Programme recommended the adoption of a long-term programme on air quality. This led to the adoption of Directive 96/62/EC on ambient air quality assessment and management, laying the foundations for common objectives on ambient air quality to prevent harmful effects

[133] Commission Communication 'The Clean Air for Europe (CAFE) Programme: Towards a Thematic Strategy for Air Quality', COM (2001) 245 final, 4 May 2001.

[134] Directive 96/61/EC, OJ L257, 10 October 1996, 26.

[135] Commission Communication, 'The Clean Air for Europe (CAFE) Programme: Towards a Thematic Strategy for Air Quality', COM (2001) 245 final, 4 May 2001.

[136] See COM (95) 172 final, 10 May 1995; chapter 4, pp. 158–67 above.

[137] Chapter 8, p. 371 above. For background, see COM (2001) 581 final, OJ C75E, 26 March 2002, 33. See also Commission Green Paper on Greenhouse Gas Emissions Trading Within the European Union, COM (2000) 87 final; and Final Report: Designing Options for Implementing an Emissions Trading Regime for Greenhouse Gases in the EC, 22 February 2000.

[138] The Kyoto Protocol was signed by the European Community on 10 December 1997. See COM (2001) 579 final, OJ C75E, 26 March 2002, 17; COM (2001) 580 final; COM (2001) 581 final, OJ C75E, 26 March 2002, 33.

[139] This intention was confirmed in Council Resolution of 8 June 1998 on renewable sources of energy, OJ C198, 24 June 1998, 1.

on human health and the environment.[140] The Directive covers the revision of existing legislation and the introduction of new air quality standards for previously unregulated air pollution. It has been followed by proposals for 'daughter Directives' establishing limit values for certain specified air pollutants.[141] Directive 96/62 does not itself set limit values, but its Article 4 provides that the Commission shall submit to the Council proposals for the setting of limit values and, as appropriate, alert thresholds.[142] Directive 96/62 defines terms like 'ambient air', 'pollutant', 'limit value' and 'alert threshold',[143] and directs member states to take any action needed to prevent concentrations of nitrogen dioxide and lead in the ambient air, as assessed in accordance with the rules under the Directive.[144]

In order to maintain and improve air quality within the Community, the Directive also defines basic principles which make it possible to: establish quality objectives for ambient air (outdoor air in the troposphere); draw up common methods and criteria for assessing air quality; and obtain and disseminate information on air quality.[145] Member states are required to monitor ambient air quality throughout their territories to draw up a list of areas and conurbations where pollution levels exceed the limit values.[146]

In addition to the framework Directive and the daughter Directives, a Directive on national emissions ceilings for certain atmospheric pollutants was adopted in 2001.[147] The Directive aims to set a strategy to combat acidification, eutrophication and photochemical air pollutants. It provides for the introduction, by the end of 2010 at the latest, of national emissions ceilings for sulphur dioxide (SO_2), nitrogen oxides (NO_x), volatile organic compounds (VOCs) and ammonia (NH_3).[148] The Directive includes a review clause which requires the Commission to report in 2004 and 2008 on the progress being

[140] Council Directive 96/62/EC, OJ L296, 21 November1996, 55.

[141] See e.g. Directive 2000/69/EC, OJ L313, 13 December 2000, 12, introducing specific limit values for two pollutants (benzene and carbon monoxide) in ambient air; Directive 2002/3/EC, OJ L67, 9 March 2002, 14, relating to ozone in ambient air, (see n. 220 below); and Directive 99/30/EC of 22 April 1999, OJ L163, 29 June 1999, 41 (see n. 192 below).

[142] See Art. 4 and Annex I. [143] Art. 2.

[144] On failure to designate a competent authority and bodies responsible for implementing the Directive, see Case C-417/99, *Commission* v. *Spain* [2001] ECR I-6015.

[145] Art. 1 [146] Arts. 5 and 6. See also Arts. 8 to 10.

[147] Directive 2001/81/EC, OJ L309, 27 November 2001, 22. See also Directive 2001/80/EC, OJ L309, 27 November 2001, 1, on the limitation of emissions of certain pollutants into the air from large combustion plants, chapter 8, p. 337 above. In light of these new Directives, the Commission has recently made a proposal to accede to the 1999 Protocol to the 1979 LRTAP Convention, chapter 8, p. 325 above; see COM (2002) 44 final, OJ C151E, 25 June 2002, 74.

[148] See Art. 4 and Annex I. Member states are required to draw up national programmes for the progressive reduction of national emissions of the four pollutants by 1 October 2002: Art. 6.

made in meeting the targets, and requires examination of air pollution caused by aviation and shipping.

Motor cars

The first EC Directive designed to protect air quality and human health was adopted in 1970 to establish mandatory technical standards for emissions of carbon monoxide, unburnt hydrocarbons, nitrogen oxides and particulates from certain vehicles with petrol engines,[149] based on technical requirements adopted by the UNECE. The Council has since been empowered to adopt legislation to stabilise and reduce emissions of carbon dioxide and other greenhouse gases from motor cars and introduce certain tax incentives for vehicles covered by the Directive.[150] The EC Council is also committed to limiting carbon dioxide emissions from motor vehicles, adopting emission standards for all commercial vehicles, and implementing a research and development programme to encourage the marketing of clean vehicles and fuels.[151]

Subsequent amending Directives cover motor vehicles with spark-ignition and compression-ignition engines and apply to tailpipe emissions, evaporative emissions, emissions of crankcase gases and the durability of anti-pollution devices for specified motor vehicles.[152] The Directives lay down differing limit values for emissions (by petrol and diesel cars) of: carbon monoxide; unburnt hydrocarbons; nitrogen oxides; and, specifically for diesel engines, limit values for particulate pollutants. The most stringent values, laid down by Directive 98/69/EC, have become applicable from 2000 onwards, according to the type of vehicle.[153]

Measures to reduce air emissions from cars have also been prepared within the first Auto/Oil Programme[154] and the Auto/Oil II Programme, which aim for significant improvements in urban air quality by 2010.[155] The Commission has also entered into environmental agreements with motor manufacturers

[149] Council Directive 70/220/EEC, OJ L76, 6 April 1970, 1, as amended, Annex I, paras. 5.3.1.4 and 7.1.1.1.

[150] Council Directive 89/458/EEC, amending Council Directive 70/220/EEC, OJ L226, 3 August 1989, 1, as amended, Arts. 3 and 6.

[151] Council Directive 91/441/EEC, amending Council Directive 70/220/EEC, OJ L242, 30 August 1991, 1 (Preamble).

[152] Council Directive 70/220/EEC, OJ L76, 6 April 1970, 1, has been amended by, *inter alia*, the following: Council Directive 93/59/EC of 28 June 1993, OJ L186, 28 July 1993, 21; Council Directive 94/12/EC of 23 March 1994, OJ L100, 19 April 1994, 42. Commission Directive 96/44/EC of 1 July 1996, OJ L210, 20 August 1996, 25; Directive 98/69/EC of 13 October 1998, OJ L350; 28 December 1998, 1; Commission Directive 99/102/EC of 15 December 1999, OJ L334, 28 December 1999, 43; and Directive 2001/1/EC of 22 January 2001, OJ L35, 6 February 2001, 34.

[153] OJ L350, 28 December 1998, 1.

[154] See COM (96) 248 final, 18 June 1996, OJ C77, 11 March 1997, 8.

[155] See COM (2000) 626 final.

to reduce CO_2 emissions from cars. These include agreements with ACEA (Association des constructeurs européens d'automobiles)[156] and the Japanese and Korean Automobile Manufacturers Association.[157]

Diesel engines

Council Directive 72/306/EEC establishes limits on emissions of soot from all vehicles with diesel engines except those run on rails, agricultural tractors and machines and public works vehicles.[158] It was supplemented in 1988 by a Directive establishing emissions limits for carbon monoxide, hydrocarbons and nitrogen oxides for new models and existing models of vehicles with diesel engines.[159]

Directive 99/96/EC amends the 1988 Directive by introducing provisions on polluting emissions from new heavy-duty engines fuelled by natural gas (NG) and liquefied petroleum gas (LPG). The Directive also introduces measures on the introduction of a new concept of Enhanced Environmentally Friendly Vehicles and actions likely to facilitate the type-approval of engines and vehicles using ethanol as a substitute fuel.[160] Another amending Directive grants to small diesel engines for use in commercial vehicles a derogation from the limit value applicable from 1 October 1995, as prescribed by Directive 91/542/EEC. It also authorises member states to provide for tax incentives encouraging the placing on the market of vehicles which satisfy the provisions of the EC Treaty and to introduce a new statistical method of monitoring production.[161] There has also been a proposal for a Directive to reduce the atmospheric pollution caused by agricultural or forestry tractor engines by laying down, at Community level, standards for acceptable emissions that apply to those engines.[162]

Non-road mobile machinery

Directive 97/68/EC sets out air emissions limit values for machinery other than passenger and commercial vehicles, airplanes and ships; it covers machinery

[156] See COM (98) 495 final; 29 July 1998, announcing the agreement and the Recommendation addressed by the European Commission to ACEA, Commission Recommendation 1999/125/EC, OJ L40, 13 February 1999, 49.

[157] See Commission Recommendation 2000/304/EC, OJ L100, 20 April 2000, 57, and Commission Recommendation 2000/303/EC, OJ L100, 20 April 2000, 55.

[158] Council Directive 72/306/EEC, OJ L190, 20 August 1972, 1, as amended, Art. 2 and Annexes I and VI as amended.

[159] Council Directive 88/77/EEC, OJ L36, 9 February 1988, 33, Art. 2 and Annex I, as amended. Directive 2001/27/EC, OJ L107, 18 April 2001, 10, adapts to technical progress Council Directive 2001/27/EC, OJ L107, 18 April 2001, 10.

[160] Directive 99/96/EC, OJ L44, 16 February 2000, 1.

[161] Directive 96/1/EC, OJ L40, 17 February 1996, 1.

[162] Commission Proposal, COM (98) 472 final, OJ C303, 2 October 1998, 9.

such as compressors, forestry equipment, snowplough equipment, aerial lifts and mobile cranes.[163]

Fuels and lead

The Community has long regulated the content of fuels. Directive 75/716/EEC established limits on the concentration of certain substances in gas oils marketed in the EC.[164] It was followed by a Directive establishing limits on the permitted lead-compound content of leaded petrol and the benzene content of leaded and unleaded petrol on their markets, which required member states to ensure the availability and balanced distribution within their territories of unleaded petrol.[165] An alternative approach to the maintenance of air quality is provided by Council Directive 82/884/EEC, which fixes a limit value (concentration levels which must not be exceeded) for lead in the air.[166]

Council Directive 93/12/EC[167] introduced a gradual reduction in the sulphur content of gas oil to reach the emission limit values fixed in other Community provisions. Another Directive relating to the quality of petrol and diesel fuels meets the commitment given in Directive 93/12/EC that target values would be adopted involving a substantial reduction in pollutant emissions from motor vehicles after 2000; it sets the environmental specifications to apply successively (with effect from 1 January 2000 and 1 January 2005) to fuels for vehicles equipped with petrol and diesel engines.[168] The Directive banned leaded petrol from the market from 2000 and provides for progressive improvements in the environmental quality of unleaded petrol and diesel fuel. Notwithstanding the general rules of the Directive, member states may in certain specific cases allow petrol or diesel fuels which fail to comply with the Directive to remain on the market. They may also impose more stringent standards on fuels marketed on their territory in order to protect the environment or public health in a specific ecologically sensitive area, provided the measures are restricted to those areas.

[163] Directive 97/68/EC, OJ L59, 27 February 1998, 1, as amended by Directive 2001/63/EC, OJ L227, 23 August 2001, 41. The amending Directive relates to measures to counter the emission of gaseous and particulate pollutants from internal combustion engines to be installed in non-road mobile machinery. See Case C-320/99, *Commission* v. *France* [2000] ECR I-10453, on non-compliance.

[164] Council Directive 75/716/EEC, OJ L307, 27 November 1975, 22, as amended; see Case 92/79, *EC Commission* v. *Italy* [1980] ECR 1115, (non-implementation).

[165] Council Directive 85/210/EEC, OJ L96, 3 April 1985, 25, as amended, Arts. 2, 3 and 4. See Case-162/89, *EC Commission* v. *Belgium* [1990] ECR I-2391, (non-implementation by failure to provide reports to the Commission). This Directive is now repealed by Directive 98/70/EC, OJ L350, 28 December 1998, 58.

[166] Council Directive 82/884/EEC, OJ L378, 31 December 1982, 15, as amended, Arts. 1 and 2, now repealed (see n. 194 below).

[167] Directive 93/12/EC, OJ L74, 27 March 1993, 81, as amended.

[168] Directive 98/70/EC, OJ L350, 28 December 1998, 58, as amended. This repeals Directives 85/210/EEC, OJ L96, 3 April 1985, 25, 85/536/EEC, OJ L334, 12 December 1985, 20, and 87/441/EEC, OJ L238, 21 August 1987, 40, as from 1 January 2000.

Ozone layer

Despite initial misgivings about the need for action, the EC has been an active participant in the 1985 Vienna Convention and the 1987 Montreal Protocol. In 1980, the EC required member states to stop increases in the 'production capacity' of certain chlorofluorocarbons and to ensure that industries situated in their territories reduced the use of these chlorofluorocarbons in the filling of aerosol cans by 30 per cent compared with 1976 levels by 31 December 1981.[169] Council Decision 82/795 defined 'production capacity' for purposes of the application of Decision 80/372 and provided for the regular collection by the EC Commission of statistical information on production and use of certain chlorofluorocarbons.[170]

In 1988, the EC became a party to the 1985 Vienna Convention and the 1987 Montreal Protocol,[171] and in 1991 it implemented the 1990 Amendments and Adjustments and introduced control measures for phase-out which were more stringent than those under the amended Montreal Protocol.[172] The 1991 Regulation established quantitative restrictions on imports of substances from third countries and of controlled substances from non-parties, as well as for imports from non-parties of products which contain or are produced with controlled substances, and exports to non-parties.[173] The Regulation also implemented a new phase-out schedule for the production and consumption of certain substances, as well as specific EC management, reporting and inspection requirements.[174]

The current Community law in respect of the protection of the ozone layer is laid down in Council Regulation (EC) No. 2037/2000.[175] It replaced Council Regulation (EC) No. 3093/94 on substances that deplete the ozone layer, so as to adapt Community rules in the light of the technical developments which had occurred since the earlier Regulation was adopted, and in line with the changes made, in 1995 and 1997, to the 1990 Montreal Protocol.[176] In laying down stricter provisions, the new Regulation takes into account the increasing availability of products that can replace those which deplete the ozone layer, such as hydrochlorofluorocarbons (HCFCs) and methyl bromide. The Regulation includes controls on production, importation, exportation, supply, use, leakage and recovery of controlled substances. It also establishes a licensing procedure for all imports of ozone-depleting substances.[177] In the landmark decision in

[169] Council Decision 80/372/EEC, OJ L90, 3 April 1980, 45, as amended, Art. 1.
[170] Council Decision 82/795/EEC, OJ L329, 25 November 1982, 29, Arts. 1 and 2 and Annex.
[171] Council Decision 88/540/EEC, OJ L297, 31 October 1988, 8; chapter 8, pp. 344–57 above.
[172] Council Regulation (EEC) No. 91/594, OJ L67, 14 March 1991, 1; chapter 8, pp. 345–57 above.
[173] Part I, Arts. 3 to 9, and Annex II.
[174] Part II, Arts. 10 and 11; and Part III, Arts. 13 to 15.
[175] OJ L244, 29 September 2000, 1, as amended.
[176] OJ L333, 22 December 1994, 1.
[177] Arts. 6–8. See Case T-336/94, *Efisol* [1996] ECR II-1343.

Gianni Bettati, the ECJ held that provisions on the production, supply and use in the Community of certain ozone-depleting substances did not impinge on other provisions of Community law.[178] Notably, the Court stated that:

> [I]t is settled law that Community legislation must, so far as possible, be interpreted in a manner that is consistent with international law, in particular where its provisions are intended specifically to give effect to an international agreement concluded by the Community (see to that effect Case C-61/94, *Commission* v. *Germany* [1996] ECR I-3989, paragraph 52).[179]

Sulphur dioxide and nitrogen dioxide

The EC has adopted far-reaching legislation aimed at curbing emissions of sulphur dioxide and nitrogen dioxide. The first legislative act, in 1980, fixed limit values and guide values for sulphur dioxide and suspended particulates in the atmosphere.[180] Subject to the exceptions laid down in the Directive, member states were required to ensure that atmospheric concentrations were not greater than the limit values fixed in Annex I to the Directive by 1 April 1983, and to endeavour to move towards the guide values in Annex II wherever measured concentrations were higher than those values.[181] The Directive also established reference methods for sampling and analysis.[182] In 1981, the EC became a party to the 1979 LRTAP Convention;[183] in 1993, it acceded to the 1988 NO_x Protocol;[184] and in 2001 it approved the Heavy Metals Protocol.[185] The Commission plans to accede to the 1999 Protocol to Abate Acidification, Eutrophication and Ground-Level Ozone.[186]

Limit value and guide values have also been fixed for concentrations of nitrogen dioxide in the atmosphere other than at work or inside buildings.[187] Subject to the exceptions laid down in the Directive, member states have been required to ensure that atmospheric concentrations of nitrogen oxide are limited to the values set out in Annex I to the Directive by 1 July 1987.[188] Lower values may be fixed for zones in which member states consider it necessary

[178] See Case C-341/95, *Gianni Bettati* v. *Safety Hi-Tech Srl* [1998] ECR I-4355, paras. 31 *et seq.*

[179] *Ibid.*, para 20.

[180] Council Directive 80/779/EEC, OJ L229, 30 August 1980, 30, Art. 1 and Annexes I and II now repealed; see n. 193 below.

[181] Arts. 3 and 5. [182] Art. 10 and Annexes III and IV.

[183] Council Decision 81/462/EEC, OJ L171, 27 June 1981, 11, see chapter 8, pp. 324–36 above. See also Council Decision 86/277/EEC, OJ L181, 4 July 1986, 1.

[184] Council Decision 93/361/EEC, OJ L149, 21 June 1993, 14; chapter 8, pp. 328–9 above.

[185] Commission Decision 2001/379/EC of 4 April 2001, OJ L134, 17 May 2001, 40; chapter 8, pp. 333–4 above.

[186] See COM (2002) 44 final, OJ C151E, 25 June 2002, 74; chapter 8, pp. 335–6 above.

[187] Council Directive 85/203/EEC, OJ L87, 27 March 1985, 1, as amended, Art. 1 and Annexes I and II, now repealed; see n. 195 below.

[188] Art. 3.

to limit or prevent a foreseeable increase in pollution by nitrogen dioxide in the wake of urban or industrial development, as well as lower values than the Annex II guide values for zones for which special environmental protection is required.[189] Member states are free to fix more stringent values.[190] The Directive also establishes measuring and reporting requirements, reference methods of analysis and institutional arrangements.[191]

These Directives have been superseded by a 1999 'daughter Directive' relating to limit values for sulphur dioxide, nitrogen dioxide and oxides of nitrogen, and particulates and lead in the ambient air.[192] This Directive repeals: Council Directive 80/779/EEC on air quality limit values and guide values for sulphur dioxide and suspended particulates;[193] Council Directive 82/884/EEC on a limit value for lead in the air;[194] and Council Directive 85/203/EEC on air quality standards for nitrogen dioxide,[195] and fixes binding limit values for the different pollutants.

Industrial plants

Industrial plants are also subject to specific legislation. Council Directive 84/360/EEC established general measures and procedures to prevent or reduce air pollution from industrial plants in the EC.[196] It required member states to ensure the prior authorisation of operation of plants in relation to industrial activities listed in Annex I, except those which serve national defence purposes.[197] Authorisation was only to be granted where the national authority was satisfied that certain environmental conditions had been fulfilled, including the application of 'best available technology, provided that the application of such measures does not entail excessive cost' (BATNEEC), that the operation of the plant will not cause significant air pollution, that applicable emissions limit

[189] Art. 4(1) and (2). Where this applies in a border region, the member state is required to hold prior consultations with the other member states concerned: Art. 11(1). Belgium has been held to be in violation of the Directive by reason of its failure to implement the provisions relating to the consultation procedures: see Case C-186/91, *EC Commission* v. *Belgium* [1993] ECR I-851.

[190] Art. 5.

[191] Arts. 6 to 14.

[192] Directive 99/30/EC of 22 April 1999, OJ L163, 29 June 1999, 41.

[193] The Directive was repealed with effect from 19 July 2001, apart from Arts. 1, 2(1), 3(1), 9, 15 and 16, together with Annexes I, III(B) and IV which will be repealed with effect from 1 January 2005.

[194] The Directive was repealed with effect from 19 July 2001, apart from Arts. 1, 2, 3(1), 7, 12 and 13, which are repealed with effect from 1 January 2005.

[195] The Directive was repealed with effect from 19 July 2001, apart from Art. 1(1), first indent, and (2), Art. 2, first indent, Arts. 3(1), 5, 9, 15 and 16 and Annex I, which are repealed with effect from 1 January 2010.

[196] Council Directive 84/360/EEC, OJ L188, 16 July 1984, 20, Art. 1 and Annex I, as amended.

[197] Arts. 3 and 15. Annex I categories of plants include energy, production and processing of metals, manufacture of non-metallic mineral products, the chemical industry, waste disposal, and some paper pulp manufacturing plants.

values will not be exceeded, and that all air quality limit values will be taken into account.[198] Member states are additionally required to implement policies and strategies to gradually adapt plants which were in operation before 1 July 1987, or built or authorised before that date, to 'best available technology'.[199] The Directive allows more stringent requirements, provides for public information and confidentiality, and enables the Council, if necessary, to fix emissions limit values.[200] Limit values were fixed in 1988 – by Directive 88/609/EEC – and then updated in 2001.[201]

The significance of Council Directive 84/360 has been much reduced by the entry into force of the IPPC Directive,[202] which repeals the earlier Directive eleven years after the latter's entry into force, from 30 October 1996. Its provisions will continue to apply to existing installations until Article 5 of the IPPC Directive has been complied with.[203]

Waste incineration plants

In 1989, the EC focused its legislative efforts on regulating both new and existing waste incineration plants. Council Directive 89/369/EEC establishes air pollution standards for the prior authorisation of municipal waste incineration plants for which authorisation to operate is granted from 1 December 1990.[204] Subject to certain exceptions and derogation rights, the Directive establishes emissions limit values for specific pollutants, including dust, heavy metals, hydrochloric and hydrofluoric acids, and sulphur dioxide.[205] Member states may lay down emissions limit values for other pollutants, including dioxins and furans, because of the composition of the waste to be incinerated and the characteristics of the plant, the values for which must take account of the potential harmful effects of the pollutants and of BATNEEC.[206] The Directive establishes further environmental conditions which must be fulfilled prior to authorisation. These relate to the temperature of gases burned, oxygen content, concentrations of carbon monoxide and organic compounds in the combustion gases, measurement requirements, public information and commercial secrecy, and verification.[207]

A 1994 Directive on the incineration of hazardous wastes established uniform and integrated criteria for all hazardous waste facilities.[208] It requires

[198] Art. 4. Annex II lists polluting substances which are considered to be particularly relevant.
[199] Art. 13.
[200] Arts. 5 to 10. For its failure to fulfil its obligations under Arts. 3, 4, 9 and 10 of the Directive, see Case C-230/00, *Commission* v. *Belgium* [2001] ECR I-4591.
[201] Chapter 8, p. 336 above. [202] Art. 20(3) of the IPPC Directive.
[203] See p. 774 below.
[204] OJ L163, 14 June 1989, 32, Arts. 3 and 12(1). Existing waste incineration plants were regulated by Directive 89/429/EEC, OJ L203, 15 July 1989, 50.
[205] Art. 3. [206] Art. 3(4). [207] Arts. 4, 6, 9 and 11.
[208] Directive 94/67/EC, OJ L365, 31 December 1994, 34.

the setting up and maintaining of appropriate operating conditions and sets emissions limit values for hazardous wastes incineration plants. Plants are to be operated in order to achieve a level of incineration that is as complete as possible, and designed in such a way that specified emissions values are not exceeded.[209] Installations for the incineration of municipal waste and for the disposal or recovery of hazardous waste beyond a specified capacity are subject to the provisions of the IPPC Directive. Directive 94/67/EC sets out the licensing procedure to be followed before an incineration plant can become operational. 'Best available technologies' are to be employed in new and existing plants, and licences are to be reviewed every five years. In the event of threshold values being exceeded, the plant must cease operation until the situation has been rectified and the plant complies once more with the requirements laid down in the Directive.[210]

With the adoption in 2000 of a new Directive on the incineration of waste, Directives 89/369/EEC and 89/429/EEC on municipal waste and Directive 94/67/EC on hazardous waste plants will be repealed with effect from 28 December 2005.[211] The aim of the new Directive is to prevent or limit as far as practicable the negative effects on the environment caused by the incineration and co-incineration of waste. In particular, it aims to reduce pollution and harm to human health caused by emissions into the air, soil, surface water and groundwater. This is to be achieved through stringent operational conditions and technical requirements and by setting up emissions limit values for waste incineration and co-incineration plants within the Community.[212] It sets emissions limit values for air (in particular for dust, SO_2, NO_x and heavy metals), and introduces dioxins as a new parameter for discharges into water. It stipulates that residues from the combustion process must be minimised in their amount and harmfulness and recycled where appropriate, and, if not possible, disposed of only under certain conditions.[213] Controls on releases to water aim to reduce the pollution impact of incineration on marine and freshwater ecosystems. The Directive excludes from its scope certain plants like those treating bio-mass and experimental plants.[214] It distinguishes between incineration plants (which may or may not recover heat generated by combustion) and co-incineration plants (such as cement kilns, steel or power plants whose main purpose is energy generation or the production of material products), and envisages procedures for the application and granting of operating permits.[215] It sets up a series of operating conditions including the recovery, as far as practical, of heat generated during the incineration process, and provides for public consultation, access to information and participation in the permit procedure.[216] The Directive

[209] Arts. 6(1) and 7. [210] Art. 12.
[211] Council Directive 2000/76/EC, OJ L332, 28 December 2000, 91, Art. 18. [212] Art. 1
[213] Art. 9 [214] Art. 2 [215] Arts. 3(4) and (5) and 4. [216] Arts. 6 and 12.

will apply to existing plants as from 28 December 2005 and to new plants as from 28 December 2002.

Air pollution by ozone and other substances

Council Directive 92/72/EEC establishes harmonised procedures for monitoring, exchanging information on and warning the population about air pollution by ozone.[217] The Directive requires member states to designate or establish measuring stations and provides for specified reference methods or their equivalent.[218] Member states must inform the public (by radio, television and press) when thresholds for ozone concentration in the atmosphere are exceeded, and must also provide regular information to the Commission.[219] This Directive will be repealed by Directive 2002/3/EC relating to ozone in ambient air with effect from 9 September 2003.[220]

Directive 91/441/EEC and other Directives on emissions from motor vehicles had earlier introduced measures to reduce volatile organic compounds (VOCs) emissions from motor vehicles.[221] A 1994 Directive follows the line of those Directives and applies to the operations, installations, vehicles and vessels used for storage, loading and transporting petrol from one terminal to another or from a terminal to a service station.[222] It applies to road trucks and stationary sources and allows states to fix more stringent conditions.[223] It does not set emissions level values. In 1999, the Council adopted another Directive on emissions of VOCs from solvent-using industries.[224] This Directive describes the activity and not the installations that are covered. It sets threshold and emissions limit values for different activities, and member states are required to ensure compliance either by incorporating the Directives requirements or by general emissions regulations. Other Community measures to prevent air pollution include Directive 87/217/EEC on the prevention and reduction of environmental pollution from asbestos, legislation for the protection of forests,[225] and a Directive requiring member states to establish and

[217] Council Directive 92/72/EC, OJ L297, 13 October 1992, 1, Art. 1(1).

[218] Arts. 3 and 4(1) and Annexes II and V.

[219] Art. 5 and Annexes I and IV, and Arts. 4(2) and 6.

[220] Directive 2002/3/EC, OJ L67, 9 March 2002, 14, relating to ozone in ambient air.

[221] See n. 151 above. See also Directive 91/542/EEC, OJ L295, 25 October 1991, 1; Directive 93/59/EC, OJ L186, 28 July 1993, 21; and Directive 94/12/EC, OJ L100, 19 April 1994, 42.

[222] Directive 94/63/EC, OJ L365, 31 December 1994, 24, on the control of volatile organic compound emissions resulting from the storage of petrol and its distribution from terminals to service stations.

[223] Arts. 3(3) and 4(3).

[224] Council Directive 99/13/EC, OJ L85, 29 March 1999, 1, on the limitation of emissions of volatile organic compounds due to the use of organic solvents in certain activities and installations.

[225] Council Regulation (EEC) No. 3528/86, OJ L326, 21 November 1986, 2; and Regulation (EC) No. 2158/92, OJ L217, 31 July 1992, 3, on the protection of the Community forests against fire.

implement programmes to limit CO_2 emissions by improving energy efficiency (SAVE).[226]

Monitoring

The EC has also adopted legislation establishing a system for the reciprocal exchange of information and data from networks and individual stations which measure air pollution.[227] It provides for the transmission by member states to the EC Commission of annual measurements of emissions of certain pollutants, to the extent that they are measured, on the basis of which the EC Commission prepares an annual report.[228]

A 1993 Council Decision establishes a monitoring mechanism for CO_2 and other greenhouse gas emissions,[229] and will be employed to determine the total quantity of allowances to allocate within the scope of the new Directive on greenhouse gas emissions trading. A 1997 Decision establishes arrangements for the reciprocal exchange of information and data collected from networks and individual stations measuring ambient air pollution within the member states.[230] The exchange of information and data relates to the networks and stations set up in the member states to measure air pollution and the air quality measurements taken by those stations.[231] All data is to be sent by the member states to the Commission, which will in turn make available to the member states (by 1 July 1997 at the latest) its database, containing information on the networks and stations and on air quality. The data is to be accessible to the public through an information system set up by the European Environment Agency.

Climate change and energy efficiency

The Commission participated actively in the negotiation of the 1992 Climate Change Convention, which it signed in June 1992 at UNCED.[232] Since then, the EU has been at the forefront of the international community's efforts to

[226] Directive 93/76/EC, OJ L237, 22 September 1993, 28.

[227] Council Decision 82/459/EEC, OJ L210, 19 July 1982, 1. The Decision repeals the earlier Decision 75/441/EEC, OJ L194, 25 July 1975, 32, Art. 8.

[228] Arts. 2 to 7.

[229] Council Decision 93/389/EC, OJ L167, 9 July 1993, 31, as amended by Decision 99/296/EC, OJ L117, 5 May 1999, 35.

[230] Council Decision 97/101/EC, OJ L35, 5 February 1997, 14, as amended. The information exchange relates to the pollutants listed in Directive 96/62/EC, OJ L296, 21 November 1996, 55, and to other polluting substances (Annex I).

[231] The stations included in the exchange programme are the stations set up as part of the implementation of Directive 96/62/EC, OJ L296, 21 November 1996, 55, and stations not covered by the Directive, but which can monitor the pollutants listed above at local and regional levels and other stations which took part in the reciprocal exchange introduced by Decision 82/459/EEC, OJ L210, 19 July 1982, 1.

[232] See Decision 94/69/EC, OJ L33, 7 February 1994, 11.

combat climate change. The data suggests that the EU fulfilled its obligation under the 1992 Climate Change Convention to ensure that its greenhouse gas emissions in 2000 were no greater than in 1990. In 1998, the EC signed the 1997 Kyoto Protocol,[233] and it became a party in May 2002. It has sought to achieve a consensus on ways to comply with the Kyoto commitments.[234] In October 2001, the European Commission adopted a package of initiatives aimed at combating climate change and meeting the Community's obligations under the Kyoto Protocol,[235] including a Communication on the implementation of the first phase of the European Climate Change Programme[236] and a draft Directive on greenhouse gas emissions trading (which was adopted, in codified form, in December 2002).[237] Other measures address the availability of consumer information on fuel conomy and CO_2 emissions from cars and a scheme to monitor CO_2 emissions from cars.[238]

Water quality[239]

EC legislation to protect water quality originated in 1973 with the adoption of a Directive prohibiting the sale and use of certain detergents with a low level of biodegradability.[240] Subsequent legislation has addressed the quality and protection of drinking water, bathing water, groundwater, fish, and urban

[233] Council Decision of 23 March 1998 concerning the signature by the European Community of a Protocol to the United Nations Framework Convention on Climate Change, COM (98) 96 final.

[234] See e.g. Communication of 3 June 1998 from the Commission, 'Climate Change – Towards an EU Post-Kyoto Strategy', COM (98) 353 final; Communication of 19 May 1999 from the Commission, 'Preparing for Implementation of the Kyoto Protocol', COM (99) 230 final.

[235] See COM (2001) 579 final, OJ C 75E, 26 March 2002, 17.

[236] In March 2000, the Commission launched the European Climate Change Programme (ECCP) to prepare additional policies and measures, as well as an emissions trading scheme, to ensure that the EU achieves the 8 per cent cut in emissions by 2008–12 to which it is committed under the Kyoto Protocol.

[237] See n. 124 above; on the greenhouse gases trading Directive, see chapter 4, p. 163 above.

[238] Directive 99/94/EC, OJ L12, 18 January 2000, 16; and Decision 1753/2000/EC, OJ L202, 10 August 2000, 1.

[239] See Fifth Environmental Action Programme, n. 107 above, 50–2 and Table 11 (setting overall quantitative and qualitative targets up to 2000); and Sixth Environmental Action Programme, n. 108 above and the accompanying text. See also R. Macrory, 'European Community Water Law', 20 *Ecology Law Quarterly* 119 (1993); D. Grimeaud, 'Reforming EU Water Law: Towards Sustainability?', 10 RECIEL 41 (2001).

[240] Council Directive 73/404/EEC, OJ L347, 17 December 1973, 51. The Directive was amended by Council Directive 82/242/EEC, OJ L109, 22 April 1982, 1, and Council Directive 86/94/EEC, OJ L80, 25 March 1986, 51. The Commission has brought several successful prosecutions for failure to implement Directive 82/242/EEC, OJ L109, 22 April 1982, 1: see Case 309/86, *EC Commission* v. *Italy* [1988] ECR 1237; Case 134/86, *EC Commission* v. *Belgium* [1988] ECR 2415.

waste water, and regulated discharges of certain dangerous substances. In the mid-1990s, the Community decided to refashion its approach and adopt an overall Community framework on water pollution leading to the adoption, in 2000, of the Water Framework Directive.

Water Framework Directive

The framework Directive for the protection of inland surface waters, transitional waters, coastal waters and groundwater was adopted in 2000, with the purposes of providing a sufficient supply of good quality surface water and groundwater as needed for sustainable, balanced and equitable water use, by: preventing further deterioration and protecting and enhancing the status of aquatic ecosystems; promoting sustainable water use based on the long-term protection of available water resources; enhancing the protection and improvement of the aquatic environment (by progressive reduction of discharges, emissions and losses of priority substances and the cessation or phasing-out of discharges, emissions and losses of the priority hazardous substances); and ensuring the progressive reduction of pollution of groundwater.[241] It adopts an innovative and modern ecosystem approach, premised on the view that 'water is not a commercial product like any other but, rather, a heritage which must be protected, defended and treated as such'.[242]

The Directive embodies the concept of integrated river basin management, and aims to rationalise and update current water legislation and replace – over time – seven existing Directives.[243] Member states must identify their river basins and assign them to individual river basin districts.[244] Within four years of entry into force member states must complete an analysis of the characteristics of each river basin district, a review of the impact of human activity on the water, and an economic analysis of water use, and compile a register of areas requiring special protection.[245] Within nine years of entry into force member states must devise a management plan for each district lying entirely

[241] Directive 2000/60/EC, OJ L327, 22 December 2000, 1, Arts. 1 and 2.

[242] Preamble. For critique of the Directive as ambiguous and overly broad, see David Grimeaud, 'Reforming EU Water Law: Towards Sustainability?', 10 RECIEL 41 (2001).

[243] Most 'first wave' Community water instruments will be repealed with effect from seven years after the Directive's entry into force, including: Directives 75/440/EEC and 79/869/EEC on drinking water (see p. 771 below); Directives 78/659/EEC and 79/923/EEC on the quality of waters to support fish life (see p. 775 below); Directive 80/68/EEC on groundwater (see p. 774 below); Directive 76/464/EEC on pollution caused by dangerous substances (partially) and its daughter Directives (see p. 773 below): Art. 22.

[244] Art. 3. A 'river basin' is 'the area of land from which all surface run-off flows through a sequence of streams, rivers and, possibly, lakes into the sea at a single river mouth, estuary or delta': Art. 1(13). A competent authority is to be designated for each of the river basin districts by December 2003 at the latest and river basins covering the territory of more than one member state will be assigned to an international river basin district.

[245] Arts. 5 and 6.

within its territory, taking into account the results of their analyses.[246] For an international river basin district falling entirely within the EC, member states must 'co-ordinate with the aim of producing a single international river basin management plan'.[247] For an international river basin district extending beyond the boundaries of the EC the member states

> shall endeavour to produce a single river basin management plan, and, where this is not possible, the plan shall at least cover the portion of the international river basin district lying within the territory of the member state concerned.
>
> Where such an international river basin management plan is not produced, member states shall produce river basin management plans covering at least those parts of the international river basin district falling within their territory to achieve the objectives of this Directive.[248]

The measures provided for in the river basin management plan are intended to prevent deterioration of surface water and groundwater and preserve protected areas. Article 4(1) sets out the environmental objectives in making operational the programmes of measures specified in the river basin management plans, in respect of surface waters, groundwater and protected areas. Article 4(3) to (9) provides for certain derogations and exemptions, laying down a sustainable water policy which combines both environmental and development goals.[249] These objectives are to be achieved at the latest fifteen years after the Directive's entry into force, although this deadline may be extended under certain conditions. The Directive lists priority substances which are deemed to present a significant risk to the aquatic environment, and sets forth measures to control such substances, as well as quality standards applicable to their concentrations, and the basis for measures to reduce, stop or eliminate discharges, emissions and losses of priority substances.[250] The Directive includes specific provisions (including water quality standards) on waters used for abstraction of drinking water (Article 7) and on monitoring of surface waters and groundwaters and protected areas (Article 8). The Directive requires member states to ensure (within twelve years of the Directive's entry into force or unless otherwise specified) that all discharges into surface waters are subject to emissions controls based on best available techniques, or the relevant emission limit values, or in the case of diffuse impacts the controls including, as appropriate,

[246] Art. 13(1); Annex VII includes information to be included in the plan.

[247] Art. 13(2). Where no such plan is produced, each member state must produce plans covering at least those parts of the international river basin district falling within its territory.

[248] Art. 13(3).

[249] Art. 11 requires member states to establish a programme of measures for each river basin district, or for each part of an international river basin district within its territory.

[250] Decision 2455/2001/EC, OJ L331, 15 December 2001, 1, established the list of priority substances. See also Annex X to the Directive.

best environmental practices, set out in various existing EC Directives (96/61 (integrated pollution prevention and control), 91/271 (urban waste water) and 91/76 (nitrates)), as well as Directives adopted under Article 16 or listed in Annex IX to the Water Framework Directive.[251] By 2010, member states are to ensure that water-pricing policies provide adequate incentives for users to use water resources efficiently, and ensure an adequate contribution by the different water uses (disaggregated into at least industry, household and agriculture) to the recovery of the costs of water services.[252] The Directive also includes provisions on public information and reporting, and commits the European Parliament and the Council to adopt specific measures against pollution of water by individual pollutants or groups of pollutants, and specific measures to prevent and control groundwater pollution.[253]

Drinking water

Two principal Directives address drinking water quality standards. Council Directive 75/440/EEC establishes quality standards for drinking water after it has been abstracted from surface freshwater and after it has been treated.[254] The Directive divides surface water into three categories (A1, A2 and A3) in accordance with methods of treatment set out in Annex I and corresponding with the physical, chemical and microbiological characteristics of the waters as set out in forty-six parameters identified in Annex II.[255] Surface waters falling short of the A3 standard may only be used for the abstraction of drinking water in exceptional circumstances and after notification to the EC Commission.[256] Member states are free to fix more stringent values.[257]

Under Directive 80/778/EEC, member states must fix quality values for all waters intended for human consumption (except natural mineral waters and medicinal waters) in accordance with the parameters set out in Annex I.[258] The Directive is designed to promote the free movement of goods within the

[251] Art. 10.

[252] Art. 9(1). This is to be based on the economic analysis conducted according to Annex III and taking account of the polluter-pays principle.

[253] Arts. 14–17.

[254] Council Directive 75/440/EEC, OJ L194, 25 July 1975, 26. On non-implementation, see Joined Cases 30 to 34/81, *EC Commission* v. *Italy* [1981] ECR 3379; and Case 73/81, *EC Commission* v. *Belgium* [1982] ECR 189; see also Council Decision 77/795/EEC, OJ L334, 24 December 1977, 29, as amended. This Directive will be repealed in 2007: see n. 243 above.

[255] Art. 2. See Council Directive 79/869/EEC, OJ L271, 29 October 1979, 44, as amended.

[256] Art. 4(3). For failure to fulfil obligations under Arts. 3 and 4 with regard to the quality of surface water intended for the abstraction of drinking water, see Case C-266/99, *Commission* v. *France* [2001] ECR I-1981.

[257] Art. 6.

[258] Council Directive 80/778/EEC, OJ L229, 30 August 1980, 11, as amended, Arts. 1, 2, 4 and 7. See Case C-42/89, *EC Commission* v. *Belgium* [1990] ECR I-2821, holding that the exclusion of private water supplies was incompatible with the Directive. In Case

EC and to protect human health and the environment, and it allows member states to set more stringent levels.[259] Annex I lays down maximum admissible concentration (MAC) levels and guide levels (GL) for sixty-two parameters and minimum required concentrations (MRC) for four parameters, in six categories: organoleptic parameters, physico-chemical parameters, parameters concerning substances undesirable in excessive amounts, toxic substance parameters, microbiological parameters, and MRC for softened water intended for human consumption. The Directive allows derogations, provides for emergency situations, and requires member states to ensure regular monitoring of the quality of drinking water intended for human consumption in accordance with Annexes II and III.[260] Directive 98/83/EC on the quality of water intended for human consumption will replace Directive 80/778/EEC in 2003. The new Directive seeks to improve assessment criteria for, and monitoring of, pollution of drinking water and to speed up the harmonisation of such criteria at the European level.[261]

Bathing water

Council Directive 76/160/EEC, which now applies to more than 14,000 bathing areas in the EC, requires member states to set the values applicable to bathing water for the nineteen imperative (I) and guideline (G) physical, chemical and microbiological parameters set forth in the Annex.[262] Member states had ten years from the notification of the Directive, until December 1985, to ensure that the quality of bathing water conformed to the limit values in the Annex,

C-340/96, *Commission* v. *United Kingdom* [1999] ECR I-2023, the ECJ held that undertakings from water companies, under national legislations, are an insufficient way to ensure that the quality of water complies with the requirements of the Directive if the conditions governing the acceptance of such undertakings are not specified.

[259] Art. 16.

[260] Arts. 9, 10 and 12. The ECJ has upheld several claims by the Commission alleging violations of the Directive: see Case 97/81, *Commission* v. *Netherlands* [1982] ECR 1819; Case C-42/89, *Commission* v. *Belgium* [1990] ECR I-2821; Case C-237/90, *Commission* v. *Germany* [1992] ECR I-5937 (unlawful derogations); Case C-337/89, *Commission* v. *United Kingdom* [1992] ECR I-6103 (unlawful derogations).

[261] OJ L330, 5 December 1998, 32.

[262] Council Directive 76/160/EEC, OJ L31, 5 February 1976, 1, as amended, Arts. 1, 2 and 3. The Directive applies to all bathing waters except those used for therapeutic purposes and water used in swimming pools: Art. 1(1). Several violations of the Directive have been upheld by the ECJ: see Joined Cases 30 to 34/81, *Commission* v. *Italy* [1981] ECR 3379 (non-implementation); Case 72/81, *Commission* v. *Belgium* [1982] ECR 183; Case 96/81, *Commission* v. *Netherlands* [1982] ECR 1791; Case C-56/90, *Commission* v. *United Kingdom* [1993] ECR I-4109 (holding that the United Kingdom had failed to take all necessary measures to ensure that the quality of bathing waters in Blackpool and those adjacent to Southport conform to the limit values under Art. 3 of the Directive); Case C-92/96, *Commission* v. *Spain* [1998] ECR I-505; and Case C-198/97, *Commission* v. *Germany* [1999] ECR I-3257. In December 2000, the Commission adopted a Communication on the development of a new bathing water policy with a view to revising the twenty-five-year-old Bathing Water Directive: COM (2000) 860 final.

subject to derogations granted by member states and communicated to the EC Commission. within the time limit granted.[263] Member states remain free to fix more stringent values.[264] Riparian member states are to collaborate in setting common quality objectives for 'sea water in the vicinity of frontiers and water crossing frontiers which affect the quality of the bathing water of another member state'.[265] The Directive requires regular sampling by the competent authorities of the member states and may be waived in exceptional circumstances, including exceptional weather or geographical conditions.[266]

Dangerous substances

Council Directive 76/464/EEC on pollution caused by certain dangerous substances discharged into the aquatic environment of the Community was designed to prevent pollution of inland surface water, territorial waters, internal coastal waters and groundwater by eliminating discharges of dangerous substances specified in List 1 of the Annex, and by reducing discharges of substances in List 2 of the Annex.[267] The EC Council is required to lay down limit values and quality objectives which the emissions standards must not exceed for the List 1 substances.[268] To date, the Council has set specific emissions limit values for a number of List 1 substances in five specific Directives, referred to as 'daughter Directives'. These include mercury,[269] cadmium,[270] hexachlorocyclohexane[271] and certain other dangerous substances.[272] Legal action has been taken where national legislation has not been adopted[273] and for failures to

[263] Art. 4(1) and (3). For failure of obligations under Art. 4, see Case C-307/98, *Commission* v. *Belgium* [2000] ECR I-3933; and for inadequate implementation see Case C-368/00, *Commission* v. *Sweden* [2001] ECR I-4605.

[264] Art. 7(2). [265] Art. 4(4).

[266] Arts. 6 and 8. On failure to carry out requisite sampling and failure of obligations under Arts. 3, 4, 5 and 6 of the Directive, see Case C-147/00, *Commission* v. *France* [2001] ECR I-2387.

[267] OJ L129, 18 May 1976, 23, Arts. 1 and 2, as amended. See also Council Directive 91/676/EEC, OJ L375, 31 December 1991, 1. The Directive is repealed with effect from 2013 (see above); however, the Water Framework Directive provides that, for bodies of surface water, environmental objectives established under the first river basin management plan shall, as a minimum, give effect to quality standards at least as stringent as those required by Directive 76/464/EEC: Art. 22(6).

[268] Art. 6. This provision will be repealed in 2007: see n. 243 above.

[269] Council Directive 82/176/EEC, OJ L81, 27 March 1982, 29, as amended; and Council Directive 84/156/EEC, OJ L74, 17 March 1984, 49, as amended.

[270] Council Directive 83/513/EEC, OJ L291, 24 October 1983, 1, as amended.

[271] Council Directive 84/491/EEC, OJ L274, 17 October 1984, 11, as amended.

[272] Council Directive 86/280/EEC, OJ L181, 4 July 1986, 16, as amended by, *inter alia*, Council Directive 88/347/EEC, OJ L158, 25 June 1988, 35, and Council Directive 90/415/EEC, OJ L219, 14 August 1990, 49.

[273] See C-213/97, *Commission* v. *Portugal* [1998] ECR I-3289, on failure to transpose Directive 86/280/EEC, OJ L181, 4 July 1986, 16, and Directive 88/347/EEC, OJ L158, 25 June 1988, 35; Case C-208/97, *Commission* v. *Portugal* [1998] ECR I-4017, on failure to transpose the

comply with other obligations under the Directives.[274] The regulation of other 'candidate List 1 substances' was suspended at the beginning of the 1990s due to the preparation of a more comprehensive and integrated permit system for industrial installations. Article 7 requires the establishment of implementation programmes to reduce pollution from List 2 substances[275] and for List 1 substances for which the Council has not yet determined emissions limit values.[276] The Council has not yet adopted any implementing Directives for these substances. Although the IPPC Directive will be applicable to new installations, the provisions of this Directive will remain applicable to existing installations until the measures required pursuant to Article 5 of the IPPC Directive have been taken by the competent authorities.[277]

Groundwater

Council Directive 80/68/EEC is designed to prevent the pollution of groundwater by the substances listed in Lists I or II in the Annex to the Directive, but does not apply to certain discharges of domestic effluents, certain small quantities and concentrations, or radioactive substances.[278] Member states must prevent the introduction into groundwater of substances on List I, by prohibiting direct discharges and taking appropriate measures, including prior investigation and authorisation of activities which might lead to indirect discharge.[279] They must

Mercury Directive; or where the Directive was transposed by an administrative circular rather than binding legislation, as in Case C-262/95, *Commission* v. *Germany* [1996] ECR I-5729.

[274] For failure to comply with the reporting obligations under Directive 76/464/EEC, OJ L129, 18 May 1976, 23, on pollution caused by certain dangerous substances discharged into the aquatic environment and its daughter Directives, see Case C-435/99, *Commission* v. *Portugal* [2000] ECR I-11179.

[275] The first judgment under this Directive was rendered in 1998 in Joined Cases C-232 and 233/95, *Commission* v. *Greece* [1998] ECR I-3343. In 1996 and 1997, the Commission brought actions against Luxembourg, Spain, Italy, Germany, Belgium and Greece essentially for the absence of pollution reduction programmes for List 2 substances. See also Case C-152/98, *Commission* v. *Netherlands* [2001] ECR I-3463.

[276] Those substances are provionally treated as List 2 substances governed by Art. 7. Case C-207/97, *Commission* v. *Belgium* [1999] ECR I-275, paras. 34 and 35; and Case C-184/97, *Commission* v. *Germany* [1999] ECR I-7837, para. 27.

[277] Art. 20 of the IPPC Directive. See also Case C-207/97, *Commission* v. *Belgium* [1999] ECR I-275, para. 36.

[278] Council Directive 80/68/EEC, OJ L20, 26 January 1980, 43, as amended, Arts. 1 and 2. See also Council Resolution of 25 February 1992, OJ C59, 6 March 1992, 2. The Directive wil be repealed in 2007: see n. 243 above.

[279] Arts. 3(a) and 4. 'Direct discharge' is defined as 'the introduction into groundwater of substances in Lists I or II without percolation through ground or subsoil'; 'indirect discharge' is defined as the introduction of such substances into the groundwater 'after percolation through the ground or subsoil': Art. 1(2)(b) and (c). For its failure to fulfil its obligations under Arts. 3–5, 7 and 10, see Case C-230/00, *Commission* v. *Belgium* [2001] ECR I-4591.

also limit the introduction of List II substances by making potential direct or indirect discharges subject to prior investigation and authorisation.[280] Where appropriate, more stringent measures may be taken individually or jointly.[281] Member states must monitor compliance with the conditions of authorisation and the effects of discharges on groundwater, keep an inventory of authorisations, and supply the EC Commission with any relevant information at its request and on a case-by-case basis.[282] The Directive has been the subject of numerous violations.[283] In 1997, the Commission submitted a proposal for a decision on an action programme for integrated groundwater protection and management.[284]

Protection of fish

The protection of the quality of waters to support fish life is the subject of two principal Directives. Under Council Directive 78/659/EEC, member states must designate salmonid waters (supporting salmon, grayling and whitefish) and cyprinid waters (supporting cyprinids, pike, perch and eel) which require protection or improvement, and set in respect of those designated waters guideline values (G) and imperative values (I) in accordance with the parameters set forth in Annex I.[285] The designated waters were required to conform to the standards set out in Annex I within five years of designation, and member states may set more stringent standards.[286] The Directive provides for establishing programmes,[287] sampling, derogations, and the provision of information and reports by the member states to the EC Commission.[288] Where fresh waters cross or form national frontiers between member states, and one of the member states

[280] Arts. 3(b) and 5. Arts. 8 to 12 specify the criteria for authorisations.

[281] Art. 18. [282] Arts. 15 to 17.

[283] See e.g. Case 1/86, *EC Commission* v. *Belgium* [1987] ECR 2797; Case C-174/91, *EC Commission* v. *Belgium* [1993] ECR I-2275; Case 291/84, *EC Commission* v. *Netherlands* [1987] ECR 3483; Case C-360/87, *EC Commission* v. *Italy* [1991] ECR I-791; Case C-131/88, *EC Commission* v. *Germany* [1991] ECR I-825; and Case C-183/97, *Commission* v. *Portugal* [1998] ECR I-4005.

[284] The framework Directive 2000/60/EC, OJ L327, 22 December 2000, 1, on water will repeal Council Directive 80/68/EEC, OJ L20, 26 January 1980, 43, on groundwater.

[285] Council Directive 78/659/EEC, OJ L222, 14 August 1978, 1, as amended, Arts. 1 to 4. This Directive will be repealed in 2013. See also Case 14/86, *Pretore di Salo* v. *Persons Unknown* [1987] ECR 2545, holding that Directive 78/659/EEC cannot of itself and independently of an implementing national law determine or aggravate the liability in criminal law of persons who act in contravention of its provisions.

[286] Arts. 5 and 9.

[287] 'Specific programmes' are required; general water purification programmes are not sufficient: see Case C-298/95, *Commission* v. *Germany* [1996] ECR I-6747, para. 24.

[288] Arts. 6, 7, 11, 15 and 16. On non-implementation of notification and designation, see Case 322/86, *EC Commission* v. *Italy* [1988] ECR 3995; and Case C-291/93, *Commission* v. *Italy* [1994] ECR I-859.

considers designating these waters, consultations are to take place between the states.[289]

Council Directive 79/923/EEC applies a similar approach to the protection of coastal and brackish waters designated by member states as needing protection or improvement to support shellfish life.[290] Member states have six years following designation to ensure that waters conform with the standards set out in the Annex to the Directive.[291] Implementation has not been speedy.[292]

Urban waste water

The objective of Council Directive 91/271/EEC is to protect the environment from the adverse effects of discharges of urban waste water and waste water from certain industrial sectors, both of which are responsible for large quantities of marine pollution.[293] The Directive reflected an early example of the increasingly detailed nature of EC environmental law, and has entailed significant and costly improvements to the treatment of waste waters in many of the member states. Under the terms of the Directive, all agglomerations (urban areas) were to have collecting systems for urban waste water by 31 December 2000 in areas where there is a population equivalent (p.e.) of more than 15,000 people, and by 31 December 2000 where the p.e. is between 2,000 and 15,000.[294] Where urban waste waters are discharged into receiving waters which are 'sensitive areas', collection systems were to be provided by 31 December 1998 for agglomerations of more than 10,000 p.e.[295] Systems achieving the same level of environmental protection may be used instead of a collecting system if the use of a collecting system is not justified on environmental or (excessive) cost grounds.

Urban waste water entering collecting systems is to be subject to 'secondary treatment' or an equivalent treatment before discharge, by 31 December 2000 for all discharges from agglomerations of more than 15,000 p.e., and by 31 December 2005 for all discharges from agglomerations of between 10,000 and 15,000 p.e. and discharges to fresh waters and estuaries from agglomerations of between 2,000 and 10,000 p.e.[296] Discharges from collecting systems to fresh

[289] Art. 10.

[290] Council Directive 79/923/EEC, OJ L281, 10 November 1979, 47, as amended, Arts. 1 to 4. This Directive will be repealed in 2013: see n. 243 above.

[291] Art. 5.

[292] See e.g. Case C-225/96, *Commission* v. *Italy* [1997] ECR I-6887.

[293] Council Directive 91/271/EEC, OJ L135, 30 May 1991, 40, as amended, Art. 1. 'Urban waste water' is defined as 'domestic waste water or the mixture of domestic waste water with industrial waste water and/or runoff rain water': Art. 2(1).

[294] Art. 3(1). Basic requirements for 'collecting systems' are set out in Annex I(A).

[295] Art. 3(1); the criteria for 'sensitive areas' are set out in Annex II, Part A.

[296] Art. 4(1). 'Secondary treatment' means 'treatment of urban waste water by a process generally involving biological treatment with a secondary settlement or other process in which the requirements established in Table I of Annex I are respected': Art. 2(8). Discharges to waters situated in high mountain regions may be subject to less stringent

waters and estuaries from agglomerations of less than 2,000 p.e. and to coastal waters from agglomerations of less than 10,000 p.e. were to be subject to appropriate treatment by 31 December 1995.[297] These discharges are to satisfy the requirements set out in Annex IB, including parameters for demand of biochemical oxygen and chemical oxygen, suspended solids, phosphorus and nitrogen.[298]

All discharges from agglomerations of more than 10,000 p.e. into sensitive areas were to be subject to more stringent treatment than that described above by 31 December 1998.[299] Sensitive areas were to be identified by member states by 31 December 1993 in accordance with Annex II, and reviewed at least every four years.[300] Discharges from agglomerations of between 10,000 and 150,000 p.e. to coastal waters and from agglomerations of between 2,000 and 10,000 p.e. to estuaries in less sensitive areas may be subject to less stringent treatment provided that they receive at least primary treatment and comprehensive studies indicate that they will not adversely affect the environment.[301] In exceptional circumstances where it can be demonstrated that advanced treatment will not produce any environmental benefits, discharges into less sensitive areas from agglomerations of more than 150,000 p.e. may also be subject to this less stringent treatment.[302] The Directive also makes provision for the voluntary identification of less sensitive areas which will be subject to less stringent standards.[303]

Since 31 December 1993, the discharge of industrial waste water into collecting systems and urban waste water treatment plants has been subjected to prior regulations and/or specific authorisations, to satisfy the requirements of Annex IC.[304] Biodegradable industrial waste water from plants in the industrial sectors

treatment: Art. 4(2). A longer time period may be established in exceptional cases due to technical problems and for geographically defined populations: Art. 8.

297 Art. 7. 'Appropriate treatment' is defined as 'treatment of urban waste water by any process and/or disposal system which after discharge allows the receiving waters to meet the relevant quality objectives and the relevant provisions of this and other Community Directives': Art. 2(9).

298 Art. 4(3).

299 Art. 5(1) and (2). Certain exceptions may be established for individual plants: Art. 5(4).

300 Art. 5(1) and (6). Sensitive areas do not have to be identified in certain circumstances: Art. 5(8).

301 Art. 6(2). 'Primary treatment' means treatment by 'a physical and/or chemical process involving settlement of suspended solids, or other processes in which the BOD5 [biochemical oxygen demand for five days] of the incoming waste water is reduced by at least twenty per cent before discharge and total suspended solids of the incoming waste water are reduced by at least fifty per cent': Art. 2(7). On the conditions under which the exemption may be applied, see *R. v. Secretary of State for the Environment, ex parte Kingston upon Hull City Council and ex parte Bristol City Council* [1996] Env LR 248; (1996) 8 Admin LR 509.

302 Art. 8(5). 303 Art. 6. 304 Art. 11.

listed in Annex III is subject to separate rules.[305] The Directive encourages the re-use of treated waste water and sludge and has provided for the conditions of their disposal, and prohibited the disposal of sludge to surface waters by dumping from ships or by other means after 31 December 1998.[306] Finally, the Directive establishes basic requirements concerning the adverse effects of discharges of urban waste waters from one member state on another member state, for the design, construction and operation of treatment plants, and for monitoring and other basic implementation requirements.[307] The Directive was to be transposed into national law by mid-1993. In 1996, Greece, Germany and Italy were taken before the ECJ for non-compliance.[308]

The Directive was amended by Directive 98/15/EC,[309] with the aim of clarifying the rules relating to discharges from urban waste water treatment plants in order to put an end to differences in interpretation by the member states. It specifies, *inter alia*, that:

- the option of using daily averages for the total nitrogen concentration applies both to agglomerations of 10,000–100,000 population equivalent and to those of more than 100,000 p.e.;
- the condition concerning the temperature of the effluent in the biological reactor and the limitation on the time of operation to take account of regional climatic conditions only apply to the 'alternative' method using daily averages;
- use of the 'alternative' method must ensure the same level of environmental protection as the annual mean technique.

A Commission report of November 2001 concluded that most member states had made considerable efforts to comply with the Directive resulting in significant improvements in water quality in Europe.[310]

Marine pollution

The EC is a party to several regional and international conventions concerning the protection of the marine environment, including: the 1974 Paris LBS Convention,[311] the 1974 Baltic Sea Convention,[312] the 1976 Barcelona Convention

[305] Art. 13. [306] Arts. 12 and 14. [307] Arts. 9, 10 and 15 to 17.

[308] See e.g. Cases C-161/95, *Commission* v. *Greece* [1996] ECR I-1979; C-297/95, *Commission* v. *Germany* [1996] ECR I-6739; and Case C-302/95, *Commission* v. *Italy* [1996] ECR I-6765. See also Case C-236/99, *Commission* v. *Belgium* [2000] ECR I-5657.

[309] OJ L67, 7 March 1998, 29.

[310] Commission Report, COM/2001/685 final, 21 November 2001.

[311] See chapter 9, pp. 430–4 above, Council Decision 75/437/EEC, OJ L194, 25 July 1975, 5, as amended by Council Decision 87/57/EEC, OJ L24, 27 January 1987, 46. See also Council Decision 85/613/EEC, OJ L375, 31 December 1985, 20 (implementing PARCOM Decisions 85/1 and 85/2).

[312] Council Decision 94/156/EC of 21 February 1994, OJ L73, 16 March 1994, 1; and Council Decision 94/157/EC of 21 February 1994, OJ L73, 16 March 1994.

and Protocols,[313] the 1983 Bonn Agreement,[314] the 1992 OSPAR Convention,[315] the 1998 Rhine Convention,[316] the 1992 Watercourses Convention[317] and the 1982 UNCLOS.[318]

In December 2000, the EC Council adopted a Decision setting up a Community framework for co-operation in the field of accidental or deliberate marine pollution.[319] The Commission has also put forward a proposal for a Regulation on the establishment of a fund for compensation for oil pollution damage in European waters and related measures.[320]

Nature and biodiversity[321]

The EC has made a significant contribution to the development of international law for the conservation of biodiversity, most notably by the 1979 Wild Birds Directive and the 1992 Habitats Directive, which are described in chapter 11 above.[322] The EC has also legislated on: the importation of whales and other cetacean products;[323] the importation of skins of seal pups and their products;[324] the importation of raw and worked ivory;[325] the protection of animals used for experimental purposes;[326] the protection of dolphins;[327] and

[313] Chapter 9, pp. 400–2 above, Council Decision 77/585/EEC, OJ L240, 19 September 1977, 1. The EC is also a party to the 1976 Barcelona Dumping Protocol (Council Decision 77/585/EEC); the 1976 Barcelona Oil Pollution Protocol (Council Decision 81/420/EEC, OJ L162, 19 June 1981, 4); the 1980 Athens LBS Protocol (Council Decision 83/101/EEC, OJ L67, 12 March 1983, 1); and 1982 Geneva SPA Protocol (Council Decision 84/132/EEC, OJ L68, 10 March 1984, 36).

[314] Chapter 9, pp. 452–3 above. Council Decision 84/358/EEC, OJ L188, 16 July 1984, 7.

[315] Council Decision 98/249/EC of 7 October 1997, OJ L104, 3 April 1998, 1, which entered into force on 25 March 1998 to replace the Oslo (1972) and Paris (1974) Conventions; see chapter 9, pp. 409–12 above.

[316] Council Decision 2000/706/EC of 7 November 2000, OJ L289, 16 November 2000, 30.

[317] Council Decision 95/308/EC of 24 July 1995, OJ L186, 5 August 1995, 42.

[318] Council Decision 98/392/EC of 23 March 1998, OJ L179, 23 June 1998, 1.

[319] Council Decision 2850/2000/EC, OJ L332, 28 December 2000, 1.

[320] Commission Proposal COM (2000) 802 final, OJ C120E, 24 April 2001, 83.

[321] Fifth Environmental Action Programme, n. 107 above, Table 10, setting forth specific targets up to 2000 on maintenance or restoration of natural habitats, the creation of a European network of protected sites, and strict control of abuse and trade of wild species.

[322] Chapters 11, pp. 536–40 and 602–5 above.

[323] Council Regulation (EEC) No. 348/81, OJ L39, 12 February 1981, 1, as amended.

[324] Council Directive 83/129/EEC, OJ L91, 9 April 1983, 30, as amended.

[325] Commission Regulation (EEC) No. 2496/89, OJ L240, 17 August 1989, 5.

[326] Council Directive 86/609, OJ L358, 18 December 1986, 1. On 23 March 1998, the Council adopted Decision 1999/575/EC, OJ L222, 24 August 1999, 29, on the conclusion of the European Convention for the protection of vertebrate animals used for experimental and other scientific purposes.

[327] Council Decision 99/337/EC, OJ L132, 27 May 1999, 1, on the signature by the European Community to the agreement on the International Dolphin Conservation Programme.

the keeping of wild animals in zoos.[328] The EC is a party to various international conventions including: the 1980 CCAMLR;[329] the 1979 Berne Convention;[330] the 1979 Bonn Convention;[331] the 1992 Biodiversity Convention;[332] the 1994 Geneva Convention on tropical wood;[333] and the 1994 Desertification Convention.[334]

The EC is not a party to the 1973 CITES, but has adopted legislation providing for the implementation of that Convention.[335] A 1997 Regulation is now the core of the Community's wildlife trade legislation.[336] Protected species covered by the Regulation are listed in four Annexes, and changes to the list are made by way of new Regulations. The Regulation establishes common conditions for the import, export and sale of the species covered and sets out the conditions and restrictions for the movement of species within the Community. It also sets out various obligations of member states including that of monitoring compliance with the provisions of the Regulation. It introduces a system for the exchange of information between the authorities concerned, and states that stricter measures may be taken by the member states, particularly as regards the keeping of specimens of species listed in Annex A.

Beyond the Habitats Directive and other legislation, in 1998 the Community adopted a Biodiversity Strategy, addressing conservation and the sustainable use of natural resources, research and the exchange of information, the sharing of genetic resources, and education.[337] In March 2001, the Community adopted a Biodiversity Action Plan for the Conservation of Natural Resources. The Community's areas of activity were the conservation of natural resources, agriculture, fisheries and development and economic co-operation.[338] Earlier,

[328] Council Directive 99/22/EC, OJ L94, 9 April 1999, 24.

[329] Chapter 14, pp. 714–16 above. Council Decision 81/691/EEC, OJ L252, 5 September 1981, 26, as amended.

[330] Chapter 11, pp. 532–5 above. Council Decision 82/72/EEC, OJ L38, 10 February 1982, 1.

[331] Chapter 11, pp. 607–11 above. Council Decision 82/461/EEC, OJ L210, 19 July 1982, 10.

[332] Council Decision 93/626/EC, OJ L309, 13 December 1993, 1, concerning the conclusion of the Convention on Biological Diversity; chapter 11, pp. 515–23 above.

[333] Council Decision 94/493/EC, OJ L201/1, 1996.

[334] Council Decision 98/216/EC, OJ L83, 19 March 1998, 1.

[335] Chapter 11, pp. 505–15 above; G. A. Vandeputte, 'Why the European Community Should Become a Member of the Convention on International Trade in Endangered Species of Fauna and Flora', 3 *Georgetown International Environmental Law Review* 245 (1991). Council Regulation (EEC) No. 82/3626, OJ L384, 31 December 1982, 1, as amended. In 1997, the old legislation was replaced by Council Regulation (EC) No. 338/97, OJ L61, 3 March 1997, 1, as amended.

[336] Commission Regulation (EC) No. 939/97, OJ L140, 30 May 1997, 9, as amended, sets out detailed rules concerning the implementation of Council Regulation (EC) No. 338/97, OJ L61, 3 March 1997, 1.

[337] COM (98) 42, OJ C341, 9 November 1998, 41. [338] COM (2001) 162 final.

the Community had adopted several Regulations with regard to forests,[339] and the Community has adopted a Communication regarding coastal zone management.[340]

Fisheries

The EC has also developed an extensive body of secondary legislation for the conservation of fisheries resources, relying principally on Articles 32 to 38 of the EC Treaty (formerly Articles 38 to 46), which provide for a common policy in the field of agriculture.[341] In 1978, the EC Commission published proposals for total allowable catches (TACs) for most states in Community waters. The principal instrument governing conservation was, until 1993, Council Regulation (EEC) No. 83/170, which established a system to protect fishing grounds, the conservation of biological resources of the sea, and their balanced exploitation on a lasting basis and in appropriate economic and social conditions.[342] The Regulation allowed the TAC to be fixed each year and to be distributed between the member states in a manner which assured the relative stability of fishing activities for each of the states concerned.[343] Provided that they gave prior notice to the EC Commission, member states could exchange parts or all of the quotas allocated to them, which in effect established a system of tradeable fisheries rights.[344] The conservation measures were formulated in the light of scientific advice, and included: (1) the establishment of zones where fishing is prohibited or limited to certain periods or vessels or fishing gear; (2) the setting of standards for fishing gear; (3) the setting of minimum fish size, or weight

[339] See Regulations to protect forests from fire, Regulation (EEC) No. 2158/92, OJ L217, 31 July 1992, 3, as amended; from atmospheric pollution, Regulation (EEC) No. 2157/92 amending Regulation (EEC) No. 3528/86, OJ L217, 31 July 1992, 1, as amended; Regulation (EC) No. 2494/2000, OJ L288, 15 November 2000, 6, on measures to promote the conservation and sustainable management of tropical forests and other forests in developing countries; and Regulation (EEC) No. 1615/89, OJ L165, 15 June 1989, 12, as amended, establishing a European Forestry Information and Communication System (EFICS).

[340] See Communication on 'Integrated Coastal Zone Management: A Strategy for Europe' and a Proposal for a Recommendation Concerning the Implementation of Integrated Coastal Zone Management in Europe, COM (2000) 547 final, of 17 September 2000 and COM (2000) 545 final of 8 September 2000.

[341] For an account of the history, development and application of this extensive area of law, including the case law of the ECJ, see R. R. Churchill, *EEC Fisheries Law* (1987).

[342] Council Regulation (EEC) No. 170/83, OJ L24, 27 January 1983, 1, Art.1(1). See also Council Regulation (EEC) No. 86/3094, OJ L288, 11 October 1986, 1, on minimum mesh sizes, attachment to nets, minimum fish sizes, prohibitions on fishing for certain species, restrictions on types of vessels and fishing gear, and prohibitions on processing operations.

[343] Arts. 3(1) and 4(1). See e.g. Council Regulation (EEC) No. 3926/90, OJ L378, 31 December 1990, 1, fixing TACs for 1991.

[344] Art. 5(1).

for a species; and (4) limits on catches.[345] The EC Commission also manages a licensing system to govern certain fishing activities,[346] and has adopted a large number of instruments implementing these fisheries measures as well as measures for conservation and management in respect of fishing vessels of third states.[347]

In December 1992, the EC adopted Regulation (EC) No. 3760/92 which replaced the 1983 Regulation with effect from 1 January 1993. This sought to extend and consolidate the earlier legal regime

> to protect and conserve available and accessible living marine aquatic resources, and to provide for rational and responsible exploitation on a sustainable basis, in appropriate economic and social conditions for the sector, taking account of its implications for the marine ecosystem, and in particular taking account of the needs of both producers and consumers.[348]

The Regulation recognises the need to protect accessible resources, including those in the waters of third countries to which EC fishing vessels have access pursuant to bilateral or other arrangements. The new Regulation relies upon a range of management tools to limit exploitation, including:

1. establishing prohibited fishing zones;
2. limiting exploitation rates;
3. setting quantitative limits on catches;
4. limiting time spent at sea;
5. fixing the number and types of fishing vessels authorised to fish;
6. laying down measures on fishing gear and its use;
7. setting minimum size or weight of catches; and
8. establishing incentives, including those of an economic nature, to promote more selective fishing.[349]

The licensing system established under the 1983 regime has been amended: the EC Council now establishes management objectives for each fishery or group of fisheries in relation to specific resources on a multi-annual or multi-species basis, establishes a management strategy, and sets the total allowable catches and/or total allowable fishing efforts for particular fisheries on the basis of quotas set for each member state in such a way as to ensure the relative stability of fishing patterns in the EC.[350] The licensing system breaks new ground in being

[345] Art. 2. [346] Art. 7(1).
[347] See R. R. Churchill, *EEC Fisheries Law* (1987), 167–202.
[348] Regulation (EEC) No. 92/3760, OJ L389, 31 December 1992, 1, Art. 2(1).
[349] Art. 4(2).
[350] Art. 8 (as amended by Council Regulation (EC) No. 1181/98 of 4 June 1998, OJ L 164, 9 June 1998, 1, to provide for the exercise of powers by the Council as regards allocating catches in Community waters to vessels of third countries authorised to fish in those waters, and to set the technical conditions under which catches must be made). For TACs

applicable to all EC fishing vessels in EC waters, in waters of third countries, or on the high seas; the previous rules applied only for fishing of 'species of special importance' in EC waters. The current licensing system combines a national system with the possibility of the EC Commission imposing further licensing requirements on behalf of the EC where 'species of special importance' require special regulation.[351]

The Regulation required the Council to set, by January 1994, objectives and detailed rules for the restructuring of the control system for enforcing the Regulation by establishing an EC control system for the entire EC fisheries sector, including the state of resources and the economic situation of coastal regions and communities.[352]

Noise

The EC has developed an extensive body of secondary legislation limiting permissible sound levels of various products and activities. Specific legislation has been adopted establishing limits on noise levels from motor vehicles;[353] motorcycles;[354] construction plant and equipment;[355] subsonic aircraft;[356] compressors;[357] tower cranes;[358] welding generators;[359] power generators;[360] hand-held concrete-breakers and picks;[361] lawnmowers;[362] household appliances;[363]

in 2002, see Council Regulation (EC) No. 2555/2001 of 18 December 2001, OJ L347, 31 December 2001, 1, fixing for 2002 the fishing opportunities and associated conditions for certain fish stocks and groups of fish stocks, applicable in Community waters and, for Community vessels, in waters where limitations in catch are required.

[351] Arts. 5 and 7. Annex I fixes special arrangements for fishing in coastal waters of each member state; Annex II identifies sensitive regions and fixes the maximum number of vessels with a length of not less than 26 metres authorised to fish for demersal species.

[352] Art. 11.

[353] Council Directive 70/157/EEC, OJ L42, 23 February 1970, 16, as amended.

[354] Council Directive 78/1015/EEC, OJ L349, 13 December 1978, 21, as amended. This Directive is repealed by Directive 97/24/EC, OJ L226, 18 August 1997, 1, on certain components and characteristics of two- or three-wheel motor vehicles.

[355] Council Directive 79/113/EEC, OJ L33, 8 February 1979, 15, as amended.

[356] Council Directive 80/51/EEC, OJ L18, 24 January 1980, 26, as amended; Council Directive 89/629/EEC, OJ L363, 13 December 1989, 27. These comply with standards set by the ICAO. Directive 92/14/EC, OJ L 76, 23 March 1992, 30, provides for a ban as of 1995 of civil subsonic aircraft that do not comply with ICAO requirements. On the reconciling of trade and environment in respect of aircraft, see Case C-389/96, *Aher-Waggon GmbH* v. *Bundesrepublik Deutschland* [1998] ECR I-4473.

[357] Council Directive 84/533/EEC, OJ L300, 19 November 1984, 123, as amended.

[358] Council Directive 84/534/EEC, OJ L300, 19 November 1984, 130, as amended.

[359] Council Directive 84/535/EEC, OJ L300, 19 November 1984, 142, as amended.

[360] Council Directive 84/536/EEC, OJ L300, 19 November 1984, 149, as amended.

[361] Council Directive 84/537/EEC, OJ L300, 19 November 1984, 156, as amended.

[362] Council Directive 84/538/EEC, OJ L300, 19 November 1984, 171, as amended.

[363] Council Directive 86/594/EEC, OJ L344, 1 December 1986, 24.

and excavators.[364] A new Directive relating to the noise emission in the environment by equipment used outdoors was introduced in July 2000.[365] This Directive repeals several earlier Directives including Directive 79/113/EEC, Directives 84/532/EEC to 84/538/EEC and Directive 86/662/EEC with effect from 3 January 2002.[366] The aim of the Directive is to promote the internal market and to improve the health and well-being of the population by reducing noise emitted by equipment used outdoors.[367] It harmonises noise emissions standards, conformity assessment procedures, noise level marking, and the gathering of data on noise emissions. The Commission envisages the appointment of the European Environment Agency to collect and evaluate these data.

In July 2000, the Commission adopted a Proposal for a general Directive on environmental noise.[368] The Proposal aims at providing a basis for a coherent, integrated EU policy on environmental noise. It introduces measures to classify and understand the problems caused by noise, as a necessary step towards preparing concrete measures to reduce noise pollution. The Commission has proposed the idea of establishing EU-wide 'noise-maps' which should form the basis for the development of action plans and strategies at local, national and EU levels to combat noise pollution.

Chemicals, hazardous substances, industrial risks and biotechnology

The EC has adopted a large body of technical rules regulating hazardous substances. The frequency with which many of the secondary acts are amended often makes it difficult to know the current status of a particular rule or the extent to which a particular substance or activity is regulated. Some of the legislation, such as the 'Seveso Directive', has influenced developments in other regions and at the global level. Legislation on the classification, packaging and labelling of dangerous substances was first adopted in 1967, and has since been amended or adapted to technical progress more than thirty-five times.[369] Currently, there are fifteen classes of danger in Directive 67/548/EEC, such as 'explosive', 'very toxic', 'carcinogenic' or 'dangerous for the environment'. Several member states have been held to be in violation of the 1967 Directive

[364] Council Directive 86/662/EEC, OJ L384, 31 December 1986, 1, as amended.

[365] Council Directive 2000/14/EC, OJ L162, 3 July 2000, 1. Annex 1 sets out the definition of equipment.

[366] Art. 21(1). [367] Art. 1.

[368] Proposal for a Directive of the European Parliament and of the Council Relating to the Assessment and Management of Environmental Noise, COM (2000) 468, OJ C337, 28 November 2000, 251.

[369] Council Directive 67/548/EEC, n. 60 above, OJ L196, 16 August 1967, 1, as amended. See Joined Cases C-218/96, C-219/96, C-220/96, C-221/96 and C-222/96, *Commission* v. *Belgium* [1996] ECR I-6817.

and its amending Directives.[370] The 1967 Directive has been supplemented by legislation requiring the listing of certain chemical substances,[371] as well as measures addressing particular chemicals and substances, including asbestos[372] and batteries.[373] The 1988 legislation to regulate the classification, packaging and labelling of dangerous preparations was comprehensively reviewed in 1999,[374] and rules were developed on the provision of information.[375] The rules on the marketing and use of dangerous substances and preparations have been harmonised,[376] and rules have been developed and applied, partly on the basis of OECD recommendations, on good laboratory practice and testing.[377] The import and export of chemicals is also addressed by a 1988 Regulation,[378] and the following year the export of certain chemical products was also the subject of legislation.[379] The Seveso and Seveso II Directives[380] and the EC legislation on genetically modified organisms[381] are discussed in chapter 12 above. In 1998, the Community signed the 1992 Industrial Accidents Convention,[382] and it became a party to the 2000 Biosafety Protocol in August 2002.[383]

In 1993, the Council adopted the Existing Substances Regulation (ESR), introducing a comprehensive framework for the evaluation and control of 'existing' chemical substances. The Regulation was intended to complement the rules under Council Directive 67/548/EEC for 'new' chemical substances. An 'existing' chemical substance is defined as any chemical substance listed

[370] See Case 208/85, *EC Commission* v. *Germany* [1987] ECR 4045; Case 278/85, *EC Commission* v. *Denmark* [1987] ECR 4069. See also Case 187/84, *Criminal Proceedings Against Giacomo Caldana* [1985] ECR 3013, holding that Directive 67/548/EEC, as amended by Directive 79/831/EEC, OJ L259, 15 October 1979, 10, does not require preparations containing one or more of the dangerous substances to be listed. See also Case C-238/95, *Commission* v. *Italy* [1996] ECR I-1451, on the failure to fulfil obligations under Directive 93/67/EEC, OJ L227, 8 September 1993, 9, on assessment of risks to man and the environment posed by dangerous substances; and Case C-79/98, *Commission* v. *Belgium* [1999] ECR I-5187.

[371] Commission Decision 85/71/EEC, OJ L30, 2 February 1985, 33.

[372] Council Directive 87/217/EEC, OJ L85, 28 March 1987, 40.

[373] Council Directive 91/157/EEC, OJ L78, 26 March 1991, 38.

[374] Council Directive 99/45/EC, OJ L200, 30 July 1999, 1, relating to the classification, packaging and labelling of dangerous preparations, replaced the earlier Council Directive 88/379/EEC, OJ L187, 16 July 1988, 14, as amended.

[375] Commission Decision 91/155/EEC, OJ L76, 22 March 1991, 35, as amended.

[376] Council Directive 76/769/EEC, OJ L262, 27 September 1976, 201, as amended.

[377] Council Directive 87/18/EEC, OJ L15, 17 January 1987, 29; see also Council Directive 88/320/EEC, OJ L145, 11 June 1988, 35; Council Decision 86/569/EEC, OJ L315, 28 October 1989, 1.

[378] Council Regulation (EEC) No. 88/1734, OJ L155, 22 June 1988, 2.

[379] Council Regulation (EEC) No. 89/428, OJ L50, 22 Febuary 1989, 1. See also Council Regulation (EC) No. 92/2455, OJ L251, 29 August 1992, 13.

[380] Chapter 12, pp. 622–3 above.

[381] Chapter 12, pp. 658–62 above.

[382] Council Decision 98/685/EC, OJ L326, 3 December 1998, 1.

[383] Council Decision 2002/628/EC, OJ L201, 31 July 2002, 48.

in the European Inventory of Existing Commercial Substances (EINECS), an inventory currently listing more than 100,000 substances.[384]

In 2001, the European Commission adopted a White Paper setting out a strategy for a future Community Policy for Chemicals. The main objective of the new Strategy is to ensure a high level of protection for human health and the environment, while ensuring the efficient functioning of the internal market and stimulating innovation and competitiveness in the chemical industry. It addresses the shortcomings of the current system and relates mainly to the Directive on the classification, packaging and labelling of dangerous substances and dangerous preparations, the Regulation on the evaluation and control of the risks of existing substances and the Directive on restrictions on the marketing and use of certain dangerous substances and preparations.[385]

Important legislation not affected by the White Paper includes a Regulation concerning control of the international trade in certain dangerous chemicals, which implements the provisions of the 1998 Chemicals Convention. Many other linked measures have been adopted, dealing with plant protection products[386] and biocides,[387] and the reduction of industrial emissions, to form a network of environmental legislation concerning chemicals.

Waste

H. Von Lersner, 'Requirements on Waste Disposal in Europe', 20 *Environmental Policy and Law* 211 (1990); A. Schmidt, 'Transboundary Movements of Waste Under EC Law: The Emerging Regulatory Framework', 4 JEL 57 (1992); H. Jans, 'Waste Policy and European Community Law: Does the EEC Treaty Provide a Suitable Framework for Regulating Waste?' 20 *Ecology Law Quarterly* 165 (1993); J.-P. Hannequart, *European Waste Law* (1998); S. Tromans, 'EC Waste Law – A Complete Mess?', 13 JEL 133 (2001); I. Cheyne, 'The Definition of Waste in EC Law', 14 JEL 61 (2002).

Current EC policy on waste is set out in the non-binding 1990 Community Strategy for Waste Management, which proposed the principles, policy objectives and actions which the EC Commission has followed in developing legislative proposals and other action.[388] The Strategy adopted five guidelines to influence EC policy:

[384] Council Regulation (EC) No. 793/93 of 23 March 1993, OJ L84, 5 April 1993, 1.

[385] White Paper on the Strategy for a Future Chemicals Policy, COM (2001) 88.

[386] Council Directive 91/414/EEC, OJ L230, 19 August 1991, 1, deals with the authorisation of placing agricultural pesticides on the market. On non-transposition, see Case C-137/96, *Commission* v. *Germany* [1997] ECR I-6749; and Case C-380/95, *Commission* v. *Greece* [1996] ECR I-4837.

[387] Council Directive 98/8/EC, OJ L123, 24 April 1998, 1.

[388] The Strategy has been endorsed by the EC Council: see Council Resolution of 7 May 1990 on waste policy, OJ C122, 18 May 1990, 2.

1. prevention of waste by technologies and products;
2. recycling and re-use of waste;
3. optimisation of final disposal;
4. regulation of transport; and
5. remedial action.[389]

The Strategy also focused on the need to improve the implementation of EC legislation and the movement of waste prior to disposal within the EC and outside the EC. The Fifth Environmental Action Plan reinforced the EU strategy on waste management, and in July 1996 the Commission presented a new strategy continuing and adapting the old strategy.[390]

Apart from the waste legislation dealing with the protection of water quality, which prohibits disposal into the marine environment of certain wastes, and the protection of air quality, which limits atmospheric emissions of certain waste gases, the EC has adopted legislation on waste, toxic and dangerous wastes, and the disposal of particular wastes. In 1993, the EC adopted a new Regulation on the movement of wastes.[391]

Waste framework

Council Directive 75/442/EEC on waste,[392] as amended by Council Directive 91/156/EEC,[393] requires member states to prevent or reduce waste production and recover waste by recycling, re-use, reclamation or any other process, or use waste as a source of energy.[394] Prevention and reduction is to be achieved by the development of clean technologies, products designed to minimise waste, and techniques for final disposal of dangerous substances.[395] The ECJ has construed Directive 75/442 as not giving individuals the right to sell or use plastic bags and other non-biodegradable containers.[396] In the amended Directive, waste is

[389] Proposals concerning remedial action include the proposed Directive on Civil Liability for Damage Caused by Waste, OJ C251, 4 October 1989, 3; see chapter 18, pp. 926–30 below.

[390] COM (1996) 399 final.

[391] Council Regulation (EC) No. 259/93, OJ L30, 6 February 1993, 1, chapter 13, pp. 699–703 above. On the relationship between trade and environmental protection in relation to waste, see chapter 19, pp. 990–2 below.

[392] Council Directive 75/442/EEC, OJ L196, 26 July 1975, 39. On non-implementation, see e.g. Joined Cases 30 to 34/81, *Commission* v. *Italy* [1981] ECR 3379; and Case 69/81, *Commission* v. *Belgium* [1982] ECR 163.

[393] Council Directive 91/156/EEC, OJ L78, 26 March 1991, 32, as amended; on the dispute concerning the legal basis of this Directive, see n. 86 above.

[394] Art. 3. [395] *Ibid.*

[396] Case C-380/87, *Enichem Base and Others* v. *Commune di Cinisello Balsamo* [1989] ECR 2491. The ECJ also held that Art. 3(2) of the 1975 Directive requires member states to inform the EC Commission of any draft rules regarding the sale or use of certain products prior to their final adoption, but that Art. 3(2) does not give individuals enforceable rights before national courts to obtain the suspension or annulment of such rules on the

defined as 'any substance or object in the categories set out in Annex I which the holder discards or intends or is required to discard'. In the *Inter-Environment* case, the ECJ acknowledged that the scope of the term 'waste' depends on the meaning of the word 'discard'.[397] The Directive does not apply to atmospheric emissions of gases and certain categories of waste covered by other legislation.[398]

Member states are encouraged to take the measures necessary to ensure recovery or disposal of waste, including a prohibition on dumping and uncontrolled disposal,[399] and measures to establish an integrated and adequate

ground that they were adopted without having previously been communicated to the Commission.

[397] Case-129/96, *Inter-Environment Wallonie ASBL* v. *Waals Gewest* [1997] ECR I-7411. The Court found that 'discard' covers both disposal and recovery of a substance or object, and held that a substance or object that forms part of an industrial process may constitute waste within the meaning of the Waste Framework Directive. Therefore, a substance or object is not excluded from the meaning of the term 'waste' by the mere fact that it directly forms an integral part of an industrial process. See also Joined Cases 418/97 and C-419/97, *ARCO Chemie Nederland Ltd* [2000] ECR I-4475, where the ECJ held that substances which are capable of being recovered as fuel without substantial treatment must still be classified as waste. The decision lays down circumstances which must be considered in classifying as waste a substance which is treated under the operations of Annexes IIA and IIB to the Waste Framework Directive.

[398] Arts. 1(a) and 2(1). Annex I lists sixteen categories of waste. 'Waste' was originally defined in Directive 75/442/EEC, OJ L194, 25 July 1975, 39, as 'any substance or object which the holder disposes of or is required to dispose of pursuant to the provisions of national law in force' (Art. 1). In Joined Cases C-206/88 and C-207/88, *Vessaso and Zanetti* [1990] ECR I-1461, the ECJ held that the concept of waste was not to be understood as excluding substances and objects which were capable of economic re-utilisation, and did not presume that the holder disposing of a substance or object intended to exclude all economic re-utilisation of the substance or object by others. See also Case C-359/88, *Zanetti and Others* [1990] ECR I-4747, holding that national legislation defining waste as excluding substances or objects which are capable of economic re-utilisation was incompatible with Directive 75/442/EEC, OJ L194, 25 July 1975, 39, and Directive 78/319/EEC, OJ L84, 31 March 1978, 43. In the *Tombesi* case, the ECJ ruled that its earlier interpretations were not affected by the amendments to Directive 91/156/EEC, OJ L78, 26 March 1991, 32. See Joined Cases C-304/94, C-330/94, C-342/94 and C-224/95, *Tombesi and Others* [1997] ECR I-3561, para. 48. The ECJ ruled that the concept of 'waste' in Art. 1 of Directive 75/442/EEC as referred to in Art. 1(3) of Directive 91/689/EEC, OJ L377, 31 December 1991, 20, on hazardous waste, and Art. 2(a) of Regulation (EEC) No. 259/93, OJ L30, 6 February 1993, 1, on the supervision and control of shipments of waste within, into and out of the European Community, is not to be understood as excluding substances and objects which are capable of economic re-utilisation, even if the materials in question may be the subject of a transaction or quoted on public or private commercial lists. In particular, a de-activation process intended merely to render waste harmless, landfill tipping in hollows or embankments and waste incineration constitute disposal or recovery operations falling within the scope of the above-mentioned Community rules. The fact that a substance is classified as a re-usable residue without its characteristics or purpose being defined is irrelevant in that regard. The same applies to the grinding of a waste substance.

[399] Art. 4. See Case C-387/97, *Commission* v. *Greece* [2000] ECR I-5047, where the ECJ held that failing to take the measures necessary to ensure that waste was disposed of without

network of disposal installations taking account of BATNEEC, designed to enable the EC to become self-sufficient in waste disposal.[400] The network must enable waste to be disposed of in one of the nearest appropriate installations and ensure a high level of protection for the environment and human health.[401] In the *Dusseldorp* case, the ECJ ruled that the principles of self sufficiency and proximity are not to be applied to waste for recovery.[402] The competent national authorities must, as soon as possible, draw up waste management plans and take the measures necessary to prevent the movement of waste not in accordance with those plans.[403] Any company carrying out the disposal operations in Annex IIA or the recovery operations in Annex IIB must obtain a permit from the competent national authorities.[404] Companies which collect or transport waste or dealers or brokers who arrange for disposal require registration.[405] The Directive also provides that in accordance with the polluter-pays principle the cost of waste disposal must be borne by the holder who has waste handled by a waste collector or authorised disposal company, and/or the previous holders or the producer of the product from which the waste came.[406]

Hazardous waste

Council Directive 78/319/EEC requires member states to take appropriate steps to encourage the prevention of toxic and dangerous waste, its processing and

endangering human health and harming the environment in accordance with Art. 4 and by failing to draw up plans for the disposal of waste, pursuant to Arts. 6 and 12 of Directive 78/319/EEC, OJ L84, 31 July 1978, 43, Greece had not implemented all the necessary measures to comply with the ECJ's earlier judgment in Case C-45/91, *Commission* v. *Greece* [1992] ECR I-2509, and had failed to fulfil its obligations under Art. 171 of the EC Treaty. On 4 July 2000, Greece became the first country to be ordered to pay the Commission a fine of 20,000 euros for each day of delay in fulfilling its obligations for the safe management of waste in the Chania area on Crete. For violations of Arts. 4 and 8, see Case C-365/97, *Commission* v. *Italy* [1999] ECR I-7773.

400 Art. 5(1). 401 Art. 5(2).

402 Case C-203/96, *Dusseldorp* [1998] ECR I-4075, para. 30. See also Case 209/98, *Sydhavnens Sten and Grus* [2000] ECR I-3743, where the ECJ ruled that member states may impose export restrictions on waste if this is necessary for the protection of the environment, because the concept of environment is to be interpreted in the light of the source principle.

403 Art. 7.

404 Arts. 9 and 10. Art. 11 lists certain exceptions, including for companies carrying out their own waste disposal at the place of production. On the grant of permits, see generally Joined Cases 372 to 374/85, *Ministère Public* v. *Oscar Traen and Others* [1987] ECR 2141, and for its failure to fulfil its obligations under Art. 9, see Case C-230/00, *Commission* v. *Belgium* [2001] ECR I-4591.

405 Art. 12.

406 Art. 15. 'Holder' means 'the producer of the waste or the natural or legal person who is in possession of it': Art. 1(c). 'Producer' means 'anyone whose activities produce waste (original producer) and/or anyone who carries out pre-processing, mixing or other operations resulting in a change in the nature or composition of this waste': Art. 1(b).

recycling, and the use of certain processes for its re-use.[407] The Directive does not apply to radioactive waste, atmospheric emissions, and other specified categories.[408] Member states must take the measures necessary to ensure that toxic and dangerous waste is disposed of safely and that uncontrolled discharges and disposals are prohibited.[409] The Directive requires the designation or establishment of a competent national authority to plan, authorise, and supervise the disposal of toxic and dangerous waste, and to ensure that such waste is kept separate from other matter and residues, is appropriately labelled, and that deposits are recorded.[410] Companies engaged in the storage, treatment or deposit of toxic and dangerous waste must have a permit; carriage is to be controlled by the competent authorities; and any person producing or holding such waste without a permit must as soon as possible have such waste stored by an authorised person.[411] The Directive also provides that, in accordance with the polluter-pays principle, the cost of waste disposal must be borne by the holder who has waste handled by a waste collector or authorised disposal company, and/or the previous holders or the producer of the product from which the waste came.[412] The Directive requires the competent authorities to draw up and keep up to date public plans for the disposal of toxic and dangerous wastes. The Directive provides for derogations in emergency situations, requires detailed records to be kept in relation to production, holding, disposal and transport, and provides for inspection.[413]

Council Directive 91/689/EEC on hazardous waste repealed the earlier 1978 Directive on toxic and dangerous wastes.[414] The 1991 Directive applies to all wastes featuring on a list.[415] The objective of the Directive is to approximate the laws of the member states on the controlled management of hazardous waste, by establishing more stringent rules than for other types of waste, by applying a precise and uniform definition of hazardous wastes, and by ensuring the fullest possible monitoring of the disposal and recovery of hazardous wastes. The 1991 Directive seeks to achieve these objectives by applying most of the provisions of Directive 75/442 to hazardous wastes and then setting out additional obligations which will apply only to hazardous wastes.[416] The 1991 Directive establishes

[407] Council Directive 78/319/EEC, OJ L84, 31 March 1978, 43, as amended, Art. 4.
[408] Art. 3. [409] Art. 5. [410] Arts. 5 and 6. [411] Arts. 9 and 10. [412] Art. 11.
[413] Arts. 12 to 15. See Case 239/85, *Commission* v. *Belgium* [1986] ECR 3645, establishing a failure to fully implement Art. 14 of Directive 78/319/EEC, OJ L84, 31 July 1978, 43. See also Case C-422/92, *Commission* v. *Germany* [1995] ECR I-1097, where the Court held that the concept of waste within the meaning of Art. 1 of Directives 75/442/EEC and 78/319/EEC, also includes substances and objects which are capable of economic re-utilisation. A member state which excludes certain categories of recyclable waste from the scope of its legislation has not properly implemented those Directives.
[414] Council Directive 91/689/EEC, OJ L377, 31 December 1991, 20, as amended.
[415] Decision 2000/532/EC, OJ L226, 6 September 2000, 3, establishes a single Community list which integrates earlier lists of dangerous waste and other wastes. The list does not prevent member states from classifying as hazardous wastes other than those featuring on the list.
[416] Art. 1(1) and (2).

a new definition of hazardous wastes by reference to three new Annexes, and does not apply to domestic waste.[417]

The additional requirements to those set out in Directive 75/442 establish basic management rules for hazardous wastes, and include the following rules: all tipping (discharges) on every site must record and identify the waste and there must be no mixing between different categories of hazardous wastes or between hazardous and non-hazardous wastes, except in prescribed circumstances;[418] hazardous wastes must be properly packaged and labelled in accordance with international and EC standards;[419] national authorities must draw up public plans for the management of hazardous wastes;[420] in cases of emergency and grave danger, member states must ensure that hazardous wastes are dealt with so as not to constitute a threat to the population or the environment;[421] and member states must supply the EC Commission with detailed information on every establishment and undertaking which carries out the disposal or recovery of hazardous waste on behalf of third parties.[422] Directive 91/689 excludes the application to hazardous wastes of certain derogations allowed by Directive 75/442, and expressly provides for the application of certain provisions of that Directive to hazardous wastes.[423]

Disposal of particular wastes

Under EC law, certain categories of waste are subject to special disposal rules, including waste oils,[424] polychlorinated biphenyls and terphenyls,[425] waste from

[417] Art. 1(3)–(5); for the definition, see chapter 13, pp. 677–81 above. In Case C-318/98, *Fornasar* [2000] ECR I-4785, the ECJ ruled that the decisive criterion, as regards the definition of hazardous waste, is whether the waste displays one or more of the properties listed in Annex III to the Directive.

[418] Art. 2. [419] Art. 5(1).

[420] Art. 6(1). On the failure to draw up waste management plans, see Case C-35/00, *Commission* v. *United Kingdom* [2002] ECR I-953, and Case C-466/99, *Commission* v. *Italy* [2002] ECR I-851.

[421] Art. 7. [422] Art. 8(3).

[423] Arts. 3, 4, 6 and 8. See Case C-65/00, *Commission* v. *Italy* [2002] ECR I-1795.

[424] Council Directive 75/439/EEC, OJ L194, 25 July 1975, 23, as amended. See Case 172/82, *Syndicat National des Fabricants Raffineri d'Huiles de Graissage and Others* v. *Inter-Huiles AG* [1983] ECR 555, holding that Directive 75/439/EEC and the Community rules on free movement of goods do not allow a member state to organise a system for the collection and disposal of waste oils within its territory in such a way as to prohibit exports to an unauthorised disposal or regenerating undertaking in another member state; and Case 295/82, *Groupement d'Interêts Economique 'Rhone Alpes Huiles' and Others* v. *Syndicat National des Fabricants Raffineri d'Huiles de Graissage and Others* [1984] ECR 575, holding that Directive 75/439/EEC and the EEC Treaty require that waste oils may be delivered by either a holder or an approved collector to a disposal undertaking in another member state which has obtained a permit as provided by Art. 6 of the Directive in that state. On non-implementation, see Joined Cases 30 to 34/81, *Commission* v. *Italy* [1981] ECR 3379; Case 70/81, *Commission* v. *Belgium* [1982] ECR 169. See also Case C-102/97, *Commission* v. *Germany* [1999] ECR I-5051.

[425] Council Directive 96/59/EC, OJ L243, 24 September 1996, 31, on disposal of PCBs and PCTs, which repealed Council Directive 76/403/EEC, OJ L108, 26 April 1976, 41. On

the titanium dioxide industry,[426] certain liquid containers,[427] sewage sludge,[428] and waste from spent batteries and accumulators.[429] The Commission has also adopted legislation on the incineration of hazardous waste,[430] on limiting packaging waste,[431] and on landfills.[432] The priority objective of the Directive on the management of end-of-life vehicles is waste prevention, requiring manufacturers to reduce the use of hazardous substances when designing vehicles, increase the use of recycled materials, and design and produce vehicles which facilitate the dismantling, re-use, recovery and recycling of end-of-life vehicles.[433] The Directive also requires member states to set up collection systems for end-of-life vehicles and used parts, with producers being required to meet all (or a significant part of) the costs of allowing the last holder of an end-of-life vehicle to dispose of it free of charge (referred to as the 'free take-back principle').[434] A similar approach is reflected in the Commission's proposed Directive on waste electrical and electronic equipment.[435]

Treaties

The EC was a party to the 1989 Lomé Convention, which controlled the movement of hazardous wastes to ACP countries (until it was replaced by the 2000 Cotonou Agreement), and to the 1989 Basel Convention on the control of transboundary movements of hazardous wastes and their disposal.[436]

the non-implementation of the earlier Directive, see Case 71/81, *Commission* v. *Belgium* [1982] ECR 175; and Joined Cases 30 to 34/81, *Commission* v. *Italy* [1981] ECR 3379.

426 Council Directive 78/176/EEC, OJ L54, 25 February 1978, 19, as amended; Council Directive 82/883/EEC, OJ L378, 31 December 1982, 1, as amended; and Council Directive 92/112/EEC, OJ L409, 31 December 1992, 11. On non-implementation, see Case 68/81, *Commission* v. *Belgium* [1982] ECR 153.

427 Council Directive 85/339/EEC, OJ L176, 6 July 1985, 18.

428 Council Directive 86/278/EEC, OJ L181, 4 July 1986, 6.

429 Council Directive 91/157/EEC, OJ L78, 26 March 1991, 38, as amended. See Case C-347/97, *Commission* v. *Belgium* [1999] ECR I-309, on failure to comply with Art. 6 obligations under the Directive.

430 Council Directive 94/67/EC, OJ L365, 31 December 1994, 34; and Directive 2000/76/EC, OJ L332, 28 December 2000, 91, on the incineration of waste, n. 211 above.

431 Council Directive 94/62/EC, OJ L365, 31 December 1994, 10. There is currently a proposal to amend this Directive, COM (2001) 729 final, OJ C103E, 30 April 2002, 17.

432 Council Directive 99/31/EC, OJ L182, 16 July 1999, 1.

433 Directive 2000/53/EC on end-of-life vehicles, OJ L269, 21 October 2000, 34.

434 Art. 5. The Directive aims to increase the recycling of metal content of vehicles from the current 75 per cent to 85 per cent average weight per vehicle by 2006 and to 95 per cent by 2015.

435 COM (2000) 347 final, OJ C365, 19 December 2000, 195. See also the proposed Directive on restriction of the use of certain hazardous substances in electrical and electronic equipment, COM (2000) 347 final, OJ C365, 19 December 2000.

436 Chapter 13, pp. 691–5 above.

Radioactive substances[437]

EC law on radioactive substances is generally governed by the EURATOM Treaty, which was adopted in 1957 to raise the standard of living in the member states and to improve the development of commercial exchanges with other countries by creating the conditions necessary for the speedy establishment and growth of nuclear industries.[438] The main provisions of the EURATOM Treaty relating to the environment concern health and safety. The Treaty provides for basic standards to be laid down for the protection of the health of workers and the public arising from ionising radiation.[439] Member states must adopt provisions to ensure compliance with these standards, including measures relating to teaching, education and training.[440] Additional health and safety measures must be taken if a member state allows particularly dangerous experiments, and the opinion of the EC Commission must first be obtained.[441]

Member states must also establish facilities to carry out continuous monitoring of radioactivity levels in the air, water and soil and to ensure compliance with basic standards.[442] The EC Commission has the right of access to these facilities and can verify their operation and efficiency, and national authorities are required to keep the Commission informed about the level of radioactivity to which the public is exposed.[443] Under Article 37(1), member states must provide the Commission with general data relating to plans to dispose of radioactive waste so as to make it possible to determine whether the implementation of the plan is liable to result in contamination of the water, soil or airspace of another member state. The Commission must give its opinion within six months, and the ECJ has held that Article 37 requires the member state to provide the general data of a plan before such disposal is authorised by the competent authorities of the member state, in order to ensure that the Commission's opinion has a genuine chance of receiving detailed consideration and influencing the attitude of the member state.[444] The Commission may also make recommendations to member states concerning levels of radioactivity in the air, water and soil, and can, in situations of urgency, issue a Directive requiring a member state to take all necessary measures to prevent an infringement of the basic standards and to ensure compliance with regulations.[445]

Secondary legislation has been adopted under the EURATOM Treaty which establishes basic safety standards for the protection of the public and workers

[437] Chapter 13, especially pp. 703–5 above. [438] 1957 EURATOM Treaty, Art. 1.
[439] Art. 30. 'Basic standards' are defined as: (a) maximum permissible doses compatible with adequate safety; (b) maximum permissible levels of exposure and contamination; and (c) the principles governing health surveillance of workers: Art. 30(a)–(c).
[440] Art. 30(1). [441] Art. 34. [442] Art. 35(1). [443] Arts. 35(2) and 36.
[444] Art. 37(2); Case C-187/87, *Saarland and Others* v. *Ministry of Industry and Others* [1988] ECR 5013. See now Commission Recommendation of 6 December 1999 on the application of Article 37 of the Euratom Treaty, 1999/829/Euratom, OJ L324, 16 December 1999, 23.
[445] Art. 38.

against radiation;[446] on the management and storage of radioactive waste;[447] on information exchange and informing the public in the event of a radiological emergency;[448] and on shipments of radioactive waste.[449] Non-binding acts have been adopted for other associated activities, such as the storage and reprocessing of irradiated nuclear fuels.[450] Following the Chernobyl accident, the Commission adopted legislation on the radioactive contamination of certain foods.[451]

Conclusions

The extensive body of EC environmental law which has been developed and applied since 1967, together with the jurisprudence of the ECJ and CFI which interprets and applies that law, provides a rich source from which experiences can be drawn and applied to developments in other regions and globally. Although the member states of the EC are a relatively homogenous group with historic links developed over several centuries, many of the conditions which apply in the EC legal, economic and political system are analogous to circumstances which apply elsewhere. And while the specific environmental issues raised in the EC are particular to its geographical and climatic circumstances, the underlying environmental issues and needs are the same as elsewhere. In particular, the fifteen member states have differing legal traditions and systems, are at different stages of economic development, and value the environment in

[446] Directive 96/29/EURATOM, OJ L159, 29 June 1996, 1 (the 'Basic Safety Standards Directive'), replacing Directive 80/836/EURATOM, OJ L246, 17 September 1980, 1, and Directive 84/467/EURATOM, OJ L265, 5 October 1984, 4.

[447] Council Decision 75/406/EURATOM, OJ L178, 9 July 1975, 28.

[448] Council Decision 87/600/EURATOM, OJ L371, 30 December 1987, 76; Council Directive 89/618/EURATOM, OJ L357, 7 December 1989, 31. In this context, see also Directive 98/618/EURATOM, OJ C190, 18 June 1998, 7, which directs states to provide information on radiological emergencies so that the population adopts appropriate behaviour. In a normal situation, prior information about emergency response behaviour must be given to the population covered by an emergency plan; immediate information must be given to the population affected in the event of a radiological emergency.

[449] Council Directive 92/3/EURATOM, OJ L35, 12 February 1992, 24; chapter 13, pp. 703–5 above. See also the 1989 ACP–EC Lomé Convention, chapter 13, p. 695 above. See also Council Regulation (Euratom) No. 1493/93, OJ L148, 19 June 1993, 1, on shipments of radioactive substances between member states; Council Regulation (EC) No. 1420/1999, OJ L166, 1 July 1999, 6; and Commission Regulation (EC) No. 1547/99, OJ L185, 17 July 1999, 1, on rules and procedures applying to shipments of certain types of waste to non-OECD countries; chapter 13, p. 705 above.

[450] Commission Recommendation 82/74/EURATOM, OJ L37, 10 February 1982, 36.

[451] Council Regulation 87/3954/EURATOM, OJ L371, 30 December 1987, 11, as amended by Regulation (EURATOM) No. 89/2218, OJ L211, 22 July 1989, 1; Council Regulation (EEC) No. 89/2219, OJ L211, 22 July 1989, 4; Council Regulation (EEC) No. 90/737, OJ L82, 29 March 1990, 1; Commission Regulation (EURATOM) No. 90/770, OJ L83, 30 March 1990, 78.

different ways. Moreover, as the EC has integrated some of the EFTA member countries, and as moves are made to integrate countries in central and eastern Europe and the Mediterranean, the EC will become increasingly diverse, and will place new strains on the development and application of EC environmental law.

EC environmental law thus represents a model of sorts. It reflects the first attempt of any region in the international community to legislate widely on national and transboundary environmental issues. In seising jurisdiction over the internal affairs of member states by regulating environmental matters which do not raise *prima facie* transboundary issues, EC environmental law goes even further. It effectively says that the member states share a single, indivisible environment. The implications of this for our understanding and treatment of sovereignty are significant, providing further support for the view that states are increasingly willing to limit sovereignty and take on board the emerging concept of 'reasonable sovereignty'.[452]

EC environmental law may rightly be criticised for establishing weak standards in certain areas, and views as to its adequacy and effectiveness will depend in large part on national legal perspectives, that is, whether the EC rules might tend to weaken domestic standards (as may arguably be the case for Germany, the Netherlands and Denmark) or whether they impose new, higher standards (as may arguably be the case for Italy, Spain, Portugal, Greece and, to a lesser extent, the United Kingdom). Nevertheless, it is unparalleled as a manifestation of international environmental law in both its substantive and procedural content, for bringing a wide range of actors into the legal process, and for illustrating the tensions which exist where a legal system which was designed to establish international economic arrangements finds itself subject to ecological constraints.

[452] A. V. Lowe, 'Reflections on the Water: Changing Conceptions of Property Rights in the Law of the Sea', 1 IJECL 1 (1986), cited by P. Birnie, 'International Environmental Law: Its Adequacy for Present and Future Needs', in A. Hurrell and B. Kingsbury (eds.), *The International Politics of the Environment* (1992), 51 at 84.