Bangladesh (People's Republic of)

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Location and area

Bangladesh is a republic of southern Asia, in the northeastern portion of the Indian subcontinent, bordered on the west, north, and east by India, on the southeast by Myanmar (Burma), and on the south by the Bay of Bengal. The area of the country is 143,998 km^2.

Topography

Some 80% of Bangladesh is extremely flat and low-lying, comprising an alluvial plain cut by the river systems of the Ganges-Padma, the Brahmaputra-Jamuna, and the Meghna, that flow into the Bay of Bengal. The only hilly terrain is the Chittagong Hill Tracts in the southeast with Mowdok (1,003 m) as highest peak. Small, scattered hills lie along or near the eastern and northern borders with India.

Climate

About 80 per cent of the average annual rainfall (varying from 1,400 mm along the east-central border to more than 5,000 mm in the far north-east) occurs in the monsoon period (late May - mid-October). Temperatures are warm throughout the year, with relatively little variation from month to month.

Land use

With the exceptions of the Chittagong Hill Tracts, portions of the Madhupur Tract, and the Sundarbans (a great tidal mangrove swamp in the south-western corner of the country), few extensive forests remain in Bangladesh.
The overall density, 890 people per km^2 in 2001, is much higher than that of any other country in the world (except for microstates such as Singapore). More than 80% of the agricultural land is cultivated with rice (Microsoft Encarta Encyclopedia 2002).

Wetlands

Typically, at least one-half of the land is inundated annually, with one-tenth subject to severe flooding. Consequently, wetlands cover 70,000 - 80,000 km^2 (www.geoanalytics.com/bims/bg.htm).
Acccording to Gopal & Wetzel (1995), Bangladesh has 36,663 km^2 of aquatic habitats, including rivers (2,171 km^2), tributaries (2,626 km^2), beels and haors (1,148 km^2), oxbow lakes (55 km^2), seasonal floodplains (28,328 km^2), and Kaptan Lake (688 km^2).
According to Sarker (2000) Bangladesh has more than 69,615 km^2 of closed freshwater areas (haors, lakes, open water-like rivers, canals, streams, etc.) and 6,100 km^2 of brackish water and mangrove swamps areas.
Tanguar Haor (95 km^2) in Sunamganj District in the northeastern part of the country harbours some of the last vestiges of natural swamp forest and is totally flooded in the monsoon season (www.ramsar.org/archives_bulletin000808.htm).
The only extensive tract of forest remaining is the Sundarbans cf. Ismail 1990). The Sundarbans in Bangladesh and India are reported to have an area of 14,600 km^2 of freshwater

swamp forests (www.worldwildlife.org/wildworld/profiles/terrestrial/im/im0162_full.html) and 20,400 km² of mangroves (www.worldwildlife.org/wildworld/profiles/terrestrial/im/im1406_full.html). 10,000 ha of mangroves have already been lost (www.earthisland.org/map/mngec.htm#Status).

Peatlands

Already Medlicott & Blanford (1879, cited in Potonié 1907) refer to the presence of peat in the lowlands of the Ganges-delta (zie ook Früh & Schröter 1904: p. 143.)
Schneider (1958) describes large "peatland" areas from the coastal area of Bangladesh ("East-Pakistan").

Zaher (1962) referring to Khan (1957) mentions the presence of peat in the extensive swamps of the Fardipur District. Zaher (1962) describes the presence of 39 km^2 (15 square miles) of "peat fields" 5 km north of Kuhlna containing 8 million tonnes of dry peat. The peatfields are surrounded by the natural levees of several distributaries of the Ganges River. In the centre of the depression peat thicknesses ranges from 1.5 – 2.8 m. Average thickness is 1.5 m. The thickest peat deposits have no or less than 30 cm overburden of clay, whereas the overburden is larger where peat deposits are thinner. Large parts of the area are cultivated, low-lying areas are covered with swampy shrubs and herbs. Zaher (1962) notes that "the Kola Mouza forms only a part of a much larger peat field that extends northwards and eastwards. "
Tibbets (1969) mentions that peat was discovered only recently in Bangladesh ("East Pakistan") in the Delta formed by the Ganges and Bramaputra Rivers. The peat deposits vary from a few inches to about 3.5 m (12 ft) in thickness and occur under alluvial silt of "a few inches to many feet in depth". He estimates the volume on 2,000 Mtonnes on a dry basis.

Kivinen & Pakarinen (1980) estimate the peatland area (> 30 cm peat) in Bangladesh to be 3,000 km^2 with a peat thickness of 3-4 m. Kivinen & Pakarinen (1981) mention the presence of peatland in Bangladesh but present no estimates for its area.
Also Markov et al. (1988) estimate the area of „peat resources" in Bangladesh to be 3,000 km^2.
On the basis of Canadian/Irish and Dutch explorations (1958-1962) and further survey of the Bangladesh Mineral Exploration and Development Corporation (BMEDC), Bord na Mona (1985) and Shrier (1985) estimate the "peat" resp. "mire" area on 600 km^2 with an average peat thickness of 1.5 m in a range of 0.3m – 4m. Major peat deposits are found in the Ganges Delta with further limited deposits in the Sylhet Basin in the northeast. The Ganges deposits underlie a shallow layer (0.08 – 1.50 m) of alluvial silt and are regularly flooded by summer monsoon floods.

Andriesse (1988) uses the figure of 600 km^2 for the extent of organic soils, Schneider & Schneider (1990) and Pfadenhauer et al. (1993) for the extent of peatlands, whereas Rieley et al. (1996a) uses it for the extent of "peat swamps". Lappalainen & Żurek (1996b) use the same number of 600 km^2 for the recent "mire" area, of which 520 km² is situated in the centre of the Ganges river delta (Markow et al. 1988) with an (estimated) total of peat resources (1969) of 875 Mt.
According to Begum & Hossain (1987), peat in Bangladesh occurs mainly in the southwest region, where reserves of 33 Mt (dry weight) are present. The main deposits are found in the Khulna destrict („Kola Mouza": 39 km², 8 Mt) and in Faridpur („Chandra Beel" and „Baghia Beel", together 116 km² and 125 Mt of peat).
According to the interpreted World Soil Map (Van Engelen & Huting 2002) 5,195 km^2 of histosols exist in Bangladesh and 61,799 km^2 of gley soils.

Mire and peatland losses

All wetlands in Bangladesh are under great human pressure by agricultural expansion, irrigation, canalisation, drainage, embankment, roads and highways, and overfishing (Sarker 2000). Rahman et al. (2000) and Haque (2000) report that wetland („haors“) resources in Bangladesh have degraded in an alarming rate in the last century due to overexploitation resulting from alarming population increases. Freshwater “swamp” originally (before human influence) covered 14,260 km² against currently only 59 km². Mangroves originally covered 8,751 km² against currently 4,403 km² (www.geoanalytics.com/bims/bg.htm).

According to data of the Bangladesh Mineral Exploration and Development Corporation (BMEDC) from the beginning of the 1980s, 20% of the peat areas were virgin/untouched, 60% used for agriculture and horticulture, and 20% for pisciculture (Bord na Mona 1985). Lappalainen & Żurek (1996b) use the same percentages.
In the 1980s peat was extracted for fuel by local peoples, and the possibilities of large-scale peat extration for energy purposes was surveyed (Begum & Hossian 1987).
Annual peat extraction volumes amounted to 200.000 tonnes in the 1960s (2nd International Peat Congress 1963).

Still to be checked:
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