

Minerals, Fuel, Power & Industries

MINERALS

The early geological surveys of the Indian sub-continent found so much of interest in the Deccan and the Himalayas that the area in between was scarcely considered. The vast mineral resources of the Chhota Nagpur Plateau completely dwarfed all other discoveries nearby. The mineral resources of Bangladesh, being meagre, were considered totally negligible. A change in perspective had to come after 1947. With Indian trade restricted between 1947 and 1971, a beginning has been made of the geological exploration of this, superficially unpromising, corner of the sub-continent. By now some deposits of coal, peat, natural gas and limestone have been located. Coal was found at Kuchma, Nandigram Upazila, in 1960 when prospecting for oil. The coal beds have been found to slope down steeply from the western side of Bogra district right across Naogaon district. The beds are at depths from 890 to 1072 metres. Near Jamalganj (north of Naogaon) reserves of 165 million tons in an area of 9.45 sq. km has been proven. The total extractable reserves may be over 1,600 million tons. The most immediate value of this discovery is that it lends additional, and very strong, support to the theory of the sunken Garo-Rajmahal land bridge. Coal has also been found in the Lamakata-Bhemrarghat area near Takerghat, in northwest Sunamganj district. Reserves there are estimated at 3 million tons. Though coal seems to have gone out of fashion at present, the exhaustion of petroleum reserves may draw attention to it once more. Despite the fact that coal is environmentally undesirable, Bangladesh cannot afford to ignore the existence of such large reserves in the Northern Region.

Limestone was quarried in the nineteenth century at Jaflong and Jaintia in Sylhet district (Allen 1905). It has been found in a fairly large deposit (estimated at 20 million tons) in north-west Sylhet district near Takerghat (Fried, Krupp 1963). It is proposed to utilise this for a cement factory nearby. Smaller deposits have been located in the Chittagong Region. The cement factory at Chhatak, Sylhet uses limestone from quarries within India, and from small deposits within Bangladesh at Takerghat in n.w Sunamganj. A boulder quarry has been

started at Bholaganj nineteen kilometres from Chhatak. The quarry is along the Dholai Gang river and its estimated yield is 141,500 cu. metres of shingles and boulders for 50 years at least (Bholaganj etc. 1962). Pottery clay has been found at Bagaura in the Susang Hills. This is an off-white clay, with 1.2 to 1.4 percent Fe₂O₃ and 20 percent water of plasticity, as against 42 percent for good English china clay (Khan 1960). Its pyrometric cone equivalent is 28, which makes it refractory clay but not very much so. The deposit is estimated to be 3,000,000 tons.

Brown coal and lignite had earlier been found in the Hill Tracts district in very small quantities. This did not prove readily utilisable. The brown coal found had 35.5 percent carbon, 38 percent volatile matter and 25 percent ash, while specimens of lignite were found to have 25.9 percent carbon, 35.8 percent volatile matter and 38.3 percent ash. Some lignite had been found at Langla, in Sylhet district. The existence of peat beneath the surface of the delta was known at least by the early nineteenth century. By most investigators it was casually dismissed as a 'peaty layer'. Recent surveys have, however, revealed large peat beds not only in the delta regions but also in the Haor Basin and the Meghna flood-plain. Peat extraction at Jalirpar (Faridpur district) in the Central Delta Basin, (Chanda and Baghia Bils), was started on an experimental basis in 1954 but abandoned in 1960. The main drawback to extraction in the lower areas is that most of the beds are under water for half the year. Peat of the Central Delta Basin lies, on an average, one and a half metres below the surface and is underlain by light bluish grey silty clay. Analysis of this peat shows its composition to be 24 percent carbon, 42.3 percent volatile matter, 17.1 percent moisture and 16.6 percent ash. The deposits in the Central Delta Basin and areas adjoining it, is estimated to be nearly 1,100 million tons of wet peat, or 160 million tons of dry peat (2nd Five Year Plan 1965). Mature peat has everywhere been found in the deepest beds, the higher ones having mostly incipient or immature peat.

Rock salt has not yet been found, but there are three salt-water springs at Lungshem and Sorphuel in north-eastern Hill Tracts district. Salt is manufactured from brine, as is later described, mainly around Cox's Bazar. In 1961 quite extensive radio-active sand deposits were found all along the beaches from Kutubdia to Teknaf. Because of the very high radio activity of certain samples, it was suspected that zircon and not thorium is contributing most to the radio activity. These deposits have not been fully and satisfactorily surveyed and there are no plans as yet to utilise them. From partial survey it is estimated that the reserves are 487,000 tons of sand containing 10% heavy minerals, 163,000 tons of sand containing 20% heavy minerals and 6,300 tons containing 30% heavy minerals. Building stone in adequate quantities has not yet been found,

though limestone boulders, gravel and pebbles are being quarried for road construction from river beds in the Piedmont Plains, Susang Hills Region, the Southern Beach Plains, and the Meghalaya foot-hills.

Table 15.1
Gas Reserves and Methane Content in
TCF (10^{12} cft.) as on June, 1990

Field	Year of Discovery	Estimated Recoverable Gas Reserves			Methane Content (Vol %)
		Proven+Probable	Possible	Total	
1. Sylhet	1955	0.44	—	0.44	96.26
2. Chhatak	1959	1.90	5.27	7.17	99.05
3. Rashidpur	1960	2.78	1.67	4.45	98.20
4. Titas	1962	8.32	0.14	8.46	96.27
5. Kailastila	1962	3.66	—	3.66	95.70
6. Habiganj	1963	2.98	—	2.98	97.80
7. Bakhrabad	1969	1.68	2.99	4.67	94.30
8. Semutang	1969	0.16	—	0.16	96.94
9. Kutubdia	1977	0.78	—	0.78	94.41
10. Begumganj	1979	0.03	0.03	0.06	95.30
11. Feni	1981	0.02	—	0.02	95.70
12. Beanibazar	1981	0.24	1.32	1.56	93.68
13. Kamta	1981	0.32	—	0.32	95.85
14. Fenchuganj	1988	0.35	—	0.35	97.84
15. Jalalabad	1989	1.50	—	1.50	93.50
16. Marichacandi	1990				
17. Belaboo	1990				
		New discovery : Data			N / A.
TOTAL		25.16	11.42	36.58	

Note: Gas field reserves based on the report- "Habitat of Hydro Carbons in Bangladesh" by M/S. Welldrill (U. K.) Ltd., 1990 and of Titas by M/S. Technica Ltd. of Canada, 1989. Condensate recovery of Kailastila and Beanibazar is based on installation of Trubo-expander.

HYDROCARBONS [Natural Gas and Oil]

The natural gas resources have been developed rapidly during the past few years. Table 15.1 indicates that proven reserves have increased steadily and now are estimated at over 25.16 TCF. Production-sharing contract, for off-shore exploration, was signed with six multinational

companies in 1974-75. Their efforts led to the discovery of natural gas deposits close to Kutubdia island, about 40 km due west of Chittagong port. This well has, however, been kept shut.

The composition of natural gas on-shore is good with an average of over 96% methane, 2.5% ethane, 0.3% propane and 0.5% carbon dioxide. Since 1962, natural gas has been used at the Fenchuganj Fertilizer Factory in Sylhet, both as feed and raw material, for the production of urea. Condensate (oil) at the rate of 2000 gallons per day has been extracted from the Haripur Gasfield since 1959; and from the Kailashtila gasfield, since 1985, at the rate of 12 barrels per million cuft of gas. Other gasfields also yield condensate at the rate of two to three barrels per m / cuft of gas. Oil has been found at Kailashtila in 1986 - 87 and is being exploited @ 250 to 300 barrels / day. Kailashtila field also supplies natural gas to the cement factory at Chattak, about 45 km away.

To ascertain the possible reserves, Petrobangla (the government organisation responsible for hydrocarbon resource development), has undertaken a project for gasfield appraisal and development which includes, inter alia, development of eleven different wells in different gasfields. Considering that only one or two layers in each place has been tested, it is thought possible that total reserves in the Surma Basin alone could be 27 TCF and there may be three times as much in the country as a whole.

The discovery of natural gas, though long expected in view of its geological basis, was a pleasant surprise to those who despaired of finding any mineral fuel in Bangladesh. The possibility of finding coal or petroleum was considered remote. The present indications are, however, that more natural gas will be discovered, and as the coal resources are utilized, the mineral fuel resources of Bangladesh will assume a satisfactory position. Satellite imagery obtained by ERTS-I indicates the good possibility of finding petroleum in the Chittagong Sub-Region. Prospects of finding petroleum in the immediate off-shore area is also considered to be good.

About 60% of the consumption of petroleum products is in the form of kerosene, which is the universal fuel for lighting in the countryside and most of the towns. The refinery in Chittagong processes 250,000 tons of various petroleum products annually. Petroleum imports were worth only 7% of total imports in 1972-73, before the surge in crude oil prices. By 1981-82 petroleum products had reached 87% of the value of total imports. With the rapid development of natural gas resources this situation has been eased. The value of petroleum products was still as high as 44% of total imports in 1985-86, but dropped to only 14% in 1987-88. The consumption of coal and petroleum products is about 800,000 tons and 1,100,000 tons respectively.

Map 15.1

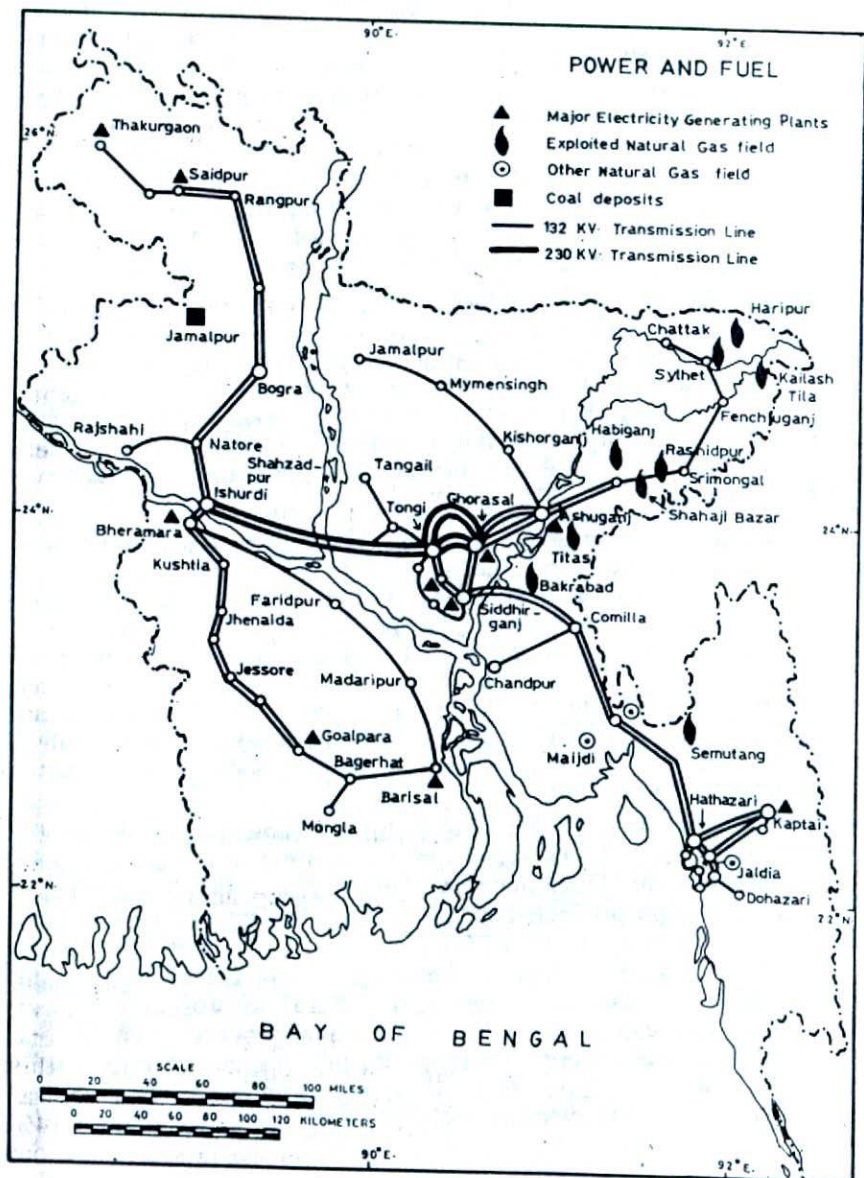


Table 15.2
Power Development (1980 - 84)

Items	Year		
	1980-81	1984-85	1988-89
1. Installed capacity (MW)	813	1141	2365
2. Maximum demand (MW)	544	887	1393
3. Generation of electricity (Million Kwh)	2661	4545	7117
4. Consumption of electric energy (MKwh)	1594	2841	4695
5. a) Village electrification (total nos)	2887	6507	11974
b) Length of transmission (total miles)	1215	1503	1725
c) Length of distribution line (total miles)	15158	26595	41285
d) Systems loss *	31.51	34.35	40.50 **
6. a) Average Tariff (Tk.)	0.34	1.40	1.96 ***
b) % Increase over preceding Yr.	6.38	8.53	13.29 ***

Notes : Transmission lines include 132 KV, 66 KV
Distribution lines include 11 KV, 33 KV, 11/0.4 KV & 0.4 KV

* Loss in % of Net Generation ** Estimates *** 1987-88

Source : Statistical Yearbook of Bangladesh, 1990, BBS
Annual Report of B.P.D.B (1987-88)

ELECTRICITY

In 1947, Bangladesh had electric power generating capacity of 22,000 KW. This was located in only eighteen towns. The supply increased slowly and steadily. The first big step was the commission of the Siddhirganj Power Station near Narayanganj, which started in 1954 with a generating capacity of 18,500 KW. In 1959, another 30,000 KW capacity was added. By 1955, the installed power capacity was 32,200 KW in public utilities and 42,000 KW industrial establishments. In 1960, the figures were 103,000 KW in public utilities and 72,000 KW in industrial establishments. This was mainly due to the increase in Siddhirganj capacity, new plants at Goalpara (near Khulna), Chittagong, Bheramara, Khulna Newsprint Factory and other industries. The installed capacity rose from 175 MW in 1960 to 297 MW in 1965 and to 488 MW in 1970. By 1981-82 the total installed generating capacity almost doubled

to 839 MW, and then increased rapidly to 2145 MW by 1987-88. The Karnafuli Hydro Project generates power at Kaptai and feeds it into the eastern grid through a 132 KV line that runs from Kaptai to Sidhirganj. This grid has been extended to Sylhet and Cox's Bazar in the east and, through the East-West Interconnector, over the Jamuna River, to the Western grid system of Khulna and Rajshahi Divisions. Though the Interconnector system helps in the efficient distribution of electricity, particularly during peak-hours, the unusually high systems loss (38.5% in 1987-88 and estimated at over 40% in 1990) indicates weak management of the electricity sector. Since the introduction of the rural electric cooperative system (the NRECA model of the USA) by the Rural Electrification Board in 1978-79, the consumption of electrical energy in rural areas for lighting, irrigation and small industries has dramatically increased. In contrast to the huge systems loss in the urban areas, the rural coops have a negligible system loss and their tariff collection is also much better than in the urban areas. Electricity consumption rose from 77 Gwh. in 1954 to 830 Gwh. in 1965, but reached only 1012 Gwh. by 1976-77. However by 1987-88 consumption of electricity has risen to 3772 Gwh.

Table 15.3
Structure of the Industrial Sector (1981-82)

	No. Units	Employment ('000)	% Share	Value added ('000 Takas)	% Share
Public Sector	303	310	(13.7)	8,680	(46.1)
Private Sector	425,089	1,958	(86.3)	10,156	(53.9)
a. Large Scale	2,425	93	(4.1)	2,139	(11.4)
b. Small Scale	24,217	400	(17.6)	3,205	(17.0)
c. Cottage	398,447	1,465	(64.6)	4,812	(25.5)
Total =	424,392	2,268.7	(100.0)	18,836	(100.0)

Source : World Bank

INDUSTRIES

The per capita income in Bangladesh is only US\$ 166 per annum, which places it in the category of the very poorest countries. As long as agriculture remains overwhelmingly dominant, per capita income is unlikely to reach even US \$250 in the next twenty years. If Bangladesh is to reach a tolerable

standard of living for its very large population it must be industrialized. At present it has a very poor industrial base and a great deal needs to be built up and maintained before industrial activity and related services begin to change the mix of sectoral contribution to the GNP.

Industrial Performance

It took the Industrial Sector three years, from 1971 to 1974, to recover from the effects of the War of Independence. Therefore industrial performance is generally measured with 1973-74, as the base year. The growth of industrial output between 1974 and 1987 has averaged about 5.7% per year. Most of the growth occurred in the period 1974-1978. Since 1978 the growth rate of industrial output has been only 3.6% per year. During the period 1974-84 labour productivity increased by 20% but unfortunately real wage declined nearly 25% (World Bank 1985). At the same time, value added in the industrial sector has grown at only 1% per year in this period, primarily due to intermediate input prices rising faster than output prices. The net result has been a decline in the real returns to capital. The industrial capacity created in the later 1970s, in the expectation of high government spending, is now feeling the pinch of resource constraints. To some extent the decline in demand from the government sector may be filled by demand generated by remittances from Bangladeshis overseas, higher agricultural incomes and the growth of non-traditional exports. The share of capital goods in manufacturing value added fell from 12% in 1981-82 to only 2% in 1985-86 and stayed at that level upto 1990.

The Structure of the Industrial Sector

Industrial enterprises can be broadly classified into four groups. The first group are the public sector enterprises, which are mostly large-scale units, run by various Government Corporations. In 1981-82 there were 303 such enterprises and they accounted for 46% of the value added in the industrial sector, but in terms of employment they accounted for only 14% of the industrial labour force. The other three groups of industries are all in the private sector. Large-scale units in the private sector account for slightly over 11% of the value added in the industrial sector and they employ only 4% of the industrial labour force. Small-scale units in the private sector account for 17% of the value added in the industrial sector and employ 18% of the industrial labour force. Cottage industries, all of it in the private sector, number nearly 400,000 and employ 65% of

Table 15.4
Cottage Industries, 1950, 1960, 1969a/ 1981

Items	Number of Enterprises				Number of Workers			
	1950	1960	1969	1981	1950	1960	1969	1981
1. Yarn & Textile Fabrics	149,244	110,678	90,748	198,200*	417,599	347,835	330,838	853,532*
2. Food Drink and Tobacco processing	91,391	1,448	88,863	84,749	208,441	14,084	211,821	232,414
3. Salt	647	15,000	f/	28,544	3,260	60,000	f/	66,702
4. Wood, Cane & Bamboo Works	73,953	27,536	66,920	70787	159,113	63,440	131,970	215,449
5. Glass & Ceramics	20,796	7,224	25,198	17,294	70,792	22,365	84,207	80,899
6. Carpets, Rugs, Rope, Bags, & Nets	28,803	-	f/	25,659	55,326	-	f/	73,531
7. Jewellery & Ornaments	14,051	-	f/	12,265	25,431	-	f/	26,600
8. Tailoring	11,882	-	24304	46,340	22,080	-	40,565	103,184
9. Metal Work	9,990	3,272	21,436	23,191	22,427	8,116	43,029	60,148
10. Leather Work	2,681	-	e/	2,219	6,447	-	e/	5,394
11. Miscellaneous	-	-	11,327	9,775	-	-	17,659	55,953
	403,438	165,154	240,796	321,743	990,916	515,340	860,059	1,413,806

a/ 1969 figures are for both Small and Cottage Industries in rural area only.

b/ Estimated.

c/ Pottery only.

d/ Leather work and tailoring of garments was enumerated jointly.

e/ Including boat & cart building.

f/

* Non-Metallic Mineral Manufacturing. Possibly included in miscellaneous manufacturing industry. Includes findings of the 1978 Handloom Survey.

the industrial labour force, but account for only 25% of the value added in the industrial sector. Single largest category in the cottage industries are the handloom establishments which number approximately 200,000 and employ 31% of the labour force but account for only 10% of the value added.

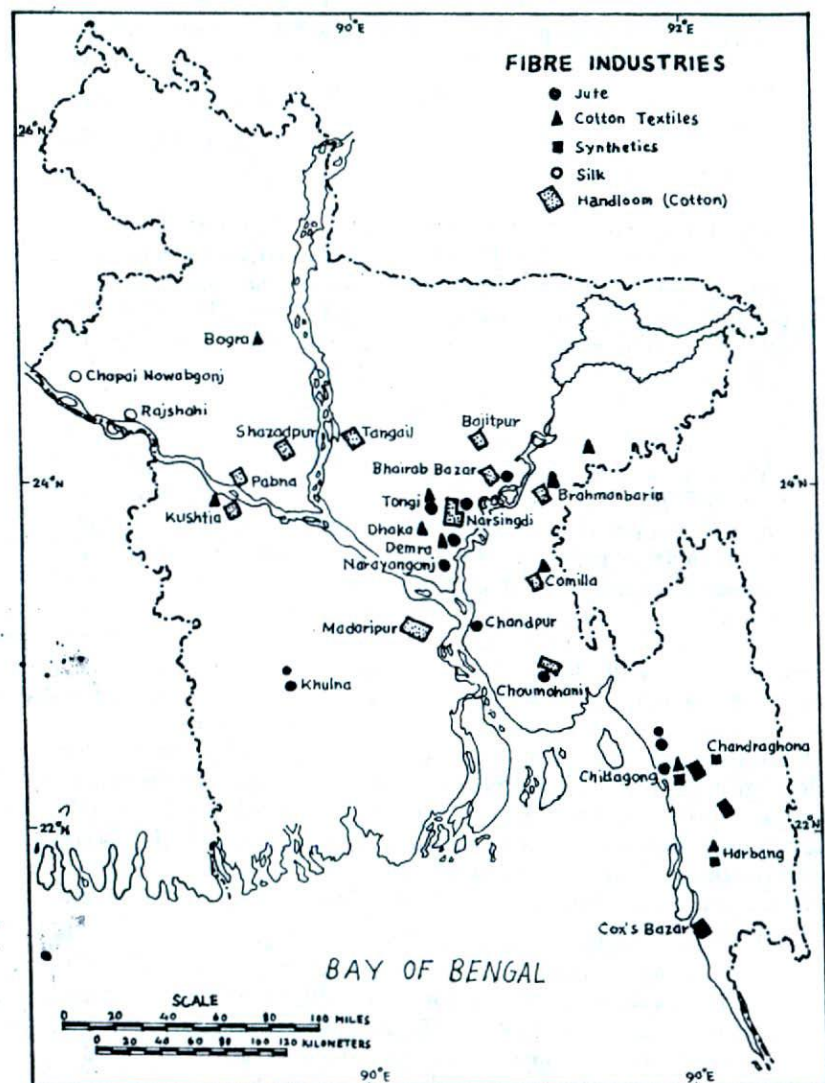
Cottage Industries

The definition of what constitutes a cottage industry has varied according to time and the agency concerned. The 1950 Census of Cottage Industries defined it as 'an enterprise carried on in the home, and mainly by the members of the household, which manufactured goods for sale, or capable of being sold, and which employed less than 20 persons' (Census 1951). This Census enumerated 403,438 cottage industry enterprises, employing 990,916 workers (Table 15.4).

The 1960 Census of Cottage Industries used a much more restricted definition and enumerated only 165,158 cottage industry enterprises, employing 515,840 persons (Table 15.3). It seems that the 1950 Census was more complete than that of 1960. A survey of cottage industries was carried out in 1969 by BBS. This again used different definitions, but it was closer in concept to the 1950 Census. The latest enumeration was carried out by BSCIC, in 1980-81. It did not include the handloom industry, possibly because a separate survey for it had been carried out in 1978 by the Bangladesh Handloom Board. In Table 15.4, the results of the handloom survey of 1978 are included with the 1981 survey figures. It shows that in 12 years the total number of workers in small and cottage industries rose only 6.6 percent, far below the population growth rate. The 1981 survey estimated that all the small and cottage industries, excluding handloom, produce goods worth about Tk. 9,962 million, on a fixed investment base worth about Tk. 3,567 million. Since production cost was estimated at about Tk. 6,632 million, transportation, packing, retailing and profit averaged 50% of production cost.

The handloom industry had 197,280 enterprises in 1978 and 847,000 full and part-time workers. There are an estimated 437,000 handlooms in the country and at full capacity they can use 1.2 million bases of yarn annually. This industry is concentrated around Baburhat Narsingdi, Bajitpur-Tangail, Shahzadpur, Santhia, Brahmanbaria, Lalmai, Choumohani, Bajitpur, Rajbari and several villages in south-east Madaripur (Map 15.2). Handloom weaving is also widespread in southern Chittagong and all over Khagrachari, Rangamati and Bandarban districts.

Map 15.2



Factory Industries

These range from the small workshop to the giant factory enterprises, and as such vary a great deal in size and output. The Statistical Office in their 'Census of Manufacturing Industries' limit the size of industrial establishments to those employing 20 or more workers and using power in their manufacturing process. Certain counts, however, also include under the definition 'establishments' which employ 10 or more persons with or without using power. Using this enlarged definition there were 1,944 factories in 1962-63. The value of fixed assets at the end of the year was over Rs. 1,586 million, and their gross value of production was over Rs. 1,954 million. Their average daily employment was 181,840 workers. In the year 1974-75, there were 2847 manufacturing industries. The value of fixed assets at the end of the year was over Tk. 4,639 million and their value of production was Tk. 11,800 million. Their average daily employment was 370 million workers. By 1987-88 the number of industrial units in production rose to 3955, gross value of industrial production was worth Tk. 84,639 million, and value added was Tk. 36,793 million. ** (BBS 1990)

As present, three quarters of the labour for large industries are drawn from seven districts - Khulna, Jessore, Dhaka, Sylhet, Comilla, Noakhali and Chittagong. Of this, half are from three districts - Comilla, Noakhali and Chittagong. The process of concentrated development is being accelerated in the case of these south-eastern areas; the widespread distribution of medium scale industries will do much to counter this decided trend.

The biggest group of Industries is engaged in jute manufacturing. In 1947 there was not a single jute mill within Bangladesh, through the big concentration of mills around Calcutta depended for most of their supplies from here. Within a decade jute industry grew up within Bangladesh, big enough to challenge that at Calcutta. In 1988-89 there were 114 jute mills, (including 33 'spinning only' mills, all in the private sector) employing a total of 216,110 workers of whom about 150,620 are permanent workers. Of these mills, 38 are in the private sector (with 10,284 looms) and 33 are in the public sector (with 15,808 looms). Only India has more looms and spindles. One of these units, the Adamjee Jute Mills (three units) at Demra near Narayanganj is the largest in the world. The main jute manufacturing units are concentrated in three regions; the belt from Narayanganj to Narsingdhi; the Khulna-Daulatpur region and north of Chittagong. There are six mills (three each in the

* Source: Department of Industries, Govt. of Bangladesh.

** All financial estimates for different years are in current terms, and thus have to be adjusted for inflation to make them comparable.

public and private sectors) which produce high quality jute carpets of various sizes and designs. The Adamjee units have started producing "geo-jute" in quantity because it is easily bio-degradeable and is therefore preferred in many 'environmentally conscious' countries for use as earth / embankment retaining nets. These Jute Mills are estimated to account for nearly 3 percent of Bangladesh's 'Gross Income'. The rapid expansion of the jute industry can be seen from Table 15.5.

Table 15.5
Production of Jute Goods

(Thousand tons)

Year	Total	Hessian	Sacking	Carpet backing	Others	Raw jute consumption (lakh bales)
1973-74	500	172	227	66	35	N.A
1974-75	444	146	228	40	30	25.4
1975-76	477	161	221	71	24	26.7
1976-77	490	166	227	70	26	28.1
1977-78	546	177	265	76	28	30.7
1978-79	500	176	232	75	18	27.8
1979-80	522	190	247	77	8	48.1
1980-81	581	202	305	70	4	31.7
1981-82	577	19	324	55	4	31.8
1982-83	561	225	238	92	6	32.6
1983-84	536	238	194	95	8	33.28
1984-85	521	205	220	80	8	32.50
1985-86	444	160	214	65	5	28.45
1986-87	531	200	244	79	8	33.06
1987-88	529	223	232	61	13	32.24
1988-89	568	188	240	71	11	31.70
1989-90	590	NA	NA	NA	NA	31.00

Source : Ministry of Jute ; Strategy Cell ; 1990.
B.B.S 1984-85

With about 68,000 workers, the textiles industry is the third largest in labour employment. There are 63 cotton textile factories and nearly a hundred and forty hosiery factories, many of which are of very small size. The value of their products and by-products is nearly two-thirds that of the jute factories. This is one of the few industries that

existed in Bangladesh in 1947. In fact at that time it was not only the biggest industry in this Wing, but it was far bigger than the cotton textile industry of the Western Wing. The ready availability of cotton in that Wing was obviously one of the factors that spurred on the growth of this industry to such an extent that within a decade it had built up its industry to six times the size of that in Bangladesh. In Bangladesh the cotton textile industry had in 1988-89, some 1,217,000 spindles and produced 70.7 million yards of cloth and 107.4 million lbs. of yarn.

Table 15.6
Production of Cotton Textiles

Year	Number of Mills Reporting	Installed ('000)		Consumption of cotton ('000 lbs)	Total yarn produced ('000 lbs)	Total cloth produced ('000 yds)
		Hours Spindle	Worked Loom			
1973-74	N.A.	N.A.	N.A.	104,567	91,347	79,378
1974-75	N.A.	N.A.	N.A.	105,829	91,302	84,626
1975-76	N.A.	N.A.	N.A.	101,700	88,073	74,475
1976-77	N.A.	N.A.	N.A.	91,888	82,422	68,124
1977-78	N.A.	N.A.	N.A.	99,874	89,766	82,552
1978-79	49	494	7	94,946	96,579	85,012
1979-80	49	1030	8	106,281	95,282	88,581
1980-81	56	1059	8	101,770	101,951	85,972
1981-82	56	1012	6	98,152	95,289	72,497
1982-83	56	1014	6	109,726	99,751	65,334
1983-84	58	1088	6	110,554	98,858	66,229
1984-85	58	1025	6	110,847	106,220	68,622
1985-86	58	1173	6	105,590	94,716	64,639
1986-87	59	1064	6	112,836	99,541	64,972
1987-88	61	1120	6	113,899	102,535	67,092
1988-89	63	1217	6	120,090	107,872	70,763

Source : Statistical YearBook 1990.

The phenomenal growth of the ready-made garment (RMG) industry during the 1980 is the success story of that decade. From virtually nothing in 1978 the number of RMG Factories exceeded one thousand in 1990, and the total number of workers employed (both long-term and casual)

approached 300,000. In that sense it is the largest industry in the country and is largely concentrated in Metropolitan Dhaka and Metropolitan Chittagong.

Table 15.7
Variety-wise Quantity and Value of Production
of Cloth by Textile Mills in 1987-88

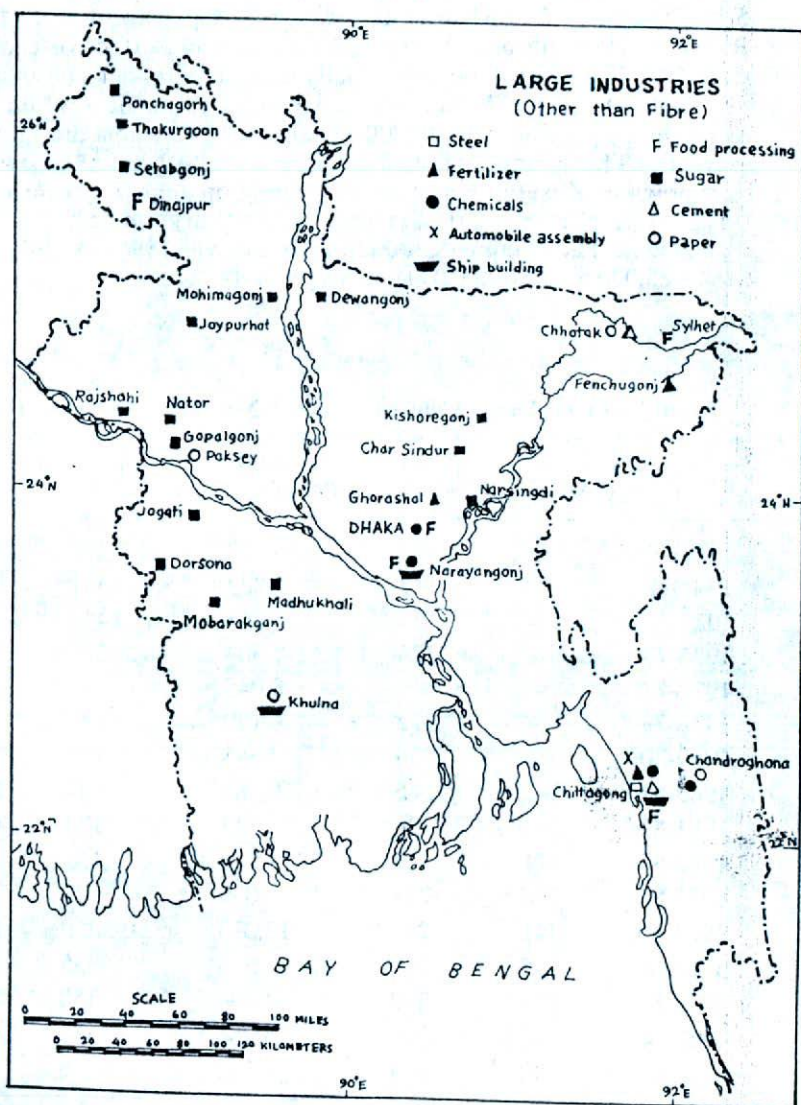
Item	Quantity (000 Yards)		Value (000 Taka)	
	87-88	88-89	87-88	88-89
Saree	2,808	2,675	45,762	33,800
Dhuti	523	858	6,834	22,689
Lungi	750	496	2,335	12,831
Long cloth	5,015	648	82,047	107,162
Poplin	1,214	992	34,133	31,612
Shirting	2,429	2,779	54,040	75,336
Drill	391	1,317	11,977	60,390
Saloo	361	262	6,277	4,118
Markin	52,418	50,433	775,372	105,672
Others	934	1,242	17,140	23,083

Source : Bangladesh Textile Mills Corporation.
Statistical Yearbook 1990

The fourth biggest industrial group, in terms of labour employees, is that of the Biri makers. Their impact on the industrial output is however, slight, since the units are small and the total volume of output is not much more than that of a single cigarette factory. Wages paid in this industry are very low. There are nearly three hundred Biri-making enterprises employing about 27,000 workers. They range in size from those employing only two workers and making about 40,000 Biris a month to one which employs 2,000 workers and makes 88 million Biris monthly (in Bogra). The main centres of production are Dhaka-Narayanganj, Bogra, Chandpur, Chittagong, Sirajganj, Feni, Pabna and Khulna.

The fifth biggest group is made up of Kutcha and Pucca jute bailing presses. Kutcha bales, are pressed by manual labour, whilst Pucca bales are pressed in large, heavy machines. These jute presses employ some 22,000 workers, half of whom are seasonal. There are currently 708 kutcha presses and 48 pucca presses all of which are licenced units. Janalpur district has the largest number of kutcha presses with 50 units, followed by Gaibandha (48) and Faridpur (44). The concentration of

Map 15.3



kutchra presses is in the Northern Region. Most of the pucca presses are located in Naryanganj with 22 units. The Khulna-Daulatpur area has 16 and Mymensingh has four.

The sixth biggest group is of the match factories. There are 23 of them employing over 9,000 workers. Seven of these factories are in Dhaka, 5 in Chittagong, 2 in Khulna and 1 each in Khepupara, Bogra, Chandpur, Rajshahi, Harbang and Sylhet. Their combined effective capacity is over 10 million gross boxes annually and their timber consumption is about 50,000 tons. The thirteen sugar mills form the seventh biggest group by employing over 10,000 workers half of whom are on permanent payroll. These mills are at Charshindur (Dhaka), Diwanganj, Kishoreganj, Kushtia, (Jagatia), Darsana, Gopalpur, Rajshahi (Harian), Joypurhat, Mahimaganj, Syhamganj, Thakurgaon, Shetabganj and Panchagar. Their annual production in 1988-89 and 1989-90 was about 85,000 mt. and 110,000 mt. respectively.

Table 15.8

Production of Urea, Cement, Safety Matches, Tyres & Bicycles.

Year	Urea (000 MT)	Cement (000 M.T)	Safety Matches (000 Gross Box)	Tyres (000 #.)	Bicycles
1973-74	—	52	6,207	312	—
1974-75	—	127	6,227	381	—
1975-76	—	157	6,845	448	—
1976-77	—	308	7,564	355	—
1977-78	—	339	8,045	383	—
1978-79	—	322	9,120	182	—
1979-80	—	336	9,341	176	—
1980-81	342	345	10,083	194	28,214
1981-82	345	326	11,843	171	30,194
1982-83	371	307	12,281	151	13,338
1983-84	728	273	12,059	520	20,612
1984-85	741	240	13,073	340	14,712
1985-86	835	287	13,579	335	15,511
1986-87	846	310	14,894	350	16,917
1987-88	1,286	310	13,754	517	19,741
1988-89	1,447	344	1,322	366	30,208

Oil mills are very commonly part of rice mills, since the majority of the units are small. Often flour milling and pulse milling machinery too are added. It is not easy, therefore, to determine in which group some of these units should be placed. Based mainly on the volume of business in rice alone, about 110 mills can be classed as rice mills. This group employs about 4,000 workers. It is concentrated at Chittagong, Phulhat, Dhaka, Birampur, Setabganj, Phulbari, Ruha, Hilli, Chirirbandar, Saidpur. Most of these places are in Dinajpur and Rangpur districts.

There are three large industrial units in the public sector engaged in manufacturing paper and paper products. Together they employ about 10,000 workers. They are the Paper Mills at Chandraghona (KPM) ; at Paksey (NBPM) and the Newsprint Factory (KNM) at Khulna. KPM was completed in 1953 and produces nearly 100 tons of paper per day (30,000 tons per year) from Muli bamboo (*Melocanna bambusoides*). The finished paper is sent down to Chittagong by the mills own flotilla of 5 diesel Tugs and 16 Barges. Auxiliary plants at the mill produce about 35 tons of caustic soda, 40 tons of lime, 10 tons of alum and 10 tons of sulphuric acid per day. A rayon mill has been set up at the same place.

Two units of the Newsprint Factory were completed in 1959 and the third in 1965. From Gewa (*Excoecaria agallocha*) wood it manufactures newsprint and mechanical printing paper. From about 40,000 tons of wood, its estimated annual production is 34,000 tons of newsprint and 14,000 tons of mechanical printing paper. Mills to produce hardboard and particle-board are expected to be put up soon possibly in Sylhet district. Small hardboard mills have been set up in Dhaka by private enterprise. A pulp mill based upon Ekra reed and bamboo has been set up at Chhatak, in Sylhet district in 1975 with a installed capacity of 24,00 MT/annum. When this plant also uses jute as raw material its installed capacity rises to 30,000 MT/annum.

The manufacture of water transport equipment is quite obviously one of the important industries. It engages nearly 4,000 workers. They are mainly located in Khulna, Narayanganj and Chittagong. At Khulna there is a small shipyard and at Narayanganj there are several dockyards. They repair inland water transport vehicles. At Barisal, Khulna, Chittagong and Narayanganj several private boatyards are making small launches. A dry-dock facility for ocean-going ships has been in operation in Chittagong (near Patenga) since July, 1985 and is capable of servicing 25 vessels / annum (depending on the nature of work) with a maximum of 16,500 DWT.

The oil mills form the next biggest group. These mills press various oilseeds (Mustard, sesamum, etc.) and sell the oil in tin and PVC containers. There are 130 such mills, employing nearly

2,000 persons and are concentrated in Chittagong, Chandpur, Choumohani, Sylhet, Kushtia and Comilla. A good number are scattered throughout Rajshahi and Rangpur districts. Most of them are medium-size enterprises, with 10 to 30 workers.

With substantial natural gas reserves, Bangladesh is well placed to convert this resource to fertilizer for agricultural development. Five urea and one TSP manufacturing plants are currently operating while two others - at Sharishabari in Jamalpur on the left-bank of the Jammuna river and on the left-bank of the Karnafuli river near Patenga in Chittagong - are being planned. Details of these plants are :

Fertilizer	Unit	Location	Date of Commissioning	Current Installed Capacity
Urea	NGFF	Fenchuganj	Nov. 1961	1.06 MT
Urea	UFFL	Ghorasal	May 1970	3.04 MT
Urea	ZFCL	Ashuganj	Aug. 1981	5.28 MT
Urea	Polash	Ghorasal	Nov. 1985	0.95 MT
Urea	CUFL	Chittagong	Oct. 1987	5.61 MT
Urea		Sharishabari	Under const.	5.61 MT
Urea		Chittagong	Planned	5.61 MT
TSP	TSP	Chittagong	Unit-I 1974	
			Unit-II 1977	1.52 MT

Direct employment by all the fertilizer factories is about 11,000 workers largely of a semi-skilled nature.

The only cement factory in Sylhet, set up at Chhatak in 1941, has an estimated annual capacity of 160,000 m.tons. It employs about 1,000 workers. Much of the limestone for the cement comes from India and under agreement a certain amount of the production is reserved for export to India. Another cement factory may be put up in the same district (Sylhet) with its raw material supply from the large limestone deposit found near Takerghat. A cement factory of 300,000 m.tons capacity, based on imported clinker was commissioned in July 1974, and is situated on the Karnafuli river at Chittagong port.

There are five cigarette factories in production. Two are in Chittagong, and one each at Dhaka, Bogra and Harbang (south of Chittagong). Their combined employment is estimated to be 1,500 workers.

The 156 tea estates of various categories in Bangladesh employ nearly 100,000 permanent workers. The great majority of them are pickers, whose job is more of agricultural than of industrial. The strictly industrial labour force is that engaged in the tea factories

of which almost every estate has one. This labour force is about 2,000 persons only.

Manufacture of metal utensils and the manufacture of glass and glass products, each employ about 2,000 persons. These industries are naturally concentrated in Dhaka and Chittagong. Other industries of note are soap-making (with over 150 units, employing about 1,500 persons and producing 7,000 tons annually; minor engineering (nearly 100 units with about 1,500 workers), steel re-rolling (20 units, employing about 1,000 persons and handling 45,000 tons)

Table 15.9

Production of Selected Food and Tobacco Items

Year	Shrimps & Froglegs (MT)	Cigarettes (millions)	Sugar ('000 Tons)	Tea Black (Tons)	Vegetables products (Tons)	Edible Oil Soya Mustard (MT)
1973-74	-	11,895	88	-	5,573	-
1974-75	-	10,441	98	-	6,129	-
1975-76	-	11,907	87	-	5,179	-
1976-77	-	11,634	140	-	6,612	-
1977-78	-	11,974	175	-	7,099	-
1978-79	-	13,531	131	-	6,064	-
1979-80	-	13,830	93	-	7,158	-
1980-81	1134	14,906	143	40,923	5,168	15,480
1981-82	1282	15,778	199	38,964	7,157	18,435
1982-83	1094	14,031	175	38,377	8,890	21,300
1983-84	488	14,711	149	38,580	7,296	16,868
1984-85	413	14,393	87	42,562	5,857	9,182
1985-86	3213	14,365	81	38,908	5,957	8,194
1986-87	2917	14,762	179	39,337	5,413	18,508
1987-88	3470	13,696	175	40,138	6,337	23,578
1988-89	4700	14,088	110	416,119	4,455	20,550

saw-milling (over 50 units employing over 500 workers), and tea blending (two units near Chittagong and one in Comilla with about 160 workers). New Industries that have a future are plywood (4 units at present turning out 600,00 tea-chests), rubber, pencil-making (present capacity 420,000 gross annually), cycle assembling,

plastics, vegetable ghee, paints and varnish, fish products and cold storage. The Chittagong Steel Mill, a public sector unit of 400,000 tons annual capacity, and based upon scrap, has been set up in Chittagong in 1967 and was upgraded in 1971. A large machine-tools factory has been set up at Gazipur, near Dhaka whose capacity for production, since July, 1980, is as follows :

Casting	-	2 shifts	7200 MT
Forging	-	1 shift	1500 MT
Machining	-	2 shift	56,700 Hrs
Assembling	-	2 shifts	80,000 Hrs

The Bangladesh Diesel Plant, also at Gazipur and another public sector unit, is capable of producing (since July, 1980) about 8000 diesel engines, of various capacities, per annum. If properly managed, these industrial units could help to change the orientation of industrial production away from consumer goods.

There are 198 pharmaceutical manufacturing units including 10 who are subsidiaries of multinational companies (MNCs). Most of the locally owned units were direct beneficiaries when the pioneering Drug Control Act (1982) was promulgated. This Act's primary, and laudable, objective was to place emphasis on the production and marketing of 200 'Essential (Pharmaceutical) Drugs' deemed as such by WHO. Currently the number of drugs considered 'essential' is 302 - a figure revised periodically based on the needs of the country. This Act adversely affected (often unfairly) most of the MNCs who suddenly found their product lines drastically cut to meet the objectives of the legislation. During the period 1989-90, all of these units together produced goods worth Tk.462 crores and to do so, imported raw materials and packaging items worth Tk.161.5 and 35 crores respectively. In spite of this, finished products worth Tk.23 crores had to be imported to meet the meagre needs of the country. This is a growth industry and because of its very nature, is in urgent need of better, more effective monitoring to ensure quality of finished products.

The main drawbacks to the expansion of industry are the cost of fuel, the difficulty of transporting materials, low productivity of workers and the very poor rate of credit repayment by the borrowers. Rapid industrialisation is being attempted through considerable government expenditure because of insufficient response from the private sector. Had this development come fifty years earlier, when the population was half as much, industries may have rapidly become as

important in the Gross National Product (GNP) as agriculture. The very large population base, and its high rate of increase, has made the task far more difficult and the share of industries in the GNP is not growing as fast as it should. Recent development has also been some what lopsided. It has led to the growth of a large number of tiny enterprises, most of which produce far less than their optimum, and the establishment of some fifty large units which account for nearly half the value added from industries. Medium scale industries ideally suited to the small towns of Bangladesh, are comparatively few. The mushrooming of small scale industries has been mostly in the three main industrial centres of Chittagong, Dhaka - Narayanganj and Khulna - Daulatpur. Half the large units are also there. As a result, there is the inevitable concentration : two-thirds of the industrial capacity is limited to these three places.

Small Industrial Estates have been set up in almost all district towns and the largest are in Feni, Comilla, Barisal, Jessore, Pabna, Rajshahi and Dinajpur. As of date, there are about 29 such Small Industrial Estates in operation and 45 other are in the process of implementation. Among these are the industrial estate set up at Shwarupkati exclusively for coir and copra products. For developing the silk industry, a reeling and weaving factory and a printing centre have been set up at Rajshahi. Seven Common Facility Centres, to provide materials and guidance to the handloom industry, have been set up at Choumohani, Shovarampur, Bhairab, Tangail, Barisal, Kumarkhali and Shahzadpur. Model and pilot units have been set up at Chandpur for agricultural implements, at Cox's Bazar for cigars, and at Kuliarchar for producing cheese. In time there will be at least one such estate in each town. This could help to distribute industries fairly evenly and mitigate the disadvantages of excessive concentration. A definite advantage of such decentralisation will be the growth of towns whose occupations are balanced between industrial, commercial and service jobs. Moreover, this state of semi-industrialisation will have greater meaning for the people when all districts share in industrial employment.

Trade

INTERNAL TRADE

Internal trade is more important to Bangladesh than external trade, though it is commonly supposed to be otherwise. More than twelve million tons of cargo are handled annually on inland routes, for a total of close to two thousand million ton-miles. The economy of the villages is very dependent upon the big village markets, known as Hat, which are held once [or more] a week depending upon the importance of the place. These Hats are centres of internal trade. The surplus rice, chilli, pulses, betelnut, coconut and such other food crops, as well as Jute, Mesta, Shon, Kapok, Tobacco and other cash crops are collected here. The food crops generally change hands between the people of nearby villages whereas the cash crops are bought by the Beparis, Farias and other middlemen traders who arrange to transport the goods to the larger trade centres. In areas where food crops are surplus, not only for certain farmers or certain villages, but for the region as a whole, they enter into the wholesale trade with the larger trade centres. For example, hats around Jhalkati (Barisal District) send their surplus betelnut to Jhalkati, from where it is sent to towns in the north where this commodity is scarce.

The village economy is, therefore, mainly dependent upon the primary markets, though the measure of their prosperity is usually the extent of their trade with secondary markets (which are usually urban centres). The average area served by a primary village market, the Hat, is about sixty four square kilometres. This excludes the area overlapped by neighbouring hats, whereas an average hat serves an area within 8 km. radius, the area solely dependent upon it is within a radius of 3 to 5 km. These hats are usually on the bank of rivers, for the farmers prefer to bring in their produce by boats. Which is the most economical way for them. The secondary markets are more dependent upon the railways while the biggest have both river and rail communications. Only a few of them, such as Tangail, Feni and Comilla, have sizeable trade traffic along the roads. By far the major portion of the internal trade is carried on between the primary and secondary centres. Most of the cash crops, however, find their way to the two tertiary markets, the seaports of Chittagong and Khulna (Mongla). These two centres of external trade

receive and distribute considerable quantities of goods received from outside, some of which find its way back to the Hats, through the secondary markets.

There are more than two thousand Hats. Since none of them are permanent markets, most of them affect internal trade only slightly. It is the secondary markets that regulate internal trade. The biggest of them is Narayanganj, which is a twin-city with Dhaka. Situated at the confluence of the Buriganga and the Sitalakhya (Lakka) rivers, and close to the confluence of the Padma and the Meghna, it is the hub of the internal trade network. As the wholesale market for the large city of Dhaka and as the main inland market for the two seaports, Narayanganj, is by far the largest trade centre. Its main trade is in jute, the golden fibre, which is both a boon and a bane for Bangladesh. Other centre of the jute trade are Sirajganj, Bogra, Joypurhat, Rangpur, Gaibandha, Kurigram, Naogaon, Atrai, Santahar, Saidpur, Alamnagar, Bonarpara and Phulhat in the Northern Region. Charmuguria, Faridpur, Goalando, Doulatpur and Rajapur in the Southern Region. Narsingdi, Sarishabari, Mymensingh, Kishoreganj, Southern Bhairab, Tangail, Bausi, Nikli, Gouripur, Keraniganj and Dhaka in the Central Region. Chandpur, Ashuganj, Choumohani and Mahdobpur in the Eastern Region. Jute moves towards Chalna from the Northern, Southern and most of the Central Regions and towards Chittagong from the Eastern and parts of the Central Region. The main lines of this movement are the railway from Nilphamari to Khulna, the railway from Narayanganj to Chittagong, and the waterways from Narayanganj to Chalna (Mongla).

Most of the other products of export and the imported goods also move along these three routes. The main feeder lines to the Nilphamari-Khulna trade route are the railway lines from Ruhea to Parbatipur; Bonarpara to Parbatipur and to Santahar; Chapai-Nawabganj to Ishurdi; Sirajganj to Ishurdi; Pabna to Ishurdi and Faridpur; Bhatiaparaghat and Goalundo to Chuadanga. The main waterway feeders to this route are along the Atrai and Bhairab rivers. The main feeder lines to the Narayanganj - Chittagong route are the railway lines from Sarishabari to Bhairab and from Sylhet to Akhaura; the waterways from Sunamganj to Bhairab and Ashuganj; the Karnafuli river; and the roads from Daudkandi to Comilla; Lakshmipur to Feni; Rangamati to Chittagong and Cox's Bazar to Chittagong. The main feeder lines to the Narayanganj - Khulna waterways are the railway lines from Sarishabari to Narayanganj. Bhairab to Narayanganj; Bagherhat to Rupsha East; the waterways from Bhairab and Ashuganj to Narayanganj; from Manikganj to Narayanganj from Charmuguria to Barisal, from Patuakhali to Barisal; from Satkhira to Khulna; from Bhatiaparaghat to Pirojpur and to Khulna; the roads from Mymensingh to Dhaka via Tangail and from

Aricha to Dhaka. Several trade routes serve two of the main routes and interconnect their movements ; such are the rail and water routes from Sunamganj to Sylhet, Bonarpara to Jamalpur, Sirajganj to Sarishabari, Laksham to Narayanganj via Chandpur, and the water routes from Chandpur to Goalundo and Chittagong to Barisal via Shondip, Hatia, Ramgati and Bhola.

The network delineated above is the main frame of internal trade routes, the details of which would be too exhaustive for this work. The important fact about internal trade is that it is more important to the village economy than external trade. The opposite holds true for the economy of the urban areas. Instead of giving exhaustive descriptions about the important internal trade centres, some of the information is presented in Table 16.1. Only indigenous products have been mentioned.

Table 16.1
Main Internal Trade Centres

Greater Districts (Trade Centres)	Principal Indigenous Commodities Handled
Dinajpur District	
Dinajpur	Rice, Hides and Skins, Mango,
Biral	Rice, Jute.
Setabganj	Rice, Sugarcane, Potato, Jute.
Chirirbandar	Rice, Sugarcane, Jute, Pulses.
Parbatipur	Rice, Jute, Pulses.
Rangpur District	
Rangpur	Jute, Tobacco, Rice, Hides & Skins, Potato.
Saidpur	Jute, Tobacco, Mustard, Sugarcane, Pulses.
Nilphamari	Jute, Tobacco, Turmeric, Mustard, Ginger.
Domar	Jute, Tobacco, Ginger.
Lalmoirhat	Jute, Tobacco, Potato, Mustard.
Kurigram	Jute, Mustard, Rice, Pulses.
Gaibandha	Jute, Turmeric, Hides & Skins, Mustard.
Alamnagar	Jute.
Bogra District	
Bogra	Rice, Potato, Pulses.
Joypurhat	Sugarcane, Rice, Potato.
Jamalganj	Rice, Sugarcane, Potato.

Table 16.1 Contd

Greater Districts (Trade Centres)	Principal Indigenous Commodities Handled
Rajshahi District	
Rajshahi	Rice, Mustard, Potato, Mango, Pan.
Godagari	Rice,
Chapai-N'Ganj	Rice, Mango, Lichu, Pulses, Brass and Bell-metal ware.
Natore	Rice, Jute, Turmeric.
Atrai	Jute,
Durgapur	Pann
Naogaon	Jute, Tobacco, Ganja, Hemp, Mustard.
Charghat	Mango, Turmeric, Khoir.
Pabna District	
Pabna	Rice, Turmeric, Handloom Textiles.
Ishurdi	Rice, Turmeric, Sugarcane, Pulses.
Bera	Rice, Linseed, Potato, Sugarcane.
Nakalia	Rice, Linseed, Sugarcane, Potato.
Ullapara	Rice, Shon, Pulses.
Sirajganj	Jute, Rice, Fish, Shon, Chilli.
Shahzadpur	Handloom Textiles, Rice, Shon
Kushtia District	
Kushtia	Jute, Rice, Turmeric, Linseed.
Bheramara	Rice, Gram.
Chuadanga	Sugarcane, Khejur, Gur, Pulses.
Alamdanga	Khejuri Gur, Rice, Cattle, Turmeric, Pulses.
Jessore District	
Jessore	Rice, Hides & Skins, Fish.
Jhikargachha	Jute, Rice, Gram, Potato.
Magura	Jute, Pulses, Rice, Earthen Pottery.
Jhenaidah	Jute, Rice, Pineapple.
Sripur	Rice.
Langalband	Rice, Onion.
Narail	Rice, Pulses, Fish.
Kotchandpur	Khejuri Gur, Gram.

Table 16.1 Contd

Greater Districts (Trade Centres)	Principal Indigenous Commodities Handled
Khulna District	
Khulna	Jute, Rice, Fish, Hides & Skins, Coconut, Timber.
Daulatpur	Jute.
Rajapur	Jute.
Satkhira	Rice, Pan.
Bagherhat	Betelnut, Rice, Coconut, . Pulses.
Morrelganj	Rice.
Barisal District	
Barisal	Rice, Hides & Skins, Sesamum, Pulses.
Backerganj	Chilli, Rice Pulses.
Boga Bandar	Rice.
Bhola	Rice, Chilli, Betelnut, Pulses.
Jhalakati	Betelnut, Rice, Cattle, Coconut.
Nalchiti	Betelnut, Rice Coconut,
Paterhat	Betelnut, Rice, Coconut, .
Swarupkati	Rice, Betelnut, Coconut, .
Gaurnadi	Jute, Rice, Kapok.
Patuakhali District	
Patuakhali	Rice.
Khepupara	Rice
Barguna	Rice, Timber.
Faridpur District	
Faridpur	Jute, Rice.
Goalando	Jute, Fish, Onion and Garlic, Chilli.
Gheor Bazar	Jute, Rice, Onion and Garlic, Chilli.
Pangsha	Jute, Rice
Tepakhola	Jute, Rice, Pulses.
Kumarkhali	Jute, Rice.
Gopalganj	Rice, Sesamum, Pulses.
Bhanga	Jute, Rice, Pulses.
Charmuguria	Jute, Rice, Shon, Sesamum.

Table 16.1 Contd

Greater Districts (Trade Centres)	Principal Indigenous Commodities Handled
Dhaka District	
Dhaka	Jute, Rice, Textiles, Hides & Skins, Pulses.
Narayanganj	Jute, Rice, Textiles, Fish.
Mirkadam	Rice, Chilli, Banana, Potato, Pulses, Ginger.
Munshiganj	Banana, Rice, Turmeric, Cattle, Pan.
Bhaggokul	Fish.
Tarpasa	Jute, Rice, Fish
Gheor	Rice, Onion, Garlic, Cattle, Chilli, Pulses.
Kaoraid	Jute, Jackfruit, Vegetables.
Raipura	Rice, Jute, Onion & Garlic, Pulses.
Narsingdi	Jute, Rice, Sugarcane, Pineapple, Banana, Fish
Baburhat	Handloom Textile.
Tangail District	
Tangail	Jute, Handloom Textile.
Elasin	Jute.
Mirzapur	Jute.
Mymensingh District	
Mymensingh	Jute, Rice, Mustard, Pulses.
Gaffargaoan	Jute, Rice, Jackfruit, Lichu, Cattle, Vegetables
Gouripur	Jute.
Sarishabari	Jute, Gram, Mustard, Pulses.
Dewanganj	Jute, Sugarcane, Mustard.
Bausi	Jute.
Jamalpur	Jute, Gram, Tobacco, Sesamum, Mustard Cattle.
Gopalpur	Jute.
Jamurki	Jute.
Toke	Jute, Vegetables.
Ishwarganj	Jute, Rice, Tobacco, Mustard.
Netrokona	Jute, Rice, Mustard.
Mohanganj	Rice, Fish, Pulses.
Oshtogram	Rice, Fish, Sweet, Potato, Chee
Kishoreganj	Jute, Rice, Sugarcane, Mustard, Potato, Pulses
Karimganj	Jute, Rice, Chilli, Mustard.
Bhairab Bazaar	Jute, Rice, Onion & Garlic, Groundnut, Potato.
Kuliarchar	Fish

Greater Districts (Trade Centres)	Principal Indigenous Commodities Handled
Sylhet District	
Sylhet	Rich, Bamboo, Shingles.
Sunamganj	Rice, Linseed, Fish.
Fenchuganj	Rice, Fish, Bamboo.
Babuganj	Rice.
Jaintiapur	Mustard, Pineapple, Cane.
Enayatganj	Jute, Rice.
Sachna	Jute, Rice.
Ajmirganj	Jute, Rice, Sweet, Potato, Fish.
Balaganj	Jute, Rice.
Moulvi Bazaar	Rice.
Habiganj	Rice, Jute, Betelnut.
Baniachang	Rice, Fish.
Srimangal	Tea, Pineapple.
Comilla District	
Akhaura	Jute, Pineapple.
Ashuganj	Jute.
Brahmanbaria	Jute, Pulses, Rice, Handloom Textiles.
Comilla	Textiles, Rice.
Jafarganj	Jute, Rice.
Elliotganj	Jute, Cattle, Sweet, Potato, Water, Melon.
Chandpur	Jute, Chilli, Fish, Pulses.
Hajiganj	Jute, Rice Chilli, Pulses.
Laksham-Daulatpur	Jute, Poultry, Rice, Chilli, Sugarcane.
Noakhali District	
Raipur	Betelnut, Chilli.
Lakhipur	Betelnut, Chilli, Pulses.
Begumganj	Rice, Oilseeds.
Choumohani	Jute, Rice Handloom Textiles, Chilli, Linseed
Sonapur	Rice, Chilli, Pulses.
Feni	Rice, Chilli, Pulses, Mustard, Pan.
Chhagalnaiya	Rice
Hatia	Rice, Chilli.

Table 16.1 Contd

Greater Districts (Trade Centres)	Principal Indigenous Commodities Handled
Chittagong District	
Chittagong	Rice, Jute, Timber, Pulses, Hides & Skins, Cattle.
Shondip	Rice, Pulses.
Mirsarai	Rice.
Dhoom	Rice
Hathazari	Rice
Patiya	Salt, Rice.
Dohazari	Bamboo, Tobacco, Vegetables.
Satkania	Rice.
Cox's Bazaar	Fish.
Moishkhali (Gorakghata)	Pan, Fish (dried).
Hill Tracts District	
Rangamati	Rice, Bamboo, Cotton.
Ramgarh	Rice, Cotton, Sesamum.
Mahalchari	Rice, Cotton, Sesamum.
Bandarban	Rice, Bamboo, Sesamum.
Lama	Rice, Cotton.
Alikadam	Rice, Bamboo, Cotton.

EXTERNAL TRADE

The pattern of external trade changed very considerably after the War of Liberation. Trade with Pakistan used to be the most important feature of the trading pattern till early 1971 (Table 16.2). This trade ceased for a few years and has since returned on a reduced scale. Since Pakistan used to take 60 percent of the exports and supply 30 percent of the imports (1965-70 average) very considerable adjustments had to be made. Principal exports to Pakistan were tea, jute goods and paper. With a closed market and a large demand, the tea trade used to be very lucrative. With the closure of this protected market, the tea industry is being forced to reappraise its future set up. The other goods formerly sold in Pakistan and now being sold in the international market, at somewhat lower profit. The principal imports from Pakistan were raw cotton, cotton yarn, cotton goods, and rice. Part of the demand for these imports is being met through import substitution industries and part through trade with India and other nearby Asian countries.

Table 16.2

Balance of Trade of Bangladesh

(at current prices)

(in million Taka)

Year	Export	Import	Balance
1975-76	5,552	14,703	-9,151
1976-77	6,670	13,993	-7,323
1977-78	7,178	18,216	-11,038
1978-79	9,632	22,073	-12,441
1979-80	10,997	30,525	-19,528
1980-81	11,484	37,288	-25,804
1981-82	12,387	38,729	-26,342
1982-83	18,016	45,265	-27,249
1983-84	20,136	50,874	-30,738
1984-85	26,225	68,263	-42,038
1985-86	27,396	62,929	-35,533
1986-87	33,682	68,496	-34,814
1987-88	41,161	91,588	-50,427
1988-89	42,690	95,080	-52,390

Source : B.B.S.

Prior to 1947 Calcutta was the main outlet for this area, with Chittagong serving a small area in eastern Bengal and southern Assam. From 1947 to 1965 Chittagong was the main outlet, while Chalna used to handle mainly jute. There was still some trade through Calcutta. The growth of trade through Chalna, however, had choked off the jute trade through Calcutta as early as 1955. No trade to or through Calcutta was carried out during the period 1965-70. In 1971, trade through Calcutta was resumed from liberated territories and in 1972 it became the principal outlet for a while, until Chittagong and Chalna harbour could be cleared of mines and wrecks at the end of the War of Liberation. Since then Mongla Port has been developed, near Chalna anchorage, and the road link to Khulna has been built. Even then the bulk of merchandise is moved in and out by river craft. Mongla Port now handles 50% of the exports (mainly raw jute) but only 10% of the imports.

Table 16.3

Import and Export by Air, Sea and Land

(in million Taka)

Year	Import				Export			
	Sea	Air	Land	Total	Sea	Air	Land	Total
1980-81	35,798	55	933	37,287	11,221	171	91	11,484
1981-82	37,394	386	947	38,729	12,029	275	82	12,386
1982-83	44,113	467	684	45,264	17,530	364	121	18,015
1983-84	49,144	728	1,000	50,873	19,449	571	114	20,135
1984-85	657	817	1,685	68,262	24,622	1,232	370	26,225
1985-86	58,780	1,877	2,271	62,929	24,623	2,746	25	27,396
1986-87	63,360	2,343	2,792	68,496	29,637	4,032	11	33,682
1987-88	86,541	3,169	1,877	91,588	36,183	4,918	58	41,661

Source : BBS

EXPORTS

Jute

For over a century, jute has been the principal article of export, and it is likely to remain so for the foreseeable future. There has, however, been a change within the jute trade itself : till 1954 only raw jute was exported, but since then manufactured jute has had an increasingly important share of the trade. India has not been an exporter of raw jute since 1949-50. Whereas Bangladesh is likely to keep its overwhelming share of the raw jute trade, there will be increasing competition between jute manufacturers of India and Bangladesh.

Jute is exported to more than fifty countries, with the major part of the exports going to USSR, Pakistan, the United Kingdom, Belgium, West Germany, France, U.S.A., Italy, Japan and India. Jute is the main net foreign exchange earner for Bangladesh. The course of future development is predicated on her being able to maintain, if not enlarge, earnings from overseas sale of raw and manufactured jute.

The jute marketed in the primary markets is bought from the farmers by small licenced traders known as Bepari or Faria. They buy by eye estimation of the qualities, which means that the elaborate system of grading adopted in the later stages has no meaning here. The prices

Table 16.4
Export of Raw and Manufactured Jute

Year	Raw Jute (ooo bales)	Jute Goods (ooo tons)
1974-75	1,252	368
1975-76	1,590	455
1976-77	1,894	462
1977-78	1,664	531
1978-79	1,968	466
1979-80	1,968	448
1980-81	1,905	502
1981-82	2,013	537
1982-83	2,246	517
1983-84	1,901	475
1984-85	1,418	465
1985-86	2,166	464
1986-87	2,241	495
1987-88	1,400	514
1988-89	1,534	649
1989-90	2,064	487 (Prov)

paid by the Beparis and Farias and the quantities bought or sold by them is largely determined by personal opportunities and inconveniences rather than by demand and supply. Middlemen known as Aratdar or Dalal, negotiate between Beparis and Farias and the Balers. There are two types of balers both of whom are licenced by the government to operate: the Kutcha and the Pucca. The Kutcha balers bale jute by manual pressure into bales of between 56 to 150 kgs. each. There are 708 licenced Kutcha baling presses. These balers sell to the Pucca balers, who also get a part of their needs directly from the Aratdars and Dalals. The Pucca bale is pressed by mechanical means and weighs 180 kgs. The Pucca balers send the jute to shippers or very often ship it themselves. The Kutcha assortment grades of the Bangladesh Jute Association is compared with the Pucca assortment grades of the London Jute Association in Table 16.5. The main grades of Kutcha jute are Top, Middle, B, Bottom, C, Bottom, X, Bottom and SMR. These are further classed as Jat, District or Northern according to the area in which the fibre was grown. In the primary markets, unfortunately for the farmers, the grade specifications change from year to year and season to season. Coupled with the fact that primary markets and growers have little storage facility, this means

Table 16.5
Grades of Jute

Bangladesh Jute Association Grading	London Jute Association Grading
White	
Jat Top	Dundee First
Jat Middle and District Top	Dundee Lighting
District Middle and Northern Top	Dundee Hearts
Jat "B" & "C" Bottom & Northern Middle	Mill First
District Bottom "B" & "C"	Mill Lighting
Jat X Bottom & Northern Bottom "B" & "C"	Mill Hearts
Etc.	Exports Hearts
Tossa	
Jat Top	Dhaka Tossa 2/3
Jat Middle	Dhaka Tossa 4
Jat Bottom "B" & "C"	Dhaka Tossa 5
Jat X Bottom	Dhaka Tossa 6
District Top	Crack Tossa 2/3
Northern Top	Dundee Tossa 2/3
District Middle	Crack Tossa 4
District Bottom "B" & "C" ; Northern Middle	Dundee Tossa 4
Northern Bottom "B" & "C"	Outport Tossa 2/3
Etc.	Outport Tossa 4

that the growers very often sell at less than they should. The balers together account for over a fifth of the price. Their share is generally felt to be excessive. The foreign buyers deliberately withhold buying till the supply at the secondary markets reaches a glut and prices come down sharply. Often the effect of this is to discourage the farmers from sowing sufficient jute next season.

This in turn leads to scarcity and higher prices which means excessive sowings and low prices the following season. This see-sawing of supply and prices has become almost a regular feature of the jute trade. The main effect of this is that in the seasons of low prices the

farmers suffer a net loss. It is considered worthwhile cultivating jute only if its price is twice that of paddy (unhusked rice), i.e. one maund (approx 37.3 kg) of jute must sell for the price of two maunds of paddy. The extra labour and expenses incurred in its cultivation is the cause of the farmer's axiom. In almost every alternate year the farmers get barely the same price as that of paddy, and this is considered to be a net loss. In the 1980's, increasing scarcity of fuelwood & building materials has enhanced the value of jute sticks. This phenomenon has kept the growing of jute as an economic proposition even when there is a fall in the price of jute fibre.

Jute is facing stiff competition from several substitute fibres both natural and synthetic, and packing materials. The fluctuations in the supply and price of raw and manufactured jute have encouraged the growth of this competition. Kenaf, Urena-lobata, Phormium hemp, Flax, Roselle and Sisal fibres are being used in several countries for purposes for which jute was previously used. Paper bags are being increasingly used for packing and they have made considerable in-road into the potential market for jute. With the increase in international trade since the Second World War, the demand for packing materials has risen so much that, though the use of paper bags has greatly increased, the use of jute bags has not fallen. The degree of competition which jute has experienced from other materials has differed in each of its major markets. In the major market for bags and sacks, jute is facing increasing competition from woven polythene-tape bags. In the market for carpet backing, jute has begun to lose the market for primary carpet backing to polypropylene. Bulk handling of wheat, flour and other materials especially in USA and Canada, has cut out a potentially large market for jute. Possibly the most threatening development is the increase in jute production in other countries. Jute and kenaf production outside Bangladesh and India (i.e. in Taiwan, China, Brazil, Zaire, Thailand, Burma, Indonesia, etc.) has risen very fast in the last few years, and Thailand kenaf (when available in quantity) competes successfully against lower quality jute.

Recent studies indicate that though jute will lose ground to synthetics there is still scope for expansion of sales in other product markets if prices are stabilised. There is also the likelihood that because jute products are easily bio-degradable, its use, and therefore demand, will increase because its synthetic substitutes are environmentally hazardous and damaging. Areas of main increase in demand, in some product markets, are likely to be the countries of eastern Europe and the low income countries of Asia and Africa.

RMG

The export of Ready-made Garments (RMG) assumed major proportions in the eighties. Total value of RMG exports is over Tk. 15,000 million annually and therefore heads the list of export earning items. However, in value added terms, RMG will rank below manufactured and raw jute export earnings because nearly eighty percent of the export value is composed of imports necessary to manufacture the garments. Unless the RMG industry utilizes more locally manufactured cloth, it will continue to be just a large scale tailoring industry.

Tea

Despite fears to the contrary tea exports have been encouraging. Pakistan has been buying from Ceylon, and Bangladesh tea has moved into the resultant gap in international supply. It can keep its place provided the industry is rationalized and revitalized. It is estimated that annually US\$ 60 million worth of tea can be exported.

Hides, Skins and Leather

These items can be the third largest export, bringing in an about US\$ 60 million annually in foreign exchange. Goat skins from Bangladesh fetch a premium and are used for luxury leather items. With proper processing, combined with active, intelligent marketing, the export value of these items could be doubled within a short period. The sector is urgently in need of technical, financial and marketing assistance in order to become a truly growth industry.

Fish and Shrimps

Fish and shrimps are the second largest export item, after manufactured and raw jute. There is good prospect for shrimp exports. Some dried fish, shark fins, shark liver oil etc. can be exported. Annual exports increased ten fold over the past decade, and with proper development of shrimp fisheries and export markets, the value of fisheries export could be doubled in the next decade.

Paper, Plasteboard etc.

Bangladesh produces paper, plasteboard, and newsprint in excess of internal demand but the surplus for export varies considerably from year to year. No consistent, long-term policy is in existence and until one is formulated and implemented, the full potential of this sector will not be realised.

Poultry and Eggs

Calcutta used to be a big market for poultry and eggs from Bangladesh but since the 1970's demand has exceeded supply and very little poultry or egg is now exported to India. However, the Middle East and Gulf States are emerging as a potential market for these items.

Table 16.6 (a)
A Comparative Statement Showing Export Earnings

(Value in Million Taka)

Commodity	1988 - 89	1987 - 88	% of increase (+) Decrease (-)	
Raw jute	3,085.50	2,490.91	(+)	23.87%
Jute goods	8,931.40	9,853.69	(—)	4.51%
Leather	4,344.98	4,551.98	(—)	4.55%
Frozen food	4,484.50	4,319.41	(+)	3.82%
Tea (incl. packet tea)	1,263.45	1,204.81	(+)	4.87%
Readymade garments	14,942.82	13,421.26	(+)	11.34%
Naphtha, furnace Oil & bitumen	509.01	370.39	(+)	37.43%
Agricultural products	423.98	590.58	(—)	28.21%
Chemical products	2,146.71	1,187.72	(+)	80.74%
Handicraft	124.76	116.16	(+)	7.40%
Engineering products	186.33	86.89	(+)	114.44%
Others	524.96	387.26	(+)	35.56%
Total :	40,968.40	38,081.06	(+)	7.58%

Source : Bangladesh Export Statistics 1988-89 : Export Promotion Bureau.

Raw Cotton

Though very little cotton is grown, it is readily exportable because of specialty uses of this very-short staple type, known as Comilla cotton in international trade. Over 2,000 tons, valued at over US \$ 1 million could be exported annually.

Spices

Fairly large quantities of chili, turmeric and ginger used to be exported to Pakistan. The surplus has now to be exported elsewhere. Ceylon has bought chili and Saudi Arabia, Egypt and Argentina have bought turmeric in recent years. India used to be a big market for ginger up to September 1949. With proper quality control and an export drive, spice export could reach U.S \$ Ten million annually.

Table 16.6 (b)

Export earnings of Bangladesh from major Importing Countries

(Value in Million Taka)

Name of Countries	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89
1. USA	1,856.28	2,727.29	4,290.44	5,141.21	9,768.20	11,025.21	10,977.57
2. Italy	756.21	1,696.50	1,338.74	1,076.73	3,028.82	3,586.33	33,351.71
3. U.K.	728.78	1,045.91	1,130.89	1,369.11	1,823.32	2,258.71	2,401.21
4. F.R.G.	323.58	326.27	469.41	636.27	1,144.69	1,899.08	2,215.83
5. Japan	1,059.65	1,058.70	1,687.32	1,815.72	2,014.74	1,765.64	1,745.10
6. Singapore	340.29	624.42	414.24	831.82	699.54	1,005.41	1,731.60
7. Belgium	713.05	1,153.92	1,878.37	1,020.57	1,251.20	1,300.84	1,686.47
8. France	170.86	268.32	298.74	206.51	304.19	820.60	1,111.41
9. Sudan	664.13	308.85	335.50	1,311.71	206.48	303.16	1,047.74
10. U.S.S.R.	973.68	428.51	983.11	537.79	959.09	1,152.65	1,047.34
11. Pakistan	1,443.34	1,625.80	1,391.43	1,727.50	991.08	1,113.83	1,023.10
12. China	512.59	308.76	170.24	625.30	508.27	648.46	995.63

OTHER EXPORTS

Betelnut, Coconut and Paan used to be exported in small quantities to India before 1954, when devaluation of the Indian rupee put an end to most of the smaller exports. This market can be opened up again.

Minor fibres such as Sun-hemp (Shon) and silk-cotton (Kapok) have had an overseas market and exports could be raised.

Tobacco exports to Burma was important before 1947. At present both manufactured and unmanufactured tobacco can be exported to India and south-east Asia.

Table 16.7

**Quantity and Value of Selected Major Commodities
Imported into Bangladesh**

Commodity	1984 - 85		1989 - 90 (Provisional)	
	Quantity	Value	Quantity	Value
Petroleum & petroleum products	1,231	11,927	2,000	11,154
Wheat	1,163	3,820	1,223	7,953
Rice	61	333	300	3,336
Chemicals, Drugs & Medicines	NA	7,711	NA	4,620

Source : BBS and Fourth Five Year Plan Document

Bee wax from the Sundarbans has been exported to various European countries. Both bee wax and honey from the Sundarbans could be profitably exported with better refining and packing.

Other minor exports have been groundnuts, sesamum, linseed, timber, catebhu (Khoir), vegetable oil, fish glue, silk, soap, medicines, sugar and fresh fruits. Exports of all these items, and also of leather goods, cotton textiles and cashewnut could be developed within a few years. In the slightly longer term, petrochemical products could develop into a major export, provided the industry is set up.

PATTERN OF TRADE

During the period when Bangladesh was a part of Pakistan (1947-71) she was exploited through the classic means of mercantile operations. In every year, except 1963-64 and 1964-65, she had a surplus in her trade with foreign countries. The hard-currency thus earned was diverted to businessmen and traders in Karachi at an artificially low exchange price. This enabled them to set up consumer industries, which was supplied to Bangladesh at prices far above international market price. This was the same sort of exploitation which enabled Britain to generate surplus capital in the early days of her imperial expansion.

Table 16.8

Value of Exports and Imports
(f.o.b.)

Year	(Million taka)	
	Exports	Imports
1978-79	8,923	23,078
1979-80	11,508	32,572
1980-81	13,344	39,255
1981-82	14,545	48,349
1982-83	18,606	51,729
1983-84	20,515	54,080
1984-85	25,210	61,220
1985-86	27,166	63,538
1986-87	30,643	71,852
1987-88	37,045	83,932
1988-89	42,690	95,080
1989-90	50,457	123,750

Source : Statistical Year Book Bangladesh 1989, BBS and Fourth Five Year Plan Document

Since 1972 the value of imports have generally been three times that of exports (Table 16.8). This is due to a persistent deficit in foodgrains and large amounts of project aid for building up the infrastructure.

The major exports, by value, are :

- 1) Readymade Garments
- 2) Manufactured jute goods
- 3) Raw jute
- 4) Fish and shrimps
- 5) Leather
- 6) Tea
- 7) Newsprint and hardboard

The countries to which most of the exports go are U. S. A., Pakistan, U. K. Italy, Belgium and Iraq. The trade deficits with Saudi Arabia and Canada are particularly large.

The major commodities, imported by value, are :

- 1) Petroleum and petroleum products
- 2) Foodgrains including Wheat and Rice
- 3) Textile and Textile articles
- 4) Edible (Vegetable) oils
- 5) Machinery and parts
- 6) Vehicles and crafts
- 7) Base metals
- 8) Electrical goods

The bulk of the imports are from USA, Saudi Arabia, Canada, West Germany, U. K., Netherlands, France, USSR and Pakistan. Imports from Saudi Arabia and the gulf states are almost solely Petroleum and Petroleum products.

Population

GROWTH

The population of Bangladesh increased enormously over the last two and half decades. In the decade 1951-61 population increased by 13 million, and in the thirteen years thereafter it increased by 22 million (Table 17.1). During the next eight years the population increased by at least 10 million. The population explosion began in the 1930s. From 1872 to 1931 the increase was less than one percent per annum. In 1951 Census recorded an apparent fall in growth. The 1943-44 famine took a toll of at least 2 million persons within Bangladesh. In 1947-51, there was considerable emigration of the Hindu community to India which was off-set to some degree by immigration of muslims to (East Bengal) Bangladesh.

Table 17.1
Population Growth

Census Year	Population (in millions)	Increase over previous decade (in millions)
1872	22.0	-
1881	24.0	2.0
1891	26.1	2.1
1901	28.9	2.8
1911	31.6	2.7
1921	33.3	1.7
1931	35.6	2.3
1941	42.0	6.4
1951	42.1	0.1
1961	55.2 *	13.1
1974	77.2 **	22.0 *
1981	89.9 **	12.7 **

* Increase over 13 years. 1974 census figure adjusted for 8 percent under - enumeration.

** Increase over 7 years adjusted for under - enumeration.

Morcover the 1951 Census probably underenumerated by 5 to 10 percent. The actual population growth in the 1941-51 period is therefore masked by these factors. The 1961 census recorded 50.8 million persons. The under estimation was about 8 percent and so the figure was adjusted to 55.2 million, which meant an annual growth rate of 2.75%. Ten years later a census was not possible because of the War of Liberation. The population census undertaken in 1974 recorded 71.48 million persons. Under-enumeration was again of the order of 8 percent. The adjusted 1974 population would therefore be about 77.2 million, and thus the growth rate in this period was 2.61% per year. The population census undertaken in 1981 recorded 87.1 million persons, but this was adjusted for under-enumeration to 89.9 million. The growth rate in these seven years was therefore 2.20% per year.

In terms of population Bangladesh ranks eighth in the world, after China, India, USSR, U.S.A, Indonesia, Japan and Brazil. The growth of population is expected to continue for the next 20 to 30 years at least. Projections of the future population, under three different sets of assumptions are shown in Table 17.2. Even with optimistic assumptions the population seems likely to grow to 132 million by the year 2000.

Table 17.2
Projected Population of Bangladesh as on July, 1990 - 2000

(in '000)

Year	Projection-1	Projection-2	Projection-3
1990	112,865	113,005	111,300
1995	127,086	126,341	121,999
2000	142,141	139,693	131,695

Source : Population Census, 1981, BSS.

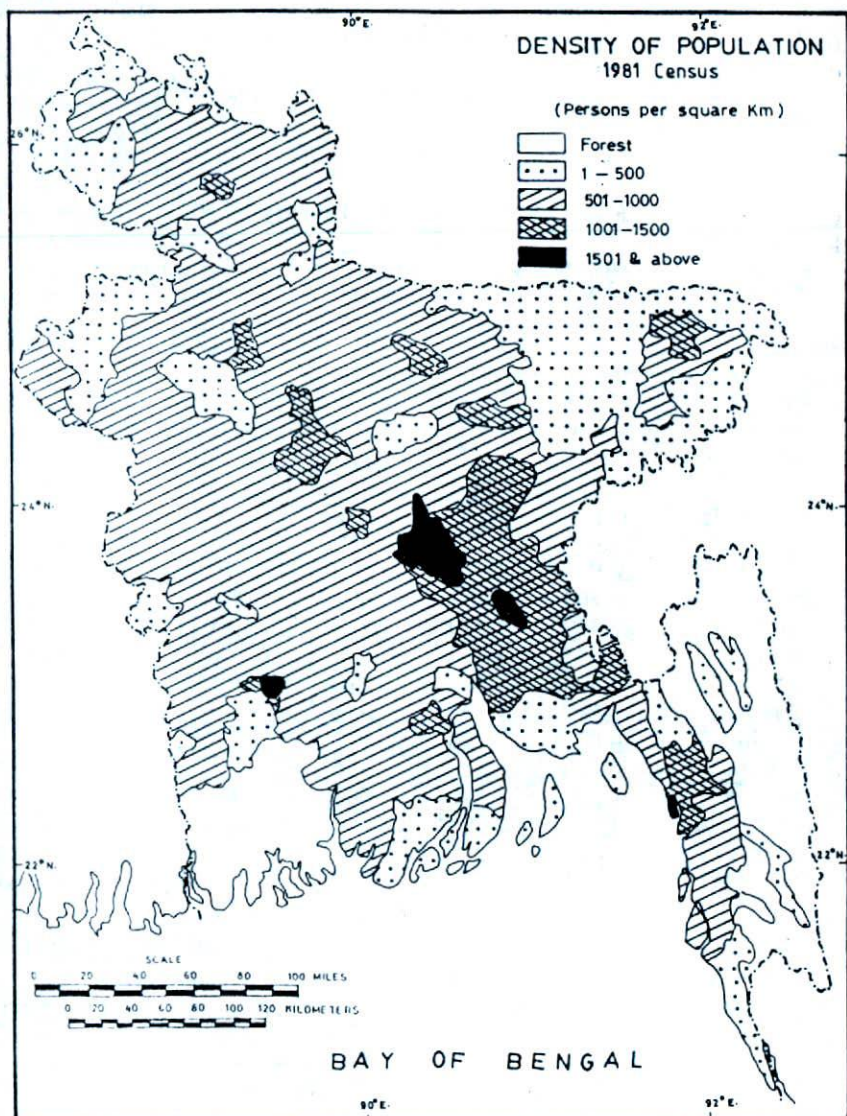
National Volume, Analytical Findings and National Tables.

POPULATION DENSITY

Average population density is about about 605 persons per sq.km. (1566 persons per square mile). An indicator of the degree of rural overcrowding is that only 20 percent of the population is urbanized (1987 est.) Table 17.3 shows the population density by old districts, with and without major water bodies and forests.

Pressure on net cultivated area varies from about 530 persons per sq.km. (1370 persons per sq. mile) in Khulna to nearly 1158 persons

Map 17.1



per sq.km. (3000 persons per sq. mile) in Comilla and Chittagong and to as high as 1737 persons per sq. km. (4000 persons per sq.mile) in parts of Dhaka district. In the period 1951-81, population has grown fastest in the Northern Region and slowest in the Eastern Region. This was to be expected since the Eastern Region had reached very high rural densities by the 1950s.

Table 17.3

Area, Population and Density (1981)

Greater District	Population (1981) (in '000)	Total Area (sq. km.)	Population Density per sq.km.	Area Excluding water bodies and forests. (sq. km)	Population Density per sq. km. of habited area.
Bandarban	171	4,501	38	1,761	97
Hill Tracts	580	8,679	67	3,760	154
Chittagong	5,491	7,457	736	5,268	1,042
Comilla	6,881	6,602	1,042	6,351	1083
Noakhali	3,816	5,460	699	4,217	905
Sylhet	5,656	12,719	445	11,999	471
Dhaka	10,014	7,470	1,340	6,781	1,477
Faridpur	4,764	6,882	692	6,411	743
Jamalpur	2,452	3,349	732	3,147	779
Mymensingh	6,568	9,668	679	9,430	697
Tangail	2,444	3,403	718	2,958	826
Barisal	4,667	7,299	639	3,786	807
Jessore	4,020	6,573	612	6,418	626
Khulna	4,329	12,168	356	8,177	529
Kushtia	2,292	3,440	666	3,269	701
Patuakhali	1,943	4,095	450	3,201	576
Bogra	2,728	3,888	702	3,803	717
Dinajpur	3,200	6,566	487	6,429	498
Pabna	3,424	4,732	724	4,473	765
Rajshahi	5,270	9,456	557	9,270	569
Rangpur	6,510	9,596	678	9,210	707
Bangladesh	87,120	143,998	605	122,119	713

Source : Statistical Yearbook of Bangladesh, 1985-86.

Water body area in Hill Tracts adjusted by including 647 sq. km. for Kaptai Lake.

A belt of high population density is noticeable from Nilphamari in the north to Kutubdia island. It coincides with the belt of fertile land

along the Jamuna-Padma-Meghna axis. The high density core areas are in Narsingdi, Munshiganj, Chandpur and Comilla districts. Highest rural densities of over 7700 persons per sq.km., are reached in Dohar, Keraniganj, Munshiganj and Tongibari Upazilas, just south of Dhaka Metropolitan area. Equally high rural densities are seen in the Faridganj, Raipur, Ramganj and Begumganj Upazilas in the south-east. In contrast, large areas in the Northern Region, in the Haor Basin and in the Hill Tracts have rural densities below 400 persons per sq.km. In the centre of the Haor Basin (Khaliajuri, Jamalganj and Sulla Upazilas) population density is below 600 persons per sq.km. In sharp contrast to all other areas of the country, the Hill Tracts and Bandarban areas have a population density only one-fifth that of the national average.

Table 17.4
Age Structure

Age Group (in years)	Population	Percentage
0 - 4	14,792,823	17.0
5 - 9	14,158,273	16.3
10 - 14	11,649,446	13.4
15 - 19	8,146,737	9.4
20 - 24	6,779,564	7.8
25 - 29	6,420,593	7.4
30 - 34	4,963,134	5.7
35 - 39	4,439,052	5.1
40 - 44	3,649,482	4.2
45 - 49	2,861,816	3.3
50 - 54	2,690,318	3.1
55 - 59	1,620,374	1.9
60 - 64	1,948,649	2.2
65 - 69	901,571	1.0
70 and Over	2,053,133	2.4

Source : Bangladesh Population Census 1981, Analytical Finding and National Table, BBS, August 1984; Table PO3.

AGE STRUCTURE

One of the most characteristic features of the population is the predominance of youth. Nearly half (47%) the population is below 15 years of age with children up to the age of 9 constituting 33 percent.

MALE - FEMALE RATIO

Another notable feature is the imbalance in the male-female ratio. For every 1000 males there are 940 females. In the youngest group (0 - 4 years) there are more boys than girls and the ratio remains more or less the same with increasing age.

LABOUR FORCE

The total civilian labour force in 1983-84, according to a BBS Survey, was 28.5 million. This seems to grossly underestimate the number of women who participate in the labour force. Much of the post-harvest activities in agriculture are performed by women but somehow the census definition of economic activity leaves them out of the labour force. Table 17.5 summarises some of the relevant labour force statistics. It should be remembered that female participation in the labour force is much higher than is shown by the conventional data. It is also worth noting that employment in the agriculture sector has declined from 84.4% of the labour force in 1961, to 58.8% in 1983-84. This is significant, and reflects some fundamental changes taking place in the economy.

Table 17.5

Labour Force

(in millions)

Characteristic	Census 1961	Census 1981	Survey 1983-84	LFS 1985-86
1. Civilian Labour Force	16.9	25.9	28.5	30.9
- Male	16.1	24.4	26.0	27.7
- Female	0.8	1.5	2.5	3.2
2. Labour Force Participation (refined activity rate)	48.6	43.1	43.9	45.6
- Male	87.6	78.2	78.5	81.4
- Female	5.1	5.1	8.0	9.9
3. Employment in Agriculture :				
Number	14.2	15.4	16.4	17.4
Percent of Total	84.4%	61.0%	58.8%	57.25%

Source : BBS

COMMUNITIES

There are four major religious communities in the country. Over 86 percent of the people are Muslims and 12 percent are Hindus. Muslims form the majority in every district except in the Hill Tracts. Hindus are a sizeable minority in many areas and specially in Khulna and Dinajpur districts. Buddhists are important in the south-east (Chittagong and Hill Tracts), but they form less than one percent of the population. Christians are even less in number, but theirs is the fastest growing religious community. Since 1972 there has been a noticeable increase in Christian Missions and an increase in conversions among the Scheduled Caste Hindus and Tribals.

URBANIZATION

An outstanding feature of urbanization in less developed countries is the dominance of the primate city, which has a population several times larger than that of the next biggest city. This feature is beginning to manifest itself in Bangladesh. Metropolitan Dhaka has well over five million people in 1990, which is more than twice as many as in Chittagong Metropolitan area and five times as many as in Khulna city.

Urban population has increased rather rapidly in the recent past, but without the necessary growth in housing or services. In the intercensal period 1961-74, total urban population increased from 2.6 million to 6.3 million. Since under-enumeration in urban areas in the 1974 Census was estimated to be 16 percent, total urban population was probably well over 7 million. In the period 1974-81 total urban population increased from 6.3 million to 13.2 million. However, with an estimated 20 percent of the population urbanized in 1990 (15.2% in 1981), Bangladesh remains one of the most rural areas in the world. Within the period 1961-81 urbanization proceeded faster in the Central and Eastern Regions than in the other areas. Urbanization was in the slowest in the Northern Region. Rajshahi city was overtaken by Mymensingh, Comilla and Barisal, which became the fourth, fifth and sixth largest urban areas in the country. The most rapid growth in urbanization was recorded in (greater) Noakhali district, where the percentage of population in urban areas increased from 2 to 11 in the 1970's. Many new urban localities grew up in the 1970's, and the nuclei of many growth centres are taking shape in the 1980's in the upazila headquarters.

Table 17.6
Population in Urban Areas.

Urban Area Number	1961	1974	1981
01. Panchagarh	-	13,643	45,689
02. Pirganj	-	15,153	-
03. Thakurgaon	7,039	15,519	33,404
04. Fulbari	-	6,628	19,613
05. Dinajpur	37,711	61,866	96,718
06. Parbatipur	27,188	10,604	118,979
07. Nilphamari	9,757	18,955	29,558
08. Saidpur	60,628	90,132	126,608
09. Rangpur	40,634	72,829	153,174
10. Lalmonirhat	22,001	23,047	36,439
11. Kurigram	8,703	30,129	47,641
12. Gaibandha	17,738	27,401	39,561
13. Santahar	8,292	12,587	-
14. Sherpur	4,812	7,233	11,161
15. Bogra	33,784	47,154	68,749
16. Jaipurhat	-	15,687	37,122
17. Naogaon	20,276	34,395	52,975
18. Nawabganj	29,725	46,059	87,724
19. Rajshahi City	56,885	132,909	253,740
20. Sardah	-	12,250	-
21. Natore	13,317	21,053	31,210
22. Ullapara	-	9,871	-
23. Shahzadpur	-	24,345	-
24. Sirajganj	47,152	74,457	106,774
25. Paksey	-	23,766	-
26. Ishurdi	11,566	19,826	72,123
27. Pabna	40,792	62,254	109,065
28. Bahirchar	-	12,542	-
29. Bheramara	-	8,494	18,370
30. Amla	-	1,467	-
31. Poradaha	-	2,458	-
32. Jagati	-	1,177	-
33. Kushtia	24,952	36,199	74,892

Table 17.6 Contd

Urban Area Number	1961	1974	1981
34. Kalisankarpur	-	11,144	-
35. Kumarkhali	5,353	10,544	13,828
36. Meherpur	8,147	15,936	23,573
37. Alamdanga	5,494	9,942	
38. Darshana	7,665	10,169	
39. Chuadanga	11,625	36,381	76,000
40. Jhenidah	9,055	34,020	47,953
41. Kotchandpur	8,737	15,411	20,594
42. Moheshpur	4,153	7,132	8,428
43. Magura	6,999	20,240	28,007
44. Narail	-	21,023	31,032
45. Jessore	46,366	82,817	148,927
46. Kalia	-		22,046
47. Satkhira	20,169	40,169	52,156
48. Khulna	127,970	437,304	646,359
49. Bagerhat	16,398	27,912	37,471
50. Mongla	3,847	14,590	27,266
51. Barguna	-	10,245	16,650
52. Patuakhali	12,325	27,167	48,121
53. Bhola	8,406	12,774	32,838
54. Barisal	69,936	98,127	172,905
55. Jhalakati	10,709	21,272	32,539
56. Pirojpur	15,754	22,218	27,531
57. Nalchity	—	—	22,174
58. Gopalganj	8,856	13,861	18,238
59. Madaripur	25,328	32,488	65,917
60. Faridpur	28,333	46,232	66,579
61. Rajbari	16,044	24,020	38,645
62. Manikganj	11,679	26,649	37,132
63. Dhaka Municipality	521,034	1,679,572	2,365,695
64. Gulshan Municipality	22,448	32,176	215,144
65. Mirpur Municipality	—	—	349,031
66. Tongi Municipality	—	—	94,580
67. Narayanganj	—	*	405,562
68. Demra	13,230	18,505	-

Table 17.6 Contd

Urban Area Number		1961	1974	1981
69.	Munshiganj	8,604	27,546	37,060
70.	Narsingdi	14,752	39,140	76,841
71.	Gazipur		15,255	68,211
72.	Kaliganj		15,218	-
73.	Ghorashal		34,321	-
74.	Gopalpur	23,588	39,066	31,725
75.	Tangail	23,688	51,863	77,518
76.	Mirzapur		17,918	-
77.	Jamalpur	37,988	60,261	91,815
78.	Sherpur	24,924	35,578	48,214
79.	Gouripur	7,028	10,020	14,370
80.	Muktagacha	8,658	11,908	16,292
81.	Gaffargaon		3,513	-
82.	Mymensingh City	53,256	1,82,153	190,911
83.	Bhairab	31,749	43,702	63,563
84.	Bajitpur	12,097	14,272	17,620
85.	Kishoreganj	24,031	35,605	52,302
86.	Mohanganj			12,148
87.	Sunamganj	9,843	14,516	18,782
88.	Chhatak	577	13,248	-
89.	Sylhet	37,740	59,546	168,371
90.	Moulvi Bazar	6,522	11,032	16,509
91.	Srimongal	4,040	8,135	25,152
92.	Kulaura		9,160	-
93.	Hobiganj	12,097	16,281	23,677
94.	Brahmanbaria	44,784	62,407	87,570
95.	Comilla	54,504	86,446	184,132
96.	Moinamoti	4,908	10,071	-
97.	Laksham		24,063	78,174
98.	Chandpur	34,837	51,668	86,656
99.	Hajiganj		12,119	58,225
100.	Noakhali	19,874	32,490	59,065
101.	Chowmuani	4,545	21,460	102,072
102.	Lakshmipur		37,813	37,813
103.	Begumganj			69,623

Table 17.6 Contd

Urban Area Number		1961	1974	1981
104.	Feni	9,817	15,428	28,249
105.	Chittagong City	364,205	889,760	1,391,877
106.	Patiya		5,000	-
107.	Cox's Bazar	8,427	15,720	29,614
108.	Bandarban		13,381	20,124
109.	Khagrachhari	—	—	15,141
109.	Rangamati	6,416	20,473	36,405
110.	Kaptai	11,967	8,252	-
111.	Chandraghona	4,421	9,578	-
Bangladesh				13,117,304

* In 1974 Census, Narayanganj was enumerated within Dhaka Metropolitan area

URBAN GROWTH AND DECAY.

Urban growth was slow throughout the period 1872-1947. In 1891 only 2.18% of the population was urbanized and even as recently as 1961 only 5.19% was urbanized. Urbanization gained momentum in the 1970's and is now proceeding at an average growth rate of 4.5% per year. The largest town, Dhaka, had nearly a million persons in the middle of the 16th century, but had gone down to about 300,000 persons when Bishop Harber visited it in the 1520s (Taifoor 1956). It further decayed as Calcutta grew and in 1872 had a population of only 69,000. Growth was slow till 1905, when it was made capital of the newly formed province of East Bengal and Assam, which lasted only seven years. Growth was then steady till 1947 when immigration from India nearly doubled the population. In 1951, Dhaka city had a population of 338,762. Influx of people because of its growing importance as a commercial centre was high throughout the next decade. In 1961, the population was 556,712; an increase of 64 percent over the previous Census. Sixteen kilometers to the south-east from Dhaka city is the centre of Narayanganj city; till the 1950s these two urban areas were separated by a big stretch of purely rural area. In the 1951 Census, since both areas showed strong tendencies of growing towards each

other, Dhaka and Narayanganj were together treated as 'Greater Dhaka City' which had a population of 404,301 (Narayanganj 68,373). Though the recognition of such a conurbation was a bit premature in 1951, the expectation was nearly fulfilled by 1961, by which time a broken chain of factories, shops and residences had linked Postagola in the south-east of Dhaka to Narayanganj. The population of Narayanganj grew very fast in that decade and was 162,054 in 1961; a rise of 123 percent. The Dhaka-Narayanganj conurbation had a population of 817,766 in 1961, and by 1974 it had more than two million inhabitants. Since the 1974 Census under-enumeration in urban areas is estimated to be 16 percent, the population of this metropolitan area may have been about 2.4 million. According to 1981 Census, Dhaka has more than 3.4 million inhabitants. In the 1961-74 inter-censal period, though two small towns, Debhatta and Nalchiti dropped out of the urban class, many new towns have been added (Table 17.6). Some of the more notable growths have been in small industrial towns, such as Chowmohani and Paksey. Some small industrial localities have been shown as urban in the 1974 Census, since they have urban characteristics eg. Patiya in Chittagong district has also been included in Table 17.6.

DHAKA

The origin of Dhaka city is obscure. In old records it is never mentioned with the port of Bengala: one or the other name occurs in the list of important places in Bengal (Taifoor 1956). This is considered by many historians to be strong evidence in favour of Bengala and Dhaka being one and the same place. There are dated antiquities only from the middle of the 15th century (Taifoor 1956). In 1608 it was chosen as the capital of the Subah of Bangala by Islam Khan, who named it Jahangirnagar after the reigning Mogul Emperor Jahangir. In 1704, Murshid Quli Khan removed the capital to Murshidabad (now in West Bengal, India). The city did not decline as rapidly as it is supposed to have, for, though it had a population nearing a million in the middle of the 17th century, it had at least a quarter as much a century and a half later. The big blow to its prosperity was the deliberate choking of the muslin trade by British commercial interests, which led to rapid decline in the first half of the nineteenth century.

The 15th century mosques and mausoleums are scattered all over the present city. The old core of the city, which dates back to the early seventeenth century, is the Islampur and Chauk areas. The long road along the river Buriganga from Lalbagh to Postagola (and

possibly even Paglarpur) seems to be as old. Along this road the Greeks, Portuguese, Dutch, French and English established their 'Factories' or trading centres. The French and Portuguese have left their names in Farashganj and Firinghibazar respectively. The Armenian traders concentrated in the quarter now known as Armanitola where a Church built by them, dating to around 1780, still stands. The oldest Church in Dhaka is a Portuguese one in Tejgaon built around 1679. An Anglican Church (of St. Thomas) was opened in 1824 and the Baptist Mission in 1815. The Roman Catholic Archbishop's residence and Church (1950s) is in the new town, just opposite the Chief Justice's residence. Dhaka is known as "The City of Mosques". The oldest is perhaps one at Narinda - Binet Bibi Mosque (1455). Other historic mosques are the Shah Ali Baghdadi Mosque at Mirpur (1577) ; Shaesta Khan's Mosque at Chawk Bazar (1675) and Khawja Amber's Satgambuz Mosque. The mosque at Baitul Mukharram is probably the largest in the country. The Hindu community have large, historic temples at Dhakeswari and Kalibari while the Sikhs have their Gurdwara at Babubazar (from the 1680s) and another large one which is within the Dhaka University campus.

In the 17th century the old residential area around Nawabpur was formed. Prominent Hindu officials and professionals established a well planned and beautiful residential area in Wari around 1885. From the late 18th century to 1905, the Europeans had most of their residences along the river-front. In 1905 a new town was planned at Ramna, to the north of the town. By chance it happened to be on the other side of the railway line which accentuated the difference between the two sections of the city. Ramna was well planned, with many avenues lined with different species of trees, a residential area for the senior civil servants and judiciary. Close by was a large central green, part of which was the race course for equestrian sports. Next to the greens is the Dhaka Club which was founded, mainly by government officials, in 1911. In 1921, the Dhaka University was established in Ramna with several fine buildings and a large attractive campus. After 1947, the town's expansion was mainly to the north and west of Ramna. New Market was built and new residential areas developed at Azimpur, Dhanmandi, Mohammedpur and Eskaton. Later came the satellite towns of Mirpur, Banani, Gulshan, Baridhara and Uttara. Local industrial sites grew up or were developed at Hazaribagh, Tejgaon and Postogola which is nearly linked to Narayanganj city, six Kilometers to the south-east. This city of the conurbation lies at the confluence of the Buriganga and Lakkhya rivers. On the east bank of Lakkhya is its suburb of Madanganj. To the north of old Narayanganj, an industrial area has developed at Demra on the Lakkhya river. Tongi whose large industrial estate has become a part of the conurbation is just north of Dhaka city across the Turag river. Commuters come from Gazipur, Sonargaon and Dhamrai, all of which will become satellite town by the year 2000. With the

opening of the Bangladesh-China Friendship Bridge over the Buriganga river on March 15th 1989, the south-east of Dhaka City will become increasingly urbanised.

The older commercial areas of both Dhaka and Narayanganj are along their river fronts. In the city of Dhaka, Nawabpur is the main retailing area, while the fashionable shopping centres are in the Baitul Mukarram-Stadium area, along Banga Bandhu Avenue, Gulshan and Banani, New Elephant Road and in the New Market. The University, the Supreme Court, the Central Bank, the Administrative and Commercial areas are in the southern part of the new town while the main areas of expansion are to the north.

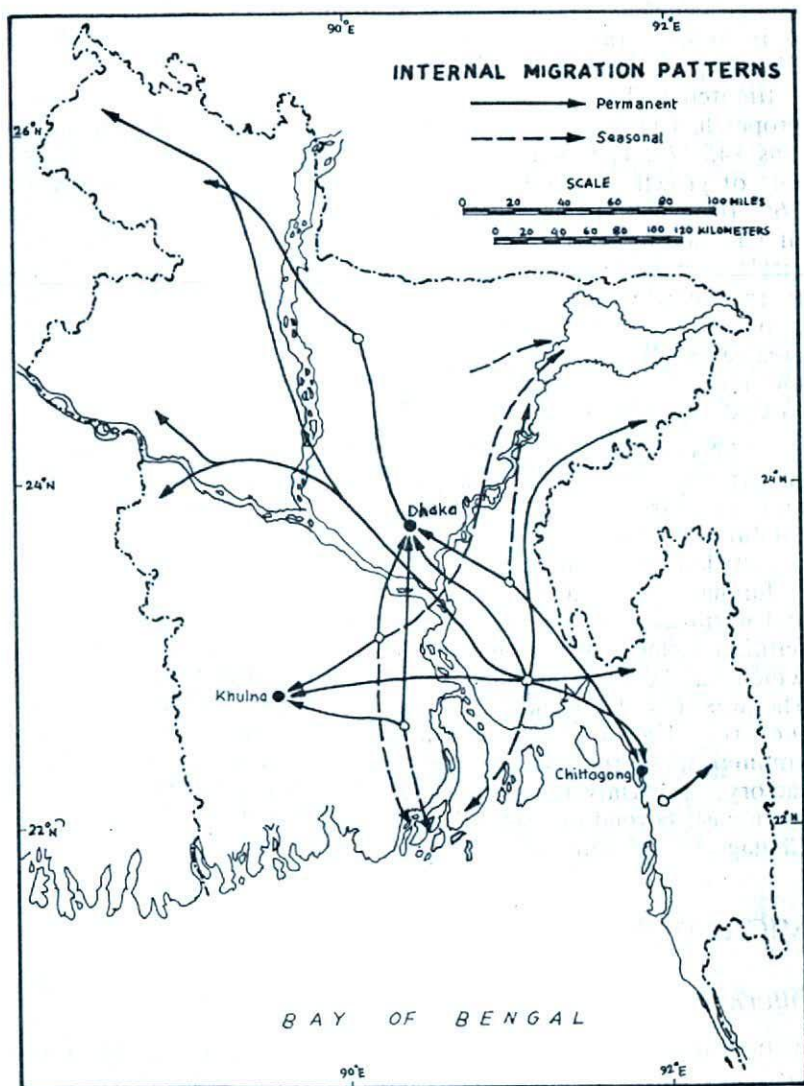
The location of Dhaka is favourable to its growth. Most of the city is on the southern-most spur of the Madhupur Tract, and is, therefore, on relatively firm high ground. The city is, at the same time, at the head of the delta. It, therefore, has easy access to the north by railways and roads and to the south by the numerous rivers. By fortunate chance it is situated almost at the centre of Bangladesh, which is an advantage, considering the paucity of communications to the remoter areas.

KHULNA

Khulna city grew rapidly in the 1950s and 1960s. In 1901 it has a population of only 10,426. By 1951 it had grown to 42,225. In the next ten years the opening of Chalna-Mongla port and the growth of Daulatpur Industrial area spurred the population of the city to 127,970 (a 92% growth). In the next two decades it grew even faster. In 1974 its population was 437,304 and by 1981 had increased to over 623,000.

Khulna hardly has any history. Till 1882 it was a small village in Jessore district. In that year it was made the head-quarters of the new Khulna district, and quickly grew into a small town. By the 1950s, the large newsprint factory, several jute mills and a big power station were built in the Goalpara-Daulatpur-Khalishpur area to the north, also on the Bhairab river. A new University is being built and when completed should add considerable vigor to the intellectual and social life of the surrounding area. The city is now 14.5 km long from north to south, and 3.2 km from east to west. Its location on the Bhairab river gives it easy access to the deltaic regions. The railway and road going north connect it with the Moribund Delta areas and north Bengal. The Chalna-Mongla anchorage, 32 km. to the south, makes Khulna in reality a sea-port. Khulna riverside is a break-of-journey point for much of the imports and exports through Chalna (Mongla). The airlink with Dhaka is through Jessore Airport about 80 km to the north.

Map 17.2



CHITTAGONG

Chittagong city strangely, has not had a rapid rise in population though commercially it is more important than Dhaka, and industrially it is bidding fair to beat it. In 1901, the Municipality had only 22,140 persons; the environs, mostly on the rural-urban fringe are estimated to have had a population of 84,708. By 1951, the city proper had grown greatly as the population within Municipal limits was 145,777. The environs, with 148,269 person, had a much smaller rate of growth. The total for Metropolitan Chittagong increased only 26% from 289,981 in 1951 to 364,205 in 1961. Since the mainland of Chittagong is as densely populated as that of Dhaka and the city's commerce and industry had grown greatly, the 26% growth in the decade 1951-61, is less than expected. In the next decade population had however, doubled to 856,000 in the metropolitan area (adjusting for under-enumeration, the population would be about one million). According to 1981 census the population of Chittagong rose to 1.39 million (probably 1.8 million by 1987).

The core of Chittagong city and its oldest part is Anderkilla (innerfort). To the north of it are several residential areas. To the south and west are the commercial, industrial zones (and the newly established Export Processing Zone) and the harbour, which stretches for 20 km along the Karnafuli river. The new industrial areas of Kalurghat, Sholashahar and Foudjarhat are to the south-east, north-east and north-west of the city respectively. The oil refinery, grain silos, fertilizer factories and a large steel mill are all in the Patenga Peninsular, which has become the most valuable industrial land in Bangladesh. The airport is also located at Patenga. The land on the southern side of the river Karnafuli is beginning to be used for industrial and commercial purposes (e.g. the fish harbour and the urea fertilizer factory). The University of Chittagong (established in 1966) is in the north-east, beyond the Sholoshahar industrial area and the Cantonment. Chittagong, therefore, now encompasses nearly 100 sq. miles.

MIGRATION

Internal

Within Bangladesh there is considerable migration, which can be seasonal and permanent in nature. This may take the form of both rural-rural and rural-urban migration, and the latter is rapidly gathering momentum. The population of almost every urban area is increasing. The increase

is not wholly due to the movement of people from the surrounding area. In all the big urban areas, and especially in the three cities, a large part of the migrants are from districts other than in which the urban area is situated. There is a substantial flow into Dhaka from Comilla, Noakhali, Mymensingh, Faridpur and Bakerganj districts. Into Chittagong the flow is mainly from Noakhali, Comilla and Dhaka district and into Khulna it is mainly from Bakerganj, Jessore, Faridpur and Noakhali districts. The people of Noakhali district show the greatest propensity to migrate. Till the 1920s, Noakhali district was surplus in food-stuffs and the growth of Chars at Ramgati and Hatia islands attracted immigrants from Barisal, Comilla and Dhaka districts. The farmers of this district were praised in several Settlement Reports as being the hardest working and as getting the most out of their land. In this same decade (1920s) there was the beginning of an awakening among the Muslims, coupled with a drive for more literacy. In the 1930s, this district became the most literate in Bangladesh and at the same time deficit in food, due to a sudden rise in population. The trickle of emigration, which had begun in 1920s, swelled to a large stream. Ramgarh district, Hills Tippera (now Tripura State in India) and the Meghna Chars were the first refuge for these migrants. In the 1940s there was emigration to all part of Bengal and Assam and some even further afield. Since 1950, Noakhali people have migrated mainly to Dhaka, Chittagong and Khulna cities, with large numbers also going to Dinajpur, Kushtia, Sylhet and the Hill Tracts. In Dhaka city they constitute a significant part of petty traders and in all major industrial areas they form the single largest industrial worker group.

Comilla and Dhaka are two other districts from which there is considerable emigration to other districts. Dhakias (as they are called in colloquial bangla) usually emigrate as petty shopkeepers and as itinerant salesman. For several centuries they have been emigrating to the different towns of Bangladesh to do business, and for a long period they controlled the cloth trade in Bengal, outside Calcutta. Since 1971, because of the economic growth in Dhaka, emigration from that district has dwindled. At the same time emigration from Comilla district has grown steadily. Like Noakhali, this district became overpopulated (i.e. its food production was inadequate to meet increasing local demands) in the 1930s. Till 1947, there was some emigration to the middle Brahmaputra valley. Since then emigrants have mainly gone to the Haor Basin, and Dhaka and Chittagong. The flow to Dhaka is particularly heavy. Unlike Sylhet to the north, and Noakhali and Chittagong to the south, this district sends few emigrants and seamen overseas.

The main flows of internal emigration are :

- (i) from Noakhali district to Jessore, Rajshahi, Rangpur, Dinajpur, southern Sylhet and Hill Tracts districts, and Dhaka, Chittagong and Khulna cities;
- (ii) from Chittagong district to the Hill Tracts district;
- (iii) from Comilla district to Sylhet, Mymensingh, Jessore and Rajshahi districts and Dhaka, Chittagong and Khulna cities;
- (iv) from Mymensingh district to northern Sylhet, northern Rangpur and Dinajpur district and Dhaka city;
- (v) from Dhaka district to Sylhet, Bakerganj, Mymensingh, Rajshahi and Rangpur districts;
- (vi) from Faridpur district to Barisal, Jessore, Kushtia, Pabna and Rajshahi district and Khulna and Dhaka cities;
- (vii) from Barisal and Patuakhali districts to Khulna and Dhaka cities.

The move from the crowded south-east to all the less populated areas and the cities is obviously the most marked feature.

External

For many centuries more people immigrated into Bangladesh than emigrated out. Till the 19th century large tracts of land were thinly populated and there was an abundance of food-stuffs. From the third quarter of the 19th century till the 1930s there was some emigration from Tangail and Jamalpur to the middle Brahmaputra valley. At the same time there was a flow from Chittagong district to Burma (Arakan Coast, Mandalay, Moulmein and the land around Rangoon). At first this was mainly a seasonal migration but soon many settled among the local Muslims. Some moved into Thailand (Chieng Mai).

Emigration to Calcutta was large before 1947 mainly from Pabna, Kushtia, Faridpur and Jessore districts. Many from Noakhali worked at the Khidirpur docks. People of Bangladesh origin have made their mark in literary, music, academic and politics of West Bengal and India.

Emigration to the United Kingdom from Sylhet district assumed sizeable numbers from 1952 onward. Within ten years the number of Bangladeshi in the U.K. increased from a thousand to 60,000.

They settled mainly in London and the Midlands. In 1962 the Immigration Act, prompted by the rapidly increasing flow from many commonwealth countries and the social problems created by it, was passed in the U.K. This reduced emigration to some extent. In 1990 it was estimated that there are 300,000 Bangladeshi in U.K. mostly in London, Bradford, Coventry, Birmingham, Liverpool, Leeds and Glasgow. They are acquiring real estate and it is estimated that more than 500 restaurants and several hundred boarding houses are owned by them. About Taka 2,000 crore is remitted in an average year. More than four-fifths of these emigrants are from Sylhet district; mainly from Jagannathpur, Bishwanath, Balaganj, Sylhet and Golapganj Upazilas.

A rough estimate has it that people of Bengali origin in Saudi Arabia, United Arab Emirates, Kuwait, Bahrein and other Arab countries, number about 460,000. According to official figures, 334,141 people migrated to these countries during the last two decades. Settlement in the U.K and the Middle East is dominated by the semi-skilled worker where as the overwhelming proportion of immigration to the U.S.A, Canada, Australia and New Zealand has been from the educated, professional and skilled groups. The latter immigration group can appropriately be termed a "brain-drain" though this is not necessarily "bad" for the country in the long run. There are also small groups of people of Bengali origin in Malaysia, Singapore, Jamaica, Trinidad, and the Guianas. Foreign employment of Bangladeshi of all categories during the calendar year 1978 was 22,809 which has risen to 103,814 by the year 1990.

Table 17.7

OVERSEAS EMPLOYMENT STATISTICS

Year	Professional		Skilled Worker		Semi Skilled Worker		Un-Skilled Worker		Total	Remittances (in million Taka)
	#	%	#	%	#	%	#	%		
1976	566	9	1,775	29	543	9	3,201	53	6,087	358.5
1977	1,766	11	6,447	41	490	3	7,022	45	15,725	1251.6
1982	3,893	6	20,611	33	3,272	5	34,981	56	62,762	1,1768.4
1983	1,822	3	18,939	32	5,098	9	33,361	56	59,220	15,687.6
1989	5,325	6	38,820	38	17,659	17	39,914	39	101,718	24,459.9
1990	6,004	6	35,673	34	20,792	20	41,345	40	103,814	26,690.8

Source : Ministry of Labour & Manpower, 1991.

Settlement Patterns

URBAN SETTLEMENT PATTERNS

Almost all urban areas have strong village characteristics and many of them grade into villages quite imperceptibly. Only Dhaka and Chittagong have big sections of purely urban built-up areas. Even large towns (e.g., Comilla, Mymensingh) have a rural atmosphere, with a profusion of trees, a scattering of cultivated fields within the town, and market days, when large numbers come from the surrounding villages to do their weekly selling and shopping. One of the marked features of these (as opposed to western towns) is the near absence of internal functional differentiation. A large number of shopkeepers live above or behind their shops. Most of the lower paid Government servants also live in quarters whose frontage on the road is often occupied by offices or shops. Only the section of the town with the Government officers residences, Club, Rest House and office buildings is clearly defined in most administrative centres. Almost all the houses in these sections are pucca and with gardens and lawns. The remainder of the town has a scattering of Pucca houses amidst closely packed kutcha houses. In fact nearly three-fourths of the house in most towns are kutcha. In the western parts of southern and northern Regions and in Sylhet the proportion of pukka houses in urban areas is over one-third. In Faridpur, Noakhali and Hill Tracts districts, it is barely one-tenth. The kutcha house-types are naturally very nearly the same as those found in the villages of the surrounding area.

Urban Houses Patterns

All houses are classed according to two categories - Kutcha and Pucca. Kutcha construction implies impermanence : bamboo, thatch, reeds and even timber are the materials used in them. Brick or stone, and some times the sturdier timber construction especially if with a strong plinth, are Pucca. According to the 1981 Population Census, 40% of the urban structures have roofing of bamboo and straw and an equal percentage have corrugated iron (C.I) sheet and wood. About sixteen percent have concrete roofing and the remaining have tiles. Similarly 50% of the structures have bamboo and straw walls and only 3% have brick

and cement. An outstanding features of urban areas in Bangladesh, and indeed of the whole of south and south-east Asia, is their strong village characteristics : paved streets and pucca houses are mixed in an intricate pattern with open fields and kutcha houses. The Pucca urban houses can be divided into two district groups : those of the old towns and those of the new. The typical house of the old towns (usually 1900-1940) is a middle-class Hindu residence, as it was the Hindus who dominated town life till 1947. These houses are usually two-storied in Dhaka and Chittagong, but one-storied in most of the towns. They have a narrow balcony in front, often with grille-work balustrades, very small windows and a courtyard at the back, for the ladies. These ill-lit houses are further plagued by insanitary conditions, since sanitation is poorly developed in all but the newest urban locales.

Most of the houses built since the 1930s and especially those built after 1947 pay greater attention to lighting and sanitation, though they are still inadequate. The houses of more recent construction also have verandas and balconies, but these are usually wider than those in older houses, and instead of iron grill-work balustrade, have brick-work in various patterns. The courtyard at the back is often dispensed with. The social pattern dictates that the kitchen and the latrine be at a little distance from the living quarters. As social ideas change and Western house patterns gain approval, the kitchen and bath-room are being built as an integral part of the main house. The courtyard, as a necessity, is disappearing. So too are the gardens unfortunately, because of the high land prices. Formerly it used to be a sign of social status and education, to cultivate roses, jasmine, queen-of-the night, lilies and other flowers. A few sickly potted plants are all that one sees in most of the new, crowded modern constructions. Multi-storied flats are being built in most of the Housing Schemes ; the absence of trees and gardens makes them dreary. The older official building (Rest Houses, Post Offices, Courts, Officers' residences) have thick walls and high ceilings, but the newer ones often go to the other extreme. Unlike in many Muslim countries, Malaysia in particular, Islamic architectural features are almost completely ignored, though their use can result in a distinctive and appealing architecture. The Curzon Hall in Dhaka is recognised as among the finest buildings in that city, and one of the few to use Saracenic features. Another pleasant structure with Persian and Saracenic features is the Rangpur District Council building. Some of the most un-aesthetic buildings are to be seen in the 'ultra-modern' structures of the new residential areas of Dhaka and Chittagong. The result of efforts to combine the features of the old style with the angular 'modern' designs often are buildings uneconomical to the builder and uncomfortable to the resident.

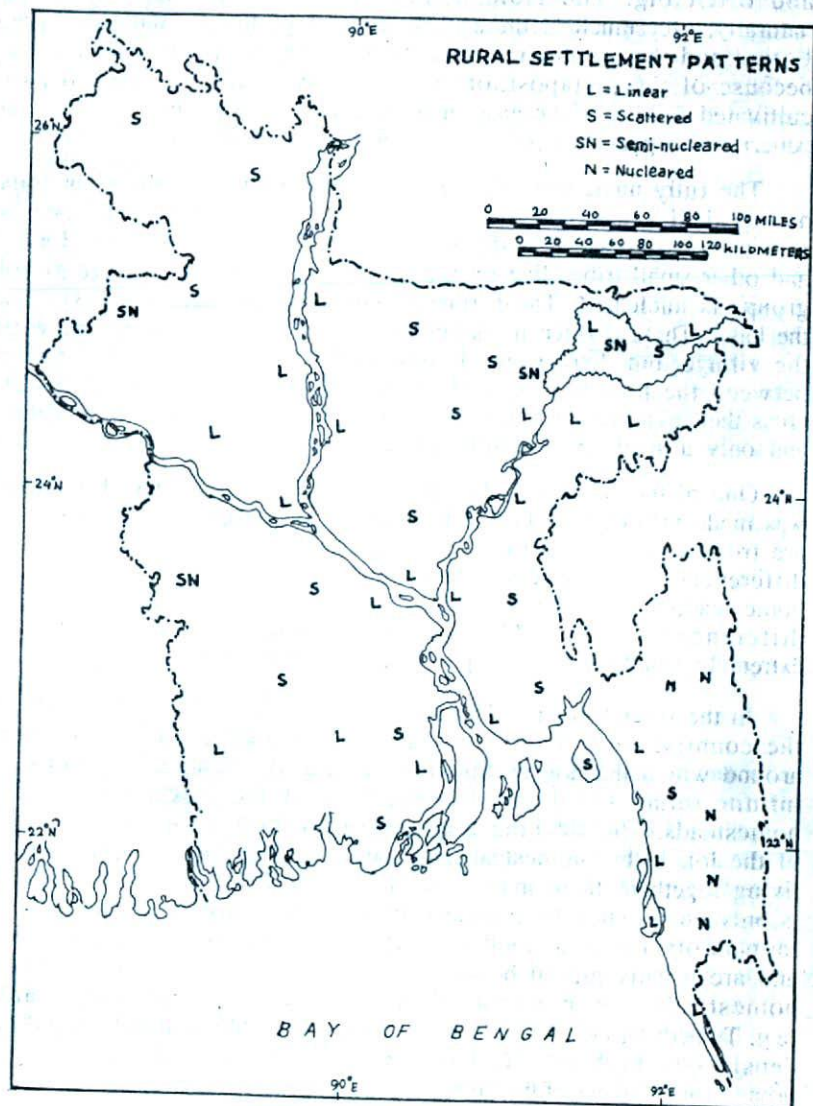
Detailed statistics are not available, but from what there is, an idea of the housing problem can be gauged. In the larger urban areas there are, on the average, two rooms per family (excluding kitchen and bathroom) and three persons per room. Nearly a seventh of the people live in congested households, i.e. with five or more persons per room. The average living space per structure is 282 square feet in the urban areas (BBS Sample Census 1981). In the poorest quarter and in the newly-spring industrial slums (especially Daulatpur) the miserable shacks measure barely 2 by 2 meters. The squalor of such areas is near indescribable.

RURAL SETTLEMENT PATTERNS *

The flooding of almost all fields in the rainy season forces settlements to be sited on higher ground or to raise the land artificially for the homesteads. In the low basins, river-flood-plains and most of the Delta the levees (existing and abandoned) form most of the 'high' ground available. Linear settlements on levees and - swales are very common (Figure I). It is the dominant type in the Immature Delta, the lower parts of the Mature and Active Deltas, the Mahananda, Tista, Jamuna, Ganges and Meghna flood-plains, the Bhar Basin and the Haor Basin. Linear settlements are also found along the base of the hills of south Sylhet and the Chittagong Region because of the spring line, where water is available close to the surface; where small streams form springs along the Jaldi and Sitakund Ranges there are linear settlements of up to ten kilometers in length. In areas with considerable middle and high level fields many of the homesteads are scattered (Map 18.1.). The linear tendency is still there, but there are single or clusters of homesteads away from them. About half the homesteads form ill defined linear patterns, a third form clusters and the rest stand apart singly. This settlement pattern (scattered) is common in the Mature and Active Deltas, the Old Brahmaputra flood-plains, the Piedmont plains, east and south Sylhet, the Tippera Surface and parts of the Chittagong Region lowlands. In the Tippera Surface it reaches its highest development, where the countryside is thickly dotted with small clusters of homesteads. Pressure of population has forced scattered homesteads even in low areas such as the Padma-Dhaleashwari Doab, the Bhar Basin and the Haor Basin. In these places, the homesteads are built upon three to five meters high artificial mounds and when the water level rises they are in effect small islands. In the Moribund Delta

* Village lines have been drawn in such a manner that the area of a village contains a number of homesteads which may be together in same pattern or scattered.

Map 18.1



the tendency towards nucleation is strong. The settlement pattern can still be called scattered, but here the clusters of homesteads are common, and often big. The isolated homestead is uncommon. Streams naturally force much of the settlements to be linear. In the west-central Barind and the Madhupur Tract the tendency to scattering is strong, because of the juxtaposition of uncultivated hillocks and strips of cultivated fields. In the eastern part of the Barind the semi-nucleated patterns of big clusters of homesteads is common.

The fully nucleated settlement pattern is found in the Haor Basin and the Hill Tracts. The Jhumia Moghs, Chaks, and Tipras live mostly near the streams, whereas the Mrus, some of the Tipras, Kumis, Lushais and other small tribes live on the ridges. The settlement pattern of both groups is nucleated. The former group has much larger villages than the latter. There is often no definite pattern. The jungle paths converge at the village, but there is no definite path-system within it. The space between the houses is usually free of undergrowth and paths criss-cross them. The remoter tribes often have stockades around their villages and only a single path leading to it.

One of the earliest studies of the homestead pattern in Bangladesh was made by J.C. Jack (1916) in Faridpur District. Though his examples are from only a small part of Bangladesh, they bring out the essential differences: the more substantial nature of the bigger land owners' homestead, the arrangement of the huts around a courtyard, the subtle differences between Muslim and Hindu homesteads, and the extremely small size of the poorer cultivator's huts.

In the Barind Tract and in the homesteads of the well-to-do all over the country, small gates are used for entrance into the courtyard, around which the houses (huts) are arranged. This arrangement takes infinite forms, but usually the parlour is the first hut in the bigger homesteads. The sleeping quarter (bedroom) is the most substantial of the lot. In big homesteads, where as many as ten families may be living together* there may be as many bedroom-huts. As a rule there is only one kitchen in a homestead; more than that is rare. The richer farmers often have a small mosque or temple within their homestead, and are usually placed besides the main tank (pond). Big clusters of homesteads are common in the higher better drained areas (e.g. Tippera Surface); in them the houses are so close and the population density so high (30-50 persons per acre) that they resemble the urban - rural fringes of the bigger towns.

* The large joint-family system is not uncommon among the Hindus.

Rural House Types

Only the main types of rural houses may be considered here. Details of construction and distribution can hardly be considered within the scope of this work. The plinth of almost all rural kutchha houses is of mud : the height varies from barely six inches in the higher areas (parts of the Barind and Madhupur Tracts) to four feet in some low-lying parts of the Delta.

There are several common materials for walling and roofing these houses (or, more properly, huts). Different combinations of them make the main types. The most common materials for making the walls is bamboo. Sixty two percent of the rural houses have straw and bamboo roofing and sixty five percent have straw and bamboo walls, according to the 1981 Population Census. Wherever available, Muli (*Melocanna bambusoides*) bamboo is used, but over most of the country, Talla (*Bambusa tulda*) is the most common bamboo used. Of bamboo walled houses the commonest are those with walls of thinly spliced bamboo, plaited into square or diamond pattern. The gabled roof is thatched with Chhon grass (*Imperata arundinacea*) in northern Central and Eastern Regions ; with Ulu (*Saccharum cylindricum*), Khari (*S. fuscum*) and Bena (*Adropogon muricatus*) grasses over most of Northern and Central Regions and the north of Southern Region ; with Golpata (*Nipa fruticans*) leaves in the south of the Southern Region and the southern coastal tract of Chittagong District ; with Tal (*Borassus flabellifer*) leaves over much of the Madhupur and Barind Tracts ; and with rice straw, by the poorest, all over the country.

Most of such houses are oblong (Type BThO), and measure three to eight meters long by three to five meters broad. This space may be divided into two or three rooms with plaited bamboo partitions. Such houses are predominant in the Eastern and Southern Regions except in the Chittagong region, the Haor Basin and the Moribund Delta. Slightly different in shape but often made with the same materials is the square thatched houses (Type BThS). Where as in the BThO type, the longer side is at least one and a half times as long as the shorter, in the BThS type the sides are almost of equal length or the longer side is less than one and a half times the length of the shorter. Another essential difference is that the gables of the BThO type are usually pitched at angles varying from 30 to 45 degrees, whereas that of the BThS type they are at angles from 45 to 60 degrees. This latter type is found scattered all over the country, but is commonest in south-east Northern Region. These houses are usually four to five meters square. Another bamboo-walled type (BThC) common in the Northern

Region (especially the south-west) is built on yard high plinths and has a curved roof. This bowed roof with steep gables is common over most of the Western Region (West Bengal). It is favoured for small temples. Very often fairly thick (4cm) splits of bamboo are pleated for the walls of this type and dubbed with a thick layer of mud. A small verandah in front, with wooden supports is common. Another special type (BThD) is common in the islands and coast of the Chittagong region south of Sitakund. It has been described as double-roofed. Actually the main house is high and has a roof separate from the verandah and small rooms around it. The main unit is 0.30 to one meter higher than the verandah around it. They usually have a small attic and are known as one and half storeys. A few such houses have even three levels with three roofs: the highest is for a big attic. Mud-walled houses of this type are very common in the Chittagong region. The walls, of 0.30 to 0.70 meter thickness, are of sun-dried mud. Two types can be distinguished. The shorter has walls of about three meters in height, and the taller is of twice the height. The taller variety is common in Satkania upazila. These mud-walled houses (MThD) may have thatching like that of Type BThD, or have tile type MID, or corrugated iron (Type MID) roofs. Of bamboo-walled houses, those with corrugated iron or kerosine-tin-sheet roofs (BIO BIS; BSO BSS) are fairly common in all well-to do localities. These roofs are made of sheets of corrugated galvanised iron riveted into a wooden frame. When new, they shine brightly, but very soon they rust and become an ugly brown. Some of the most un-aesthetic views in Bangladesh are across the jumble of rusted roof-tops of residences and warehouses in the bigger business centres (e.g., Narayanganj, Puranbazaar of Chandpur, Firinghibazar of Chittagong etc.). The advantages of such roofs are that they are fireproof and last quite long. Thirty four percent of the rural houses have C.I. Sheet and wooden roofing and fourteen percent have walls of these materials (BBS, 1981 Population Census).

Of mud-walled houses the commonest is the oblong type with thatched roof (MThO). It is common in the eastern parts of Comilla and Noakhali Districts, the northern part of Chittagong District, the southern hills of Sylhet District and much of Southern Central and Northern Region. Near Comilla and around Jessore and Chapai-Nawabganj towns such houses with tiled roofs (MTO) are common. The square types (MThS, MTS, MIS) are also not uncommon. Corrugated-iron-roofs (Type MIO) are common in the Central Region while Type MIS, with roofing of flattened kerosine-tin sheets is common from Bogra to Khulna. The walls of these mud-walled types are made from sundried blocks of clay. After the walls are made, there is further shrinkage and gaps appear between the blocks. These are

filled with more clay. In parts of the Madhupur Tract, because of the lateritic quality of the soil, the walls become so hard that it is not easy to break them even with picks. In the western part of the Southern Region and throughout the Northern Region, the commonest type of mud-walled house (MThC), has curved roof of thatch, low walls and small verandahs in front. Over much of the Barind, however, the walls are high and the roof ridge straight (MThO), and in the north-eastern South Bengal there are two special types. In Kushtia District, and especially in the tract between Poradha and Darsana, the prevalent type is mud-walled and with steep gables, topped by an ornamental ridge (Type MThSP). The gables are pitched at 60 degrees and reach twice the height of the walls. Small verandahs are common. The houses look as if they are wearing peaked caps. Just south-west of the area in which the above type is prevalent there is an area of tall mud-walled houses (MThST). The walls are up to 5 meter high and the gables are smaller than in the MThSP type. Often bamboo fencing forms one of the outer walls. This type is characteristic of the tract of the Moribund Delta between Darsana and Jessore.

Along the larger rivers, where the channels shift very often, the poorer people prefer to invest as little as possible in housing. Very often their houses have walls of jute sticks with mud dubbed on, and thatching of rice straw (JTh) ; in the Haor Basin, and in the riverine areas the poorest often used reeds for walling (RTh). In the Haor Basin, Ikra (*Erianthus ravaneae*) is the main reed used ; in the other areas Hogla (*Typha elephantina*), Muktane (*Clinogyne dichotoma*), Mura (*Juncellus inundates*) and other tall reeds are used.

Timber houses are not uncommon in certain parts of the country, e.g. Madhupur Tract, Chittagong Region, where there are forests nearby. Except in the southern Chittagong District, these timber houses are invariably double-storied (Type TID). The front is often carved and painted. In the southern Chittagong District the houses of the Rakhaing Moghs are also of timber, but on stilts and usually one-storied (Type TThS). The town dwelling Moghs, if prosperous have double-storied houses with carved balconies and lintels. Some of the rich landed gentry have houses of this pattern, often of Burmese teak, in the countryside (e.g. in Pekua and Barabakia).

Sylhet District has a distinctive half-timber type of houses (OHT), that is common to many parts of Assam. The floor and sometimes part of the lower walls, are usually of brick construction. The walls are of Ikra reeds or bamboo matting plastered over with cement or mud on both sides and painted white ; these are held up by a frame of timber, painted black. The roof is usually of C.I. sheets, and sometimes of straw. This type is common to the eastern parts of Sylhet District.

The tribes of the Hill Tracts build their houses of bamboo. The standard pattern is a hut on stilts, with an open platform (verandha) on one side (BThSt). For climbing up, there is a notched log (also used in Type TThSt). Whole bamboo pieces are usually used for the floor and walls, and split bamboo matting for the roof, along with thatching of *Kuruipata* (*Licuala peltata*) or *Ramgua* (*Pinanga gracilis*). The most substantial of such houses are built by the Mrus.

The Lushai, Panko and Bom used to have houses with wooden floors and, sometimes log walls. Though this traditional type is dying out, there are still a few houses of this type (LTSt).

The types described above are essentially those of the dwelling (parlour, dwelling, bedrooms) houses. Kitchens, cow-sheds, poultry-coops etc. are built separate and usually of poorer material. Kitchens are rarely roofed with anything but thatch and have often a quarter to one-eighth the floor space of the dwelling houses. Two by two meter is a common size. Cow-sheds are built very poorly almost all over Bangladesh, and especially in the Eastern Region. In the north-western part of the Central Region, the cow-sheds are thatched well and stand higher than the ramshackle huts common in other areas. Only in the Moribund Delta do the cow-sheds have a distinctive design. They are long and low, with a slightly curved roof. In this area, the poultry coops are also specialised, being round huts on stilts, made almost entirely of bamboo. In other areas poultry coops are low sheds.

Shops, godowns (warehouses), tea stalls, etc. have somewhat different forms from those described. Large numbers of kutcha mosques and temples are of the types described, with slight differences. Pukka mosques are not uncommon in rural areas. They have domes and minarets (usually short) characteristic of their type. The mosques in Sylhet District often have brightly painted designs. Hindu temples, when pukka, have high steeples and look somewhat like churches, except that the 'steeple' itself is the complete temple. Buddhist Kyangs are of Type TID.

Only about 2% of the rural houses are pukka. Among them are the large houses of former big Zamindars (landlords). Of these, there are nearly a hundred prominent ones such as the Tajpur Palace, Natore Rajbari, the large mansions at Gouripur, Karatia, Nagarpur, Narail, etc.. These huge buildings, often surrounded by gardens with a liberal scattering of marble statues, are rapidly decaying: their coloured glass windows, stucco ceilings, mosaic floors, grand staircases, all look completely incongruous in their very rural surroundings.

Economic Framework & Development Planning

The economy of a country is the result of the inter-relationship between its physical and human resources. Those aspects of the economy which are related directly to economic geography, such as agriculture, trade, industries and transport, have already been dealt with. In this Chapter, the framework within which the entire economy operates will be considered for a better appreciation of the inter-relationship between geography and economics.

For understanding and analysing what takes place in the economy, it is necessary to know the concept of national product accounting as used in Bangladesh. The term GNP is now almost a household word but some definitions are necessary before proceeding further. National accounts are usually expressed in periods of 12 months, corresponding either to the calendar year or the financial year. In Bangladesh, the financial year from July to June is usually used. National account statistics for GDP, GNP, etc. are therefore usually compiled for various financial years. The gross output of an economy is the total flow of goods and services which are produced in any given period. If we deduct from the gross output all intermediate goods and services, domestically produced as well as imported, which are used up in the production process, we arrive at the Gross Domestic Product (GDP). To obtain the Gross National Product (GNP), the income transferred to the country by Bangladeshis abroad has to be added and the income transferred to other countries has to be deducted. Both GDP and GNP include an estimated amount for depreciation of capital goods 'consumed' in the process of production. If this amount for depreciation is deducted in each case we arrive at the Net Domestic Product (NDP) and the Net National Product (NNP). Since the estimation of depreciation requires rather precise statistics, the national accounts for Bangladesh are usually presented in terms of GDP and GNP. These outputs can be measured either at factor cost or at market prices. Factor cost means the value added by some economic activity. When all the gross income

Table 19.1
Gross Domestic Product of Bangladesh

Sector	(Million Taka)		
	1978 - 79	1984-85	1989-90 (P)
1. Agriculture :	33,872	38,105	39,990
i) Crops	26,941	29,463	31,010
ii) Forestry	1,520	2,269	2,458
iii) Livestock	3,308	3,927	4,018
iv) Fisheries	2,103	2,446	2,504
2. Mining & Quarrying	1	1	1
3. Industry :	6,938	8,132	8,396
i) Large scale	3,967	4,544	4,703
ii) Small scale	2,971	3,588	3,693
4. Construction	2,387	4,095	4,272
5. Power, Gas, Water & Sanitary Services	184	526	577
6. Transport, Storage & Communication	4,612	5,480	5,762
7. Trade Services	9,373	7,210	7,736
8. Housing Services	3,082	5,812	5,949
9. Public Admin. & Defence	1,778	3,968	4,292
10. Banking & Insurance	545	1,545	1,658
11. Professional & Misc.Services	3,994	6,339	6,766
12. GDP at Constant Market Prices	66,766	81,213	85,399
13. Indirect Tax Net of Subsidies (—)	3,756	4,224	4,261
14. GDP at Constant Factor Cost	63,010	76,989	81,138
15. Net Factor Income from Abroad (+)	850	1,670	2,329
16. GNP at Constant Factor Cost	63,860	78,659	83,467
17. Per Capita Income GNP at Factor Cost (Tk.)	746	793	821

Source : Statistical Yearbook of Bangladesh, 1980 ; 1990.

received by the various factors of production are added we obtain the GDP at factor cost. GDP at market prices equals GDP at factor cost plus indirect taxes net of subsidies. The National Accounts of Bangladesh are usually presented as GDP at factor costs.

When comparing GDP between years current prices are usually misleading because of the change in prices. Comparisons are more meaningful when all prices are reduced by the rate of inflation, so that the base year is the same. As may be seen in Table 19.1, the GDP figures for the three different years have been brought on the same footing by deflating them by the proportion of money inflation since 1972-73. This brings out the real difference between the amounts in different years.

GDP at constant factor cost rose by 3.96% compound rate per year between 1980 and 1985 and then registered a sudden rise by 6.11% in one year. Since weather is still the single most important factor in determining economic performance such sharp changes are not uncommon. In 1984-85, the rise in per capita income was only 0.4%, whereas in 1980-81 it was 4.8%. Any analysis of the economy must, therefore, consider ten to fifteen year trends, rather than short term (up to five years) changes.

It may be noted from Table 19.2 that the following changes are discernible in this six-year period: (a) the share of agriculture has fallen below 50% (in 1971-72, it was over 65%); (b) there has been a big rise in expenditures on Public Administration and Defence; (c) the share of Construction has risen rapidly; (d) the performance of the Industry sector has been disappointing. These changes are partly due to the priorities of the Government of the period, and partly due to structural changes. The fall in the share of the Agriculture Sector and the rise in Services Sector may signal a long-term trend.

Increasing attention is being paid to regional growth because it has been observed that some areas are progressing satisfactorily but most areas are lagging far behind. With the continued growth of Dhaka Metropolitan area, other cities and regions have been deprived of resources. This is readily noticeable when one travels from Dhaka to any of the other cities. However, immigration into Dhaka is so heavy that per capita income has risen less in Dhaka Statistical region (former district) than in any other region (Table 19.3). In the period 1980-85, per capita GNP rose faster than the national average in 11 of the 20 statistical regions. Fastest growth was registered by Kushtia, Jessore, Bogra, Chittagong, Dinajpur and Jamalpur and the slowest growth was in Dhaka, Chittagong, Barisal, Sylhet and Noakhali regions. Since Chittagong and Dhaka had well above national average per-capita

Table 19.2

GDP Constant (1984-85) Price

(in million Taka)

Sector	1985-86	1987-88	1988-89
1. Agriculture :	175,549	174,901	173,037
i) Crops	139,599	137,119	134,509
ii) Forestry	11,413	12,038	12,309
iii) Livestock	12,131	12,922	13,348
iv) Fisheries	12,496	12,822	12,871
2. Mining and Quarrying	3	2	3
3. Industry :	41,156	44,682	45,927
i) Large scale	22,088	25,263	25,945
ii) Small scale	19,068	19,419	19,982
4. Construction	22,908	24,469	28,816
5. Power, Gas, Water & Sanitary Services	2,642	3,743	4,822
6. Transport, Storage & Communication	47,115	54,293	56,611
7. Trade Services	39,389	41,675	43,663
8. Housing Services	33,435	35,645	36,811
9. Public Admin & Defence	15,944	18,553	19,839
10. Banking & Insurance	8,700	9,312	9,417
11. Professional & Misc. Services	37,752	44,854	47,657
12. GDP at Constant Market Prices	424,593	455,135	466,603
13. Indirect Tax Net of Subsidies (—)	23,196	24,958	26,667
14. GDP at Constant Factor Cost	401,397	430,177	439,936
15. Net Factor Income from Abroad (+)	10,842	15,616	15,978
16. GNP at Constant Factor Cost	412,239	445,793	455,914
17. Per Capita Income GNP at Factor Cost (Tk.)	383,108	414,343	422,946
18. Annual rise of GNP at Constant Factor Cost (Tk.)	4.69	3.57	2.27
19. National Income Deflator	109.81	131.20	141.36

Source : Statistical Yearbook of Bangladesh, 1989 P.503

GNP in 1979-80, they remained well above the national average in 1984-85 despite their slow growth. However, if this trend continues they may fall below the national average by 1990. In absolute terms, only five of the twenty regions had per-capita GNP above the national average in 1984-85. It should be noted that the figure for the Hill Tracts region is misleading because half of the GDP of that region is from forestry, very little of which benefits the local people. If transfers of income are properly accounted for, then the per capita income of the Hill Tracts people will probably be less than the national average. Certainly most of the jhum cultivators have a very low income level. Estimates of National Income by BBS and the Planning Commission have differed. A Committee set up in 1988 has reconciled their differences, and produced a new set of estimates with 1984-85 as the base year. The new estimates are given in Table 19.3 below. Unfortunately, BBS has not yet published estimates for earlier years with the new base.

In order to reduce the regional imbalance, and to raise the income of the whole country, less developed countries have usually resorted to fully or partially planned economics. Planning for economic development has become a discipline by itself. It started as the brainchild of the economists but with growing environmental problems, geographers are being increasingly consulted. Economic development after all deals with the modification of human and physical resources, which are the concern of the geographer. Sophisticated economic planning requires input-output tables to show production and consumption dependence. The geographer is concerned with similar inter-relationships, but on a much larger scale, and involving natural phenomena, social environment and economic factors. Much of this cannot be quantified but can be evaluated subjectively. There is nothing inherently wrong in subjective judgements, since development planning itself is a political decision. Geographers need not involve themselves in the politics of the decision-making process but they can present the pros and cons to the decision-makers.

The poor economic performance of the developing countries is a major reason for the poor quality of life of the majority of their citizens. There are various indices to show what has been called the Quality of Life : mortality rate, life expectancy, general health, food consumption, nutrition, per capita income etc. By any set of criteria, the quality of life is indeed very poor for the vast majority in Bangladesh. Infant mortality rate and the crude death rate are three times higher than in most developed countries. Life expectancy at birth is 55 years as against 70 plus in most developed countries. There is one medical practitioner for every 6,600 persons and one hospital bed for every 3,300 persons. Figures for developed countries are one-fifth of these. Calorie intake is four-fifths of the estimated requirement of 2,300 calories per day and there are

Table 19.3

Per-capita Gross Regional Product at Current Factor Cost.

Region (Former District)	(in Taka)			
	1979-80	1983-84	1984-85	1987-88
Chittagong	3234	5107	5737	8784
Chittagong Hill Tract	8268	14323	15618	20248
Comilla	1919	3122	3619	4148
Noakhali	1959	2995	3491	4224
Sylhet	2229	3576	3959	4662
Dhaka	2397	3628	4071	5481
Faridpur	1753	2816	3379	4495
Jamalpur	1809	2930	3606	5369
Mymensingh	1981	3062	3687	4626
Tangail	2016	3433	3703	5071
Barisal	1959	2889	3338	5344
Jessore	1765	2920	3599	5041
Khulna	2404	3881	4730	6269
Kushtia	1713	2813	3692	4928
Patuakhali	2069	3377	3874	6427
Bogra	1932	3333	3924	4711
Dinajpur	2074	3249	4152	6081
Pabna	1757	2839	3280	3700
Rajshahi	1852	2897	3379	4090
Rangpur	2052	3092	3855	4429
BANGLADESH	2139	3420	4002	5249

Source : BBS

severe deficiencies in protein and vitamin intake. Despite the many disadvantages of the concept of per capita income, it does very often reflect the average level of the quality of life. With a per capita annual income, in 1989-90, of about US \$170, the people of Bangladesh are among the very poorest in the world.

The task of planning for the economic development of Bangladesh is very formidable. It is a relatively small country with an exceedingly high population and few natural resources. The one great resource is the human population itself which is not a burden and can be converted into a vast resource. In the absence of empty lands and large mineral deposits there is indeed no other way to further development. Till recently, education was considered a non-developmental expenditure, but gradually it is being realised that education improves the general level of human effectiveness. Not the type of education that aims at the mass production of Arts Faculty graduates but education that is oriented to science and technical training. There is still considerable scope for agricultural improvement but even creating an awareness or the realisation of that will involve a considerable amount of technical training.

A final word while on the subject of human resource development. It is truly heartening to see how rapidly the "silent fifty percent" of the national human resource base - the female population - is finding a new, different and more positive role in national development activities. Significantly larger number of women are enrolling themselves for higher education in science, engineering and business studies. Their recruitment in the various government services and corporations has brought in a group of enthusiastic workers who are eager learners. Women have started to, slowly but surely, break many of the traditional social taboos. They own and manage a variety of business organisations - from professional bodies, bakeries and retail clothing stores to pharmaceutical manufacturing units and clearing / shipping offices. This change is not limited to the urban areas alone. Thanks to the widespread rural development activities of the private voluntary organisations (or NGOs as they are commonly known) and some government programs, women in rural Bangladesh too are setting up and managing wholesale and retail shops in village market places in increasing numbers. Such participation in national industrial and commercial activities is a positive signal for future economic development.

Agricultural development cannot go on in isolation, and anyway, with the growth in population, there will be increasing numbers who cannot be absorbed in the agriculture sector. In a country with a great variety of resources, such as China, economic development need not depend heavily on foreign trade. In countries like Bangladesh,

Table 19.4
Sectoral Share of Gross Domestic Products of
Bangladesh at Constant Price.

Sector	Base : 1972-73		Base : 1984-85	
	1979-80	1980-81	1984-85	1987-88
1. Agriculture	49.5	48.7	41.7	38.7
i) Crops	38.9	38.6	33.2	30.5
ii) Forestry	2.4	2.4	2.7	2.5
iii) Livestock	5.1	4.8	2.9	2.9
iv) Fisheries	3.1	2.9	3.0	2.9
2. Mining & Quarrying	0.006	0.001	0.001	0.001
3. Industry	10.8	10.6	9.9	9.9
i) Large scale	6.1	6.1	5.2	5.5
ii) Small scale	4.7	4.5	4.6	4.3
4. Construction	3.7	4.0	5.5	6.1
5. Power, Gas, Water & Sanitary Services	0.3	0.3	0.6	0.6
6. Transport, Storage & Communication	7.0	6.8	10.5	11.2
7. Trade Services	10.1	9.6	9.2	8.9
8. Housing Services	7.7	7.4	8.0	7.9
9. Public Admin. & Defence	2.3	3.8	4.3	4.3
10. Banking and Insurance	1.7	1.9	1.7	2.1
11. Professional and Miscellaneous	6.9	6.9	8.6	10.0
12. GDP at Constant Market Price	100.0	100.0	100.0	100.0

Source : BBS

economic growth will have to depend to a great extent on international trade. It is a precarious mode of development, but one that has to be accepted. The exchange of goods need not be further than the adjacent Indian states, for eastern India contains most of the physical resources necessary for an industrialized state.

—The pace of development will however depend on that of the economic status of the Indian states of West Bengal, Assam, Meghalaya and Tripura. If Bangladesh and these adjacent parts of India do not industrialize at a similar pace, the growth of manufacturing and related services will, perforce, slow down. The other alternative is to industrialize on the basis of closer economic cooperation within the South Asian Association for Regional Co-operation (SAARC) and with the rapidly industrialising countries of South East Asia. The SAARC, which was largely conceived and vigorously propagated by President Ziaur Rahman, if nurtured will be beneficial for the whole region. Much depends, of course, on the attitude of India who, as the largest member of this Association, has to play a more active role to make the group function more effectively for regional development. However, in order to do so, India has first to allay the natural fears of its much smaller neighbours that their economic and social structures will not be adversely affected because of their participation in this regional development program. The agriculture sector of Bangladesh has shown that it is capable of rapid growth and that the limitation to growth is the lack of purchasing power with the general mass of the people. The industrial sector has, however, been stagnant since 1982-83. Unless the industrial sector grows much more rapidly, bringing about real structural change, the agriculture sector, and indeed the entire economy, will stagnate due to the lack of purchasing power.

It may be seen from Table 19-4 that economic growth between 1979-80 and 1987-88 has brought about a slight structural change, but not in the sectors where growth can be sustained. The highest growth in this period was in public administration and defence sector. Some growth was also recorded by power, gas, construction, professional and miscellaneous service sectors. It is somewhat unusual that amongst these the highest growth was in religious services sector. Because of the growth of various service sectors, and the slowing down of growth in boro and wheat production, the share of the agriculture sector has declined. The fall in the sectoral share of the industry sector is, however, worrisome because it shows that real structural change is not taking place. This has led to the stagnation of the economy in the late 1980's.

—The development planners are often so involved with the 'nuts and bolts' of preparing projects and programmes that they lose sight of the end-product. If the economy of Bangladesh is not to stagnate at the

end of the agricultural development period, then there has to be massive progress in technical education and training, simultaneously with agricultural development. Orientation of education towards scientific disciplines and widespread training with mechanical instruments and appliances can radically change the manner in which problems are faced and solved. A skilled and innovative labour force may be a thing of the future but the direction taken today will, to a large extent, determine the destination of tomorrow. The alternative to stagnation is radical reorientation.

It may be difficult today to visualize rapid industrialization in Bangladesh but in the long run there seems to be no acceptable alternative. Industrialization does not necessarily mean the production of basic chemicals and metals. It can mean fabrication, or the production of parts, in all cases relying on items that are labor-intensive. Improvement of communications, management and marketing techniques, and of salesmanship are important ingredients in an economy based on the skills of its labour force. As a catalyst to such a industrialisation program, it would be necessary to enact, and rigorously enforce, appropriate legislation for financial discipline, harmonious industrial relations and to protect the sanctity of all forms of contracts. Without these structures firmly in place, the necessary institutional framework for industrialisation cannot be built or sustained. The immediate orientation of the economy must, of necessity, be based on geographical realities. It is only later, when considerable use has been made of the given environment, that Bangladesh will be ready to radically alter the potential of its human and physical geography.

Environmental Issues

The Environment has always been the subject of the geographers interest. Over the past two decades it has caught the interest of the world because of the alarming damage to the ozone layer and the unsustainable development path charted by acid rain, *waldsterben* and the threat of Chernobyl-like nuclear fallout. Bangladesh has to create development opportunities which can be sustained without adversely affecting the environment for future generations.

The world is full of examples of interventions which have adversely affected the environment and thereby the quality of life. We, in Bangladesh have realized that we too, are making similar mistakes by following a development path charted by other countries who now realize the folly of pursuing the goal of an ever-increasing material standard of living, but losing the essential elements that improve the quality of life. Development of the material resources of Bangladesh is essential for improving income levels, but this will not be pursued without heed to immediate or long-term environmental needs. In some cases the adverse effects are immediate, such as on drinking water supply and this, of course, vitiates the effect of any other improvement. In some other cases, the effect is not readily apparent but causes slow degradation which will affect future generations. We must guard against that also. All development efforts which are not sustainable in the long run because of environmental deterioration, caused by that very effort, must be regarded as undesirable from the point of view of future generations. It is our sacred duty not only to safeguard, but also improve, the environment for those who will come after us.

Worldwide concern for the environment began nearly three decades ago and led to the Stockholm Conference on the Environment in 1972. Since then the evidence for a constantly degrading world environment has been accumulating. It has led to a series of seminars, workshops and conferences on forest depletion, increase of carbon-dioxide, depletion of the ozone layer, violent fluctuation in the weather pattern leading to severe floods and droughts and the acceleration of desertification. The General Assembly of the United Nations has taken due cognizance of these alarming changes. The report of the World Commission on

Environment and Development (popularly known as the Brundtland Report) and the report on "Environment Perspective to the Year 2000 and Beyond", will lead further to the United Nations Conference on Environment and Development (UNCED) to be held in Brazil in 1992. Global climatic oscillations and the degradation of the watershed areas in the Himalayas have affected Bangladesh adversely. We as a nation are acutely aware that any rise of sea level, due to the Greenhouse Effect, could bring misery and deprivation to more people in Bangladesh than anywhere else in the world. Of all countries of the world, our aggregate loss will be the highest in human terms.

The signs of environmental degradation and the depletion of the natural resource base in the whole of South Asia, are very clear. They were brought to the notice of the world during the successive major floods that hit most of Bangladesh in 1987 and again in 1988. Bangladesh suffers not only from floods but also from droughts, soil degradation, deforestation, unplanned urbanization and industrialization, depletion of water resources and forest cover and even from signs of increasing aridity which could lead to desertification. The tremendous growth of population over the past three decades has put an almost unbearable pressure on the natural resource base. This situation has been aggravated by the lack of a multidisciplinary approach to problem-solving. As a result, investments have been made both in the Private and the Public Sector which have led to environmental degradation. The lack of comprehensive environmental laws and institutional inadequacies are two major reasons why it has not been possible to halt and reverse the process of degradation. There is a great need to promulgate environmental laws to reduce pollution and also to safeguard natural resources, with the intention of achieving sustainable development.

In order to safeguard the environment, it is essential that the *People have the Legal Right to Know* – a right which is enforceable (similar to the Freedom of Information Act in the USA) – both the risks and the benefits of public and private sector development efforts. Projects to improve the environment cannot make their full beneficial effect felt without the willing cooperation of the People. A cognate element of Environmental improvement is that, in order to realize the full potential of the Strategy for Sustainable Development, it is imperative that greater attention be given to the alleviation of poverty. No action for the environment can be a practicable proposition as long as the vast mass of the people remain illiterate and in abject poverty. It must, however, be clearly understood that it is the greed of the rich and not the poverty of the poor which is mainly responsible for unsustainable use.

There are atleast twenty resource subject areas of concern for the geographers, which are briefly touched upon in this chapter to acquaint the reader with the wide range of problems affecting Bangladesh. On a spatial scale, thirty areas have been identified as of environmental concern (Map 20.1). They cover nearly 40 percent of the area of Bangladesh. This illustrates the seriousness of the issues mentioned below.

Education & Mass Awareness

Education on Environment and Mass Awareness are essential for achieving Sustainable Development. Environmental education is being imparted through the Secondary School syllabus but there is the need to train the teachers. The many-faceted aspects of the environment and the complexities of environmental management are only now being realized. At the level of development practitioners this means training on Environment Impact Assessment (EIA) and Environment Management (EM). In schools and colleges it means a revamped course on environment, supplemented by study tours, slide lectures and training courses. For the general public there should be mass awareness campaigns through all forms of media. This awareness is essential if the masses are to participate meaningfully in sustainable development.

Land

Land is the most scarce natural resource of Bangladesh, with the land / person ratio one of the lowest in the world. Land resource is generally not being utilized optimally and in many cases is being grossly misused. Measures should be taken to preserve existing land and enhance its quality and also to create new land in the delta. Hill cutting is reducing land available for productive agriculture and forestry and is also greatly increasing erosion. Watersheds are being ruined and streams and rivers are filling up with sediments. Land reclamation must be a major undertaking given the extremely high population pressure on land resources. In view of the importance of land preservation and reclamation, it is very important that a National Land Use Plan be prepared on an urgent basis.

Water & Sanitation

Due to industrial and agricultural development many water sources have become polluted by chemicals, to the extent that in some places surface water bodies cannot be used for domestic purpose. Measurements made at some critical points have revealed that industrial effluent discharge often carries toxic waste loads which are from ten to one hundred times higher than the allowable limit. This has obviously caused harm to the health of people living along such rivers as the Sitalakhya, Bhairab and the Karnafuli. Water supplies have also been affected by irrigation based on groundwater, and in many areas now domestic water supply by handpumps or ponds is seriously affected for three or four months every year. Lack of domestic water supply obviously affects sanitation too. There is a dearth of sanitary facilities and fecal wastes are a major health hazard in the country.

Urbanization

Urbanization affects the environment both in the physical and the social spheres. The social consequences of inadequate shelter and basic amenities due to the growth of slums and urban decay have become a serious concern as a result of rapid urbanization. On the physical side, the spread of urban areas is rapidly depleting the stock of good horticultural and three-crop land, because they are above normal flood level. In the absence of a National Land Use Plan, the spread of extensive housing areas, mostly with one-storey residences, is an unaffordable luxury in a country with such a low Land / Person ratio. Urbanization can affect the ambient environmental situation through air and water pollution and increased noise, stress and crime. It can also affect the environment of the area surrounding the urban centres through deforestation, increased soil erosion, and particularly through changes in micro-climate.

Industrialization

Industrialization is essential for improving the economic well-being of the people of Bangladesh. It could however lead to wasteful use and rapid depletion of scarce natural resources ; pollution of air, water and soil and accumulation of hazardous wastes, if it is not properly designed and monitored. Bangladesh is not yet very industrialized, but if the discharge of toxic effluents is many times higher than the allowable limit, then the effect on the environment is similar to that of a

country which is industrialized. There are reports that in several areas river and other water sources have become polluted by industrial effluents. In other areas there is severe air pollution due to unchecked domestic, vehicular and industrial emissions. It is also of great concern that Bangladesh is the country which will suffer most from the rise of sea-level due to the greenhouse effect. Therefore reduction and possible elimination of the emission of "greenhouse" gases by industrial processes should be a main concern, both at home and abroad.

Energy

Bangladesh has one of the lowest per capita rates of energy consumption in the world. The vast and growing population has created an unsustainable pressure on the biomass resources. As a result forests have dwindled, tree cover in the villages has diminished and now even the crop stubble and the fallen leaves are taken away for fuel. This is impoverishing the soils, which could have drastic long-term effects. It is obvious that biomass production has to be increased and per capita domestic use of fuelwood has to be reduced. The large, clandestine, consumption of fuelwood by brickfields has also to be reduced, and piped Natural Gas and LPG has to be used more widely and efficiently.

Tree Cover

The keystone of Bangladesh's environmental protection plan would have to be protection and enhancement of tree cover. Trees provide biomass for fuel and industries, fruits for human consumption, fodder for animals, raw materials for medicinal purposes, timber for housing and furniture and roundwood for fencing and plywood. Tree also provide a protective cover which greatly reduces the eroding power of rain and wind. The canopy provides shade for plants and animals and reduces soil moisture evaporation. One of the most useful functions of trees is to absorb atmospheric carbon dioxide and release oxygen, thus enhancing the life-supporting biosphere.

For these and many other reasons, not the least of which is aesthetic appreciation, there should be a major effort to preserve what little tree cover there is, and to enhance it, in volume, in diversity and in quality. The village trees, for example, can produce more fruits than they do at present. Increasing the productivity of the horticultural trees, and of tree products from government land, should be two of the major objectives of an environment policy. Nothing will affect

commercial behaviour so strongly as the right price signals. Changes in fiscal policy which will reduce the incentive to deplete the forests and convert orchards into crop lands are very necessary.

Forests

Recent usage has extended the term "forest" to virtually all tree cover, and the village orchards and groves are often called 'village forests'. Best estimates are that, of the 1.558 million hectares of government forest land, there is tree cover on only 830,000 hectares. The total extent of the village "forests", including bamboo and banana clumps, is estimated at about 600,000 hectares. Trees on various categories of public land such as roads, embankments, khas land etc. probably do not total more than 40,000 hectares. Total tree and bamboo cover in Bangladesh is therefore approximately 1.5 million hectares, which is only 10 percent of the total area of the country. In Bangladesh tree cover is well below the environmentally desirable level. This situation can be radically changed by afforesting the denuded government forest land and increasing (and protecting) horticultural land through intensive promotional work, land use planning and fiscal measures.

One of the causes of the reduction of tree cover in forest areas is that, the demand from public sector industries is much greater than the allowable annual extraction. This has happened because earlier estimates of yield were on the high side. In order to meet necessary demand, there will have to be large-scale plantations and also substantial imports of necessary raw material on a regular basis. Another cause of the imbalance between demand and supply is that royalties charged by the Forest Department are well below market prices, which results in windfall profits for those fortunate enough to get extraction permits. This policy also encourages over-extraction.

Wildlife

Wildlife is part of the heritage of Bangladesh and of the world itself. Preservation of wildlife is not a luxury for an economically poor country because it enhances the natural wealth and enriches the human environment. Preservation of wildlife is part of the campaign to protect the natural biodiversity. This cannot be done by replacing natural forests by plantations. Wildlife and the natural habitat go together. This applies also to the wetlands, of which the ecologically important ones also need to be protected. Large number of migratory birds,

winter in Bangladesh, and they are a part of the international heritage. Conditions must be created to preserve their wintering grounds in the numerous haors, bils and rivers. Voluntary registered organisations, such as the Wildlife and Nature Conservations Society of Bangladesh, have to play a more active role on such issues but they need help from local and foreign donors and experts which is not always forthcoming.

Biological Diversity

The preservation of Biological Diversity is one of the major goals of the international effort to save the Biosphere from environmental degradation. It is now well recognized that preservation of the gene pool could have immense benefit for the future. Many plants could be used for medicinal purposes after further research and the possibilities of genetic engineering would be furthered by a wide diversity of plant and animal life. The need for biological diversity has increased with the spread of high-yielding crop varieties and livestock breeds, which has necessarily narrowed the genetic base. Bio-diversity in Bangladesh is seriously threatened by extensive deforestation and drying up of wetlands for winter rice cultivation.

Crop Agriculture

In the crop sub-sector of the Agriculture Sector, considerable progress has been made over the past two decades but success has brought in its train a number of serious problems. The two most important of these are soil deterioration and the narrowing of the cereal genetic base. The seriousness of both of these problems have been emphasized in several studies carried out by FAO. Use of imbalanced fertilizer dosage and continuous cropping with HYV rice has led to sulphur and zinc deficiencies over large tracts of the country. High extraction of nutrients from the soil is also leading to the shortage of other essential minerals, and more importantly, of organic content. As a result, average HYV yields are virtually stagnant over the past decade and are likely to decline in future. This is a serious problem considering that the country has to achieve food self-sufficiency soon and keep production in pace with future population growth. Whether this food production growth will be possible during the next decade is a matter for serious debate. Soil erosion is now a serious problem in the Madhupur Tract and in the hill regions in the east. It has come about through improper land use and denudation of watershed areas. The use of good topsoil for brick manufacture has now become a general practice, as a result of which there will be a decline in crop

productivity in many areas within this decade. Other problems of national concern are the indiscriminate use of pesticides, decreasing crop diversification and the shortage of draught power.

Yet another problem of growing environmental concern is the loss of good horticultural land to urban growth, industrialization and brick manufacture. Such land, above normal flood level, is at a premium and every effort must be made to save them.

Irrigation, Drainage & Flood Control

The normal hydrologic regime in Bangladesh has been altered considerably by the spread of both surface and ground-water irrigation, many drainage and flood control projects and newly developed rural roads and inter-district high ways. Map 20.2 indicates the areas affected by the devastating floods of 1988. Very little of the agricultural land used to be irrigated thirty years ago, now over one-third of the land receives some sort of irrigation. This has altered the environmental landscape, enabling many organisms, some not beneficial, to survive throughout the year and to multiply. It has also led to continuous cropping, with consequent loss of soil fertility, and has provided an unbroken chain of host plants for various pests and diseases. At the same time many wetlands, some of international significance as the refuge of wintering migratory birds, have been drained to increase the area of cereal cropping. This too has altered the environment by increasing evapotranspiration and drying out soils, reducing beneficial moisture in certain micro-climatic situations, reducing wildlife numbers, and eliminating the breeding ground of many small fishes which are the main source of protein for the poor people. It is to be hoped that the massive Flood Action Plan, which is being implemented, will examine all these issues, so that an environmentally enhancing and sustainable set of interventions are undertaken.

Fisheries

Bangladesh has the richest inland fisheries in the world. There are over 200 species of fish in inland waters, but now many of them are threatened or endangered. This rich diversity of fishes is dependent on 2.4 million hectares of permanent water bodies, including rivers. But the potential area of fisheries extends to 5.2 million hectares now threatened by poldered projects, the unregulated use of pesticides, and by uncontrolled pollution of water bodies by industries and

transport vessels. In the past two decades, the consumption of marine fishes and shrimps has increased dramatically, but now even this source is threatened by large-scale damage to fish larvae, overfishing and pollution of the coastal waters. The loss of fisheries has had a serious effect on the availability of protein, essential minerals and vitamins for the poor people. Tragically, large numbers of children in poor families become blind every year because of improper and inadequate diet. Small fishes, rich in phosphorus and calcium, are essential for malnourished children of poor families, but unfortunately these are the very fishes eliminated when areas are poldered and bils are drained to convert them into rice fields. Increasing fish production within the polders and from ponds owned by the richer people is no answer, since the poor are deprived of livelihood and their children are the first to suffer.

The loss of fisheries is obviously linked closely with the loss of wetlands, but the decline in the fish catch from inland sources is to a large extent due to the demand from a soaring population, which has pushed up prices and encouraged the catching of both immature fish and breeding fish. A dramatic example of this is the shift of the main ilish (*Hilsa ilisha*) fishing area from the lower Padma river southwards to the estuarine mouths of the Ilsha and Tetulia rivers. As a result a large proportion these anadromous fishes are caught well before they can spawn. This will have disastrous consequences for the future of the most important fishery of Bangladesh.

Food

The provision of adequate food for people at all income levels is one of the basic tenets of the planning policy of Bangladesh. Adequate food means not only sufficient quantity, but also a nutritionally balanced diet. The agriculture sector has traditionally pursued the target of producing enough cereal so that 16 ounces (454 grams) is available per person per day. Availability alone used to be equated with self-sufficiency. Now, affordability and distributional aspects must also come under consideration. The composition of the diet has been encouraged to be largely cereals because of massive market interventions. This in turn affects the environment because the drive for ever-increasing amounts of rice land and irrigation water has seriously reduced wetlands, choked the waterways and converted horticulture and diversified cropping land into paddy land for continuous rice cultivation. This is detrimental to the long-term viability of crop agriculture. Large-scale effort should be made to change the pattern of the diet towards more non-cereal crops, particularly

those derived from horticulture. The high and rapidly increasing population pressure indicates that unless dietary pattern changes it will not be possible to maintain domestic cereal self-sufficiency beyond the year 2000.

Coastal Dynamics

The resources of the coastal areas and the adjacent Economic Exploitation Zone (EEZ), if exploited in an environmentally compatible manner, could contribute significantly to economic growth. The coastal areas have fragile ecosystems and have to be developed carefully, on the basis of the synthesis of much data of a multi-disciplinary nature. All over the world mismanagement of the coastal ecosystems has led to ecological disasters. Economic development has to proceed carefully by first studying the coastal dynamics and then making interventions which are environmentally sustainable and compatible. The CARDMA sponsored *Workshop on Coastal Area Resource Development and Management* (October 1988) and *The International Conference on Greenhouse Effect and the Coastal Area of Bangladesh* (May, 1989) came up with a number of suggestions which should be taken up in earnest.

Global Climate Change

There is great concern in Bangladesh about the possible effects of global climate changes which are taking place. The most severe impact is expected from the anticipated rise in sea-level. Any rise in the sea-level will affect more people in Bangladesh than in any other country. The catastrophe will be slow at first but will then accelerate and, in forty years time, fully one-fourth of the country may be drowned by the rising oceans. It is widely acknowledged that the greenhouse effect is very largely due to the excessive releases of greenhouse gases primarily by the industrialized countries. It would be reasonable to expect the developed countries to assume the moral responsibility and to assist Bangladesh in meeting this grave challenge.

Bangladesh is also threatened by other environmental changes which have been causing an increase in the frequency and severity of floods. International action is required to mitigate the effect of these floods, and reduce atleast one of the causes, by large scale re-afforestation in the Himalayas, Bhutan and in south-east Tibet.

Explanatory Text For Map # 20.1**MAIN AREAS OF ENVIRONMENTAL CONCERN AND THEIR MAJOR PROBLEMS**

1. Mahanada Basin : Frequently flooded, also subject to droughts.
2. West-Central Barind : Being dessicated through improper land-use. Low water-table and poor soils affect crop agriculture.
3. Middle Karatoa flood-plain : Affected by drying-up of Karatoa river. Double-cropping of HYV Rice has led to severe Sulphur & Zinc deficiencies.
4. Brahmaputra-Jamuna floodplain : Entire stretch affected by Brahmaputra Right Bank embankment, which has been breached 4 out of the last 5 years. The main river may be shifting westwards. Large floating population in the char-lands. Sand-deposits after floods often ruin cultivable land.
5. Chalan Beel : One of the richest wetland areas of Bangladesh, now almost ruined by FCDI projects.
6. Atrai-Hurasagar : drainage basin Due to construction of illconceived embankments & regulators, drainage has been impeded and water-logging has become a serious problem.
7. South-west Jessore : This area is climatically subject to wide variations in rainfall and temperature. Due to reduced flow in the Ganges in the dry season freshwater flow has decreased and salinity has increased.
8. Northern Khulna : Large-scale shrimp farming has increased salinity, conflicts among farmers and has also reduced rice production.
9. Khulna City & Mongla town : Problem area due to industrial pollution, oil spills from ships and urban congestion.

10. **Sunderban :** Increased salinity, increasing discharge of ship oil, industrial chemicals etc. has led to the top-dying of several species of trees. There has also been overcutting of the forest for industrial use.
11. **Patuakhali-Bhola-Noakhali Char areas :** Waterlogging, salinity, diluvion. Excessive use of pesticide affecting human habitations.
12. **Garo Hills Piedmont :** Erosion, flash floods, loss of tree cover has led to decreasing agricultural productivity.
13. **Tangail :** Silting of rivers, increase in sudden flooding.
14. **Madhupur Tract :** Deforestation and improper use of sloping land has led to topsoil erosion.
15. **Sitalakhya River :** Industrial plants at Ghorashal, Palash and Demra discharge toxic chemicals into this river with loss of fisheries and creation of hazard for public health.
16. **Dhaka City :** Industrial pollution ; urban expansion is destroying Class I agricultural land and some of the best horticultural land in the country.
17. **Haor Basin :** Reduction in fish spawning areas.
18. **South Sylhet :** Affected by deforestation, flash floods, and soil erosion.
19. **Lalmai Range :** Deforestation, erosion, soil removal.
20. **Lower Meghna :** Affected by floods, erosion, stagnant productivity, loss of fisheries, population pressure.
21. **Central Noakhali :** Water logging in the wet season due to impeded drainage ; lack of irrigation water supply in dry season due to saline groundwater. Decreasing agricultural productivity, increasing population.

22. Sandwip : Thickly populated island being eroded rapidly. New land formations not consolidated. Frequently affected by cyclones and surges.
23. Sitakunda Range : Affected by deforestation, erosion, loss of productivity, major source of thatching grass and therefore urgently requires Land Use Planning.
24. Chittagong City & the Port : Industrial pollution, oil spills, cutting down of hills leading to increasing erosion and consequent silting of rivers.
25. Chandraghona : Industrial units discharge large quantities of chemicals into Karnafuli river, destroying fisheries and posing health hazard.
26. Hill Tracts : Slash & burn cultivation (jhum) and improper use of hill slopes by immigrants has greatly increased erosion and flooding of valleys, with consequent loss of productivity. Serious decline in tree-cover.
27. Chakaria Sunderban : A forest area totally destroyed for use as shrimp farms. Now yields are declining and soils are becoming highly acid.
28. Chittagong Coast-Kutubdia Island : Severe bank erosion, loss of land, increase in salinity.
29. Cox's Bazar : Tropical moist forests with unique biodiversity being destroyed through clear-felling & planting operations, unchecked encroachment and illicit felling of trees.
30. Jinjira Island & Reef : (St. Martins Island) Coral reef being destroyed through over-exploitation of corals and molluscs.

Map. 20.2

