

Country Profile of Bangladesh

Bangladesh is located between 20°34' to 26 °38' North latitude and 88°01' to 92°42' East longitude with an area of 147,570 sq. km. (BBS, 1999) and a population of about 128.0 million (Author's estimation). India surrounds the country in three sides (i.e., West, North and East), sharing some 3715.18 kilometers of common border. It should be noted here that this is about 93% of Bangladesh's entire land borderlines. The other neighbour being Myanmar, sharing mountainous border in the south-east. The Bay of Bengal lies to the south of Bangladesh. The coastal zone of Bangladesh consists of about 710 km coastline, the largest patch of natural mangrove forest shared with India, and a long sea beach along the south-east.

Three major types of landscapes are found in Bangladesh: floodplains (80%), terraces (8%), and hills (12%). Excepting the eastern hilly region, almost all of the country lies in the active delta of three of the world's major rivers i.e., the Brahmaputra, the Ganges and the Meghna (GBM). The water ecosystem of the country comprises the tributaries and distributaries of these major rivers and numerous perennial and seasonal wetlands like haors, baors and beels. Figure 1 presents the map of Bangladesh showing the major river systems. The floodplains of Bangladesh comprise only about 7% of the total area of the GBM catchment, but it discharge about 92% of the flow generated by the GBM system. The ironic fact is that over 80% of the 1350 billion cubic meters of rainfall runoff occur in the entire GBM catchment within five months (June to October) during monsoon, while in the dry period the country suffers from severe moisture stress due to negligible rainfall.

Most of the land area is being used for agriculture, forest and settlement. Very small fraction of the land area is being used to meet industrial and other miscellaneous social and administrative needs. In recent years, however, there is a growing tendency of changing land use from agricultural to other lands, especially to meet the increasing demands for industrial and urban areas. As a result, more and more agricultural lands are being transformed into other lands. The arable area constitutes 7.67 million hectares (out of 14.74 million hectares), which is about half of the total area, declined rapidly from 8.74 Mha in 1990. There are three cropping seasons which approximately coincide with the three meteorological seasons: Kharif I (pre-monsoon), Kharif II (monsoon), and Rabi (winter or dry). Aus, Aman and Boro are the three paddy varieties grown respectively in those three cropping seasons. Wheat, potato, jute, sugarcane, oilseeds and spices are other important crops grown. The country has a big livestock population, constituted by some 23 million bovine animals, but of very poor quality. Since 6.7% of the landmass consists of rivers and water bodies the country enjoys inland-fresh-water-and marine-fisheries-resources, both having a rich fish biodiversity. However, due to increased pollution in water bodies combined with shrinking wetland areas the fisheries resources have deteriorated significantly over the past two decades.

The large size of population is arguably the most critical problem of the country. With a size similar to that of Delaware, Bangladesh's total population is about half of the US population. About 50% of this population are below reproductive age (i.e., 15 years) meaning that it has a high growth potential. During the past two decades, however, Bangladesh successfully retarded its population growth rate and brought it down from some 3.0% to about 1.67%. Remarkable achievements have also been made in terms of decreasing child mortality rates and increasing life expectancy. Despite such success stories Bangladesh remains the most densely populated country. Apart from a few city-states, her population density (over 850 persons per square kilometers) is considered as the most in the world. Its population, however, are dispersed evenly across the country except for the hilly south-eastern districts. The growing pressure of increasing population added to the stress on natural resources including land and water.

Owing to fertile land, agriculture remained as the major occupation for over 60% of the population for centuries. Over 50% of the agricultural workers do not own any land and get paltry return only to maintain subsistence. Open water fishing is one of the major earning source for a significant proportion of population, especially in monsoon months. The industrial base of the country has remained in its nascent state despite incentives offered by the government. Although investment rates as a share of GDP improved steadily from 15% in 1981 to about 21% by 1995, the per capita GDP is still below US\$ 400.

During the past three decades all the development efforts of Bangladesh was aimed at lifting the economy out of abject poverty. The country has followed the course of planned development since 1973 through its first Five Year Plan. This was followed by a Two Years Plan (1978-80) in the background of world-wide inflation and uncertainties and three other Five Year Plans were followed during 1980 and 2000. Every plan, including the recently adopted Fifth Five Year Plan (1997-2002) targeted at an average annual growth rate of around 5 percent but achieved an average growth rate of about 4 percent. Despite a large inflow of foreign assistance to augment domestic resources, the planned effort for development has not been able to free the economy from the low growth trap.

The human dimensions of overall development for Bangladesh are not appreciable, although some achievements have been made during the past decade in terms of spreading basic education, providing immunisation and sanitation services, enhancing health care facility and decreasing child mortality rates etc. Autocratic rules, rampant corruption, inefficient administration – all these vices worked against the development thrust of the common people of Bangladesh.

The following table gives some of the national statistics of Bangladesh for 1995.

Table-1 : National statistics on Bangladesh

Indicators	1981	1991	1995
Population (million)	89.9	111.45	119.8
Land Area (square kilometres)	144,000	147,570	147,570
-- Urban (percentage)	N/A	N/A	N/A
-- Forest (percentage)	15.00	12.80	12.74
-- Agricultural (percentage)	60.52	55.08	52.06
-- Cultivable Wasteland (percentage)	1.62	3.93	4.28
-- Current Fallow (percentage)	3.39	6.49	2.68
-- Other			
GDP (1995 US\$ in million) in 1989-90 constant price		26500	32060
-- Industrial GDP (percentage)		22.14	24.18
-- Services GDP (percentage)		49.45	50.98
-- Agriculture GDP (percentage)		28.13	24.83
GDP per capita (1995 US\$)		241	336
PPP per capita of GNP (Int'l 1995 US\$) *			1380
Urban Population as percentage of Total Population	15.20	17.20	22.00
Livestock Population (Bovine) in million		22.5	
Population in below poverty level (%)	73%	47%	45.8%
Life Expectancy at Birth (years)	55	56	58
Literacy Rate	29.2	38.8	43.2

Source: World Bank, 1997

Bangladesh' per capita energy consumption is very low, the lowest within the Indian sub-continent. The 1996 energy consumption value stands at 197 kgOE, compared to 476 kgOE for India, 446 kgOE for Pakistan, and 371 kgOE for Sri Lanka (WB 1999/2000).

Approximately 60~65% of total energy demand of the country is supplied by indigenous biomass based fuels. Agricultural residues, animal dung and fuelwood are the most important biomass fuels. Although there is no reliable data in relation to sustainable supply of biomass fuel and their consumption, there are reports claiming that the quality of the productive resources is degrading gradually due to overexploitation. Since almost two-thirds of the energy demand is met by such indigenous traditional sources, it is obvious that these directly help the majority poor rural households to maintain their energy security throughout the year.

The country is endowed with a fairly large reserve of natural gas, a recent estimate claiming that the recoverable reserve could be as high as 31 TCF. The current rate of consumption of natural gas, mainly as a source of energy and raw material for fertiliser, is about a quarter TCF (0.248 TCF in 1999) per annum which equates to about 1.938 MCF/person/year (Islam, 2000). Despite having a good reserve of natural gas, only 3 to 4% of the households have connection of natural gas for cooking purposes. Only about 2~3% households use kerosene for the same purpose and the rest (over 90%) depend on traditional biomass sources. Table 2 provides information on known and exploitable primary indigenous energy resources of Bangladesh.

Table-2: Known and Exploitable Indigenous Primary Energy Resources

Resource (Location)	Specific location	Net recoverable reserve	Production/Supply		Comments
			Present	Projected	
Coal (West Zone)	Barapukuria	70 million tonnes	0	1 million tons/year	Reserve 300 million tonnes in place
Crude oil (East Zone)	Haripur	5.5 million barrels ^φ	16.4 tonnes/day ^φ	Not yet ascertained	Appraisal of the field needed
Natural gas* (East Zone)	17 Gas fields	10.44 TCF ^φ	558 MMCFD ^φ	1000 MMCFD by 2000	Reserve life time up to 2020
Natural gas - liquid* (East Zone)	Producing gas fields	53.5 million barrels ^φ	137 tonnes/day ^φ	479 tonnes/day	After commissioning of Kailashtila & Beanibazar fields
Hydropower (East Zone)	Kaptai	N/A	1000 GWh/year	1000 GWh/year	Only Kaptai site being exploited

Notes: * Values will change based on very recent developments (as of January 2001). ^φ Values represent June 1993 data, as present in National Energy Policy 1996.

In addition to natural gas, the estimated consumption of different type of petroleum products in 1999 was about 3.3 million tons, all imported from abroad. About 0.5 million tons of coal was also imported and consumed, mainly for brick burning. In 1999 total consumption of electricity was 11,352.3 GWh, some 90kWh on per capita basis. In 1999 the total installed electricity generation capacity was 3603 MW, although the maximum daily generation could not surpass 2700 MW. Only an insignificant fraction of generated electricity is generated from petroleum products, the rest is generated from natural gas. It is reported that in 1999 only about 14~15% of households enjoyed electricity connections, but the quality of energy service being extremely poor, especially in the rural areas.

The country use to harness hydropower from one power plant, located in Kaptai. Although the total potential of the resource is about 1000 GWh/year only a part of it is actually being harnessed. The government is contemplating to enhance the capacity of the reservoir and the plant and to produce more power, the feasibility of the

enhancement project is underway. In addition, there are two other potential sites from where another 500GWh/annum of hydroelectricity can be produced. Given the locations, their respective hydro-geological set up, socio-economic, cultural, and environmental considerations, it seems highly unlikely that those potentials could be realised in near future.

Currently, the country does not have any coal mine operation, but a project is now taken to provide 1.0 million tonnes of coal per annum from the Barapukuria coal field. It is planned that 85% of its annual production will be utilised to produce electricity, the rest will be used as fuel for brick making and other purposes. The mining operations may continue up to 70 years from its inception. Bangladesh also has two other coal fields: 1000 million tons at Jamalganj and 450 million tons at Khalaspur. Early estimations suggest that it will not be techno-economically feasible to extract coal from Jamalganj reserve. The country has about 170 million tons of peat reserve in its southern regions. However, recoverable reserve is yet to be determined and the energy resources are not likely to be tapped in near future (Khan and Imaduddin, 1999).