

four lands and forests of the CHT

Physical Geography and Climate

As its name suggests, the CHT is made up of small tracts of rugged and forested hills with sparse plain lands between. The phrase was coined by the British to distinguish the relatively low hills in Burma (Myanmar) and various parts of South Asia from the higher foothills and mountain ranges of the Himalayas. The hill ranges in the CHT, the Arakan Yoma in Burma/Myanmar, and the ranges within neighbouring parts of north-east India, are part of the chain of hills that are connected to the Himalayas.

The main hill ranges in the CHT criss-cross the region in a north-south direction with the rivers Karnaphuli, Chengi, Matamuhri, Sangu, and Feni and their respective tributaries, and the narrow valleys that contain the sparse flatlands and lowlands of the region, lying between them. The main ranges are around 300 metres above sea level (masl). The highest peaks are concentrated in the north-eastern and south-eastern frontier areas and rise to 1,230m (at Keokradang in the south). The rest of the CHT rarely exceeds 60 masl (Ishaq 1975, pp 1-4). An estimated 80% of the CHT is regarded as hilly or mountainous, with steep slopes. It is relatively young, at about 25 million years old (ADB 2001b, p 6).

Describing the general aspects of the region, a British district officer wrote that the CHT was composed of,

“...a tangled mass of hill, ravine and cliff covered with dense trees, bush and creeper jungle. The intervals between the smaller hill ranges are filled with a mass of jungle, low hills, small water-courses, and swamps of all sizes and description, and these are so erratic in their configuration as to render any uniform description impossible.... Of wild barren scenery the district possesses little or none; but from the summits of the main ranges the view of the apparently boundless sea of forest is grand in the extreme. Viewed from these points, the lower jungle almost assumes the appearance of level green plains, while in reality it is one of the most difficult countries to pass through that can be imagined.” (Ishaq 1975, p1)

Climate

The general climate of the region resembles that of the neighbouring plains, but with some important differences. The highlands are mostly situated above the ‘fog belt’ so the air is drier in winter (December to February) and hotter at the height of summer

(May to August) than in the plains. The winter temperature seldom drops below 15°C, the summer temperature seldom goes above 35°C. Even so there are more extremes of temperature within the CHT than anywhere else in the country, even within the span of one day. The forested areas on the lower hills are generally cooler than other areas of Bangladesh, especially during the winter and the rainy seasons (July to August). Finally, the CHT records some of the highest rainfall in the country. Table 3 shows the average monthly and annual rainfall in Rangamati and Kaptai, both in Rangamati District, over the period 1960-1980, and Table 4 the temperature and evaporation rates in 1990.

Table 3: Average Monthly and Annual Rainfall in mm in Rangamati & Kaptai (1960 - 1980)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Average
Rangamati	3	13	33	79	235	481	618	328	282	176	35	22	2,305
Kaptai	5	19	23	111	264	624	713	432	354	253	66	25	2,889

Source: Meteorological Department (1991), as cited in ADG (2001b, p 9).

Table 4: Monthly Maximum and Minimum Temperatures and Average Evaporation, Rangamati and Kaptai in 1990

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
T Max	28	32	35	36	32	31	31	31	32	32	30	27
T Min	13	16	20	25	25	25	25	25	24	24	19	15
Evaporation mm	3.7	4.3	4.7	4.7	2.9	1.8	1.6	1.8	2.6	2.7	2.6	2.7

Source: Meteorological Department (1991), as cited in ADG (2001b, p 9).

Lands Other Than Forests

There is both privately owned and public land in the CHT. Private land includes land registered in the names of individuals for homesteads, orchards, and tree plantations; for plough cultivation; and for commercial plots in towns and market centres. Land used for intensive irrigation-oriented agriculture is generally known as 'ploughland', except for that which is submerged for part of the year by the Karnaphuli reservoir (Kaptai Lake), which is known as 'fringeland'. Ploughland is categorised as Class 1 land in the revenue records and is taxed accordingly. In comparison to the rest of the country, the percentage of cultivable land within the region is extremely low (Table 5).

Other land – usually hillside and sloping land – is generally known as 'groveland'. The groveland suitable for relatively intensive cultivation through terracing is known as 'bumpyland' and is categorised as Class 2 land, while relatively steep groveland is categorised as Class 3 land. There are no official estimates of the area of land under horticulture and swidden (jhum) cultivation.

Privately held land may be freehold, with rights in perpetuity; or leasehold, denoting rights over a specified period of years. Many inhabitants (both indigenous and non-indigenous) of the less remote rural areas hold freehold land except in the case of fringeland, which is usually held leasehold. Few farmers hold ploughland, fringeland,



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Privately owned paddy field with village common forest (bamboo brake) in the background

or groveland of more than 5 to 10 acres (2.5-4.5 ha). The vast majority of the indigenous people still do not own registered land. The leasehold plots for industrial and commercial use

(such as for rubber plantations) covering areas from 50 to 100 acres (20.5-40.5 ha) or more are held mostly by non-resident individuals and companies based in cities outside the CHT.

There is little privately held land in the highland areas that lie far from urban and market centres (bazars). In these areas, most of the inhabitants depend upon 'jhum' cultivation as a primary occupation. The swidden and forested land is administered in accordance with customary laws regulated by the headmen and their subordinate village chiefs or elders known as 'karbaries'.⁵ Most of this land is not conducive to intensive (irrigation-oriented) agriculture because of the relative infertility of the soil, the steep slopes, and the lack of water supply. Similarly, because such land is remote from market and urban areas, it cannot be used profitably for market-oriented cultivation such as horticulture, or tree and bamboo plantations.

Table 5: Agriculture Land Use: CHT and Bangladesh 1990-91

	CHT	%	Bangladesh	%
Total Land sq.km	13,295	100	147,570	100
Cultivable Land (1 crop) ha	57,900	4.4	3,294,300	22.2
Cultivable Land (2 crops) ha	22,700	1.7	3,898,900	26.3
Cultivable Land (3 crops) ha	6,100	0.5	981,000	6.6

Source: Sultanzwari (1995), for Rangamati, and data from the Bangladesh Bureau of Statistics (1992), Table 4.7

⁵ A 'karbari' is the village head and is mainly responsible for settling disputes

In a wider sense, public land is all the land not registered in the name of any individual or corporate body. Land administration authorities treat these lands as belonging to the state, which the district collectorate may lease to private owners. In the plains districts, these are usually recorded in the register under Landholding ('khatian') No. 1, denoting ownership by the state. However, much of this khas land may include the forest and swidden commons of indigenous villagers, including 'mauza reserves' (village common forests outside of the reserved forests) administered and protected by headmen in accordance with the CHT Regulations of 1900⁶.



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Ploughed field with village common forest (VCF) in the background

CHT land has also been categorised according to soil variety (Table 6). A team of soil scientists employed by a Canadian company called Forestal surveyed the CHT land between 1964 and 1966. It divided CHT land into five types, the one with the richest soil being Class A and that with the poorest soil being Class D (Table 8). Thus Class 1 land as stipulated in the revenue records may be compared with Class A land according to Forestal, Class 2 land with Class B land, and Class 3 land with Class C, D, and C-D land. Tables 6-8 summarise the soil characteristics in the CHT, and the soil classification as given by Forestal.

Forestal's data, as well as several of their recommendations, were used extensively from the late 1960s to the 1990s by the Government of Pakistan and the Government of Bangladesh for horticulture and forestry projects in the CHT. The data is still of great value for any macro-level plans on land use in the CHT, but needs to be treated with caution for a number of reasons. Firstly, the survey covered only those

⁶ Rule 41A, CHT Regulations, 1900 (Bengal Act I of 1900). See also Roy and Halim 2001b.

Table 6: **Soil Types in the CHT**

Parent Material	Location	Soil series	% of CHT
Hill Soils			
Consolidated shales, sandstones and siltstone (Surma-Tipam)	Higher hill ranges	Sandy loam Silty clay loam	70
Unconsolidated sandstone and siltstone (Dupi-Tila sands and clays)	Lower hill ranges	Sandy or silty loam Sandy clay loam	26
Alluvial soils			
Slope run-off	High river banks, terraces	Silt loam layered with sandy loam	4
Stream-borne sediment	Valley bottoms floodplains	Silty clay loam layered with clay	

Source: Adapted from Forestal (1990) and Brammer (1990) as cited in ADB (2001b, p. 8).

Table 7: **Physical and Chemical Characteristics of Soil and Rock in the CHT**

Soil series	Texture		pH	CEC*	BSP**	C/N ratio	Nutrients (ppm)	
	Silt %	Clay %					P ₂ O ₅	K
Kaptai	65	28	5.9	16.3	50	4.1	TR**	150
Bilaichari	35	10	5.0	9.5	35	5.0	TR	25

CEC = Cation exchange capacity; * BSP = base saturation %; TR = Trace

Source: SRDI (personal communication) as cited in ADB (2001b, p. 8).

Table 8: **Classification of Land in the CHT according to Type (1964-66) (Excluding Area of Reserved Forests)**

Class	Slope %	Total Area (ha)	%	Types of Land Use	Land Use Limitations
A	< 5	30,969	3.1	All-purpose agriculture	Few limitations
B	5 - 20	27,488	2.7	Terrace agriculture	Moderate limitations
C	20 - 40	148,482	14.7	Mostly horticulture, some forestry	Severe limitations
D	> 40	735,882	72.9	Forestry only	Very severe limitations
C-D	40 - 50	12,970	1.3	Horticulture and forestry	Complex of C & D
		53,535	5.3	Settlement and water	
Total		1,009,326	100		

Adapted from Forestal (1990) and Brammer (1990) with sources cited in ADB (2001).

parts of the CHT that are situated outside of the Forest Department-controlled RFs (which cover about 334,160 ha or about one fourth of the region [ADB 2001a, p 16]). Large parts of these reserves are now settled by hill people and cultivated by them, including swidden in the uplands and wet rice and tobacco in the lowlands. It must also be remembered that the different categories of land are not situated in compact blocks in clearly demarcated areas, but are interspersed in different parts of the region, cutting across different geo-physical variables, even within very short distances. In addition, the data are almost forty years old. It is more than likely that at least some important ecological changes, and consequently changes in the soil, must have come about during this period as a result of both natural factors and human intervention. These might include changing precipitation patterns and other climatic

changes, and human interventions such as cultivation, deforestation, lowering and raising of the water level of the Karnaphuli reservoir by the hydro-electric authorities, and the phenomenal growth of the region's settlements and human population. These factors and others – such as unrest, insurgency, dislocation, and distances from markets, roads, and navigable waterways – mean that the actual land use patterns in the CHT today are probably quite different from what the soil conditions as assessed by Forestal might suggest. There are no reliable estimates on this data, but some rough calculations based upon very basic survey methods in limited areas are contained in the ADB's 'Chittagong Hill Tracts Region Development Plan, 2001' (ADB 2001a,b). They are not reproduced here as the samples in the survey were too small to accurately reflect the overall situation, although they suggest certain trends in small pocket areas.

The Government-controlled Forests

About the time of the British annexation of the region in the mid 19th century, the CHT was so rich in forests that the British administrators, eager for revenue, were prompted to categorise four-fifths of the region as 'government forest' (Ishaq 1975, p 107). Most of this forest originally contained tropical and sub-tropical evergreen and deciduous species of trees and other plant life. However, starting in the 1870s, vast stands of natural forests were clear-felled to make way for monoplantations of teak, a species that was imported from Burma (Ishaq p 101, 107). Most of these forests, including the teak plantations, were categorised as RFs. The rights over this type of forest were said to belong to the state alone, rather than as 'concessions' (Roy and Halim 2001a, p 9). The Pakistani government (1947 to 1971) added plantations of pulpwood species to feed pulp and paper factories. The Government of Bangladesh has continued the process on an even larger scale. This has affected the biodiversity of both flora and fauna, in turn affecting the forest-dependent livelihoods of indigenous people (Roy 2000c, p 99, 117). The last major forests of heterogeneous stand are confined to small parts of the Kassalong and Sangu reserves along the frontiers with India and Burma respectively. These forests too are under threat.

Foresters today recognise four major kinds of forest land in the CHT. These are (i) reserved forest or 'RF', which covers about a quarter of the CHT; (ii) protected forest or 'PF' which covered about 1% of the CHT but most of which has recently been re-categorised as 'RF'; (iii) private forest or 'PRF', most of which is owned by small-scale indigenous farmers, except for a few plantations owned by non-resident individuals and companies based in cities outside the CHT (their extent is not known); and (iv) unclassed state forest or 'USF', which covers the rest of the CHT.⁷ It is important to realise, however, that despite their categorisation as forests, most of the land in all categories, including the RF areas, is now bereft of substantial vegetative cover in terms of density, height, or diversity of plant life. The RF areas are owned and administered by the Forest Department. The PFs are administered by the district collectorates, although their forest resources are controlled and managed by the Forest Department. When in an RF area, no manner of entry into or use of lands is permitted unless it is specifically allowed by the Forest Department. One may enter and use PF lands unless it is forbidden to do so. 'USFs' are a residual category of

⁷ The acronyms RF, PF, and USF are well known among foresters, while the acronym 'PRF' has been employed by the author for the purposes of this paper.

partly forested land under the control of the district collectorates which the indigenous peoples consider as their own forest and swidden commons. Table 9 provides an estimate of the different types of forest land in the CHT.



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Partially degraded hill forest

Table 9: Forest Land in the CHT

Classification	Rangamati (ha)	Bandarban (ha)	Khagrachari (ha)	Total CHT (ha)
Gazetted reserved and protected forest (RF + PF)	234,520	74,841	23,151	332,512
Estimated remaining reserved forest (RF)	49,613	–	4,018	53,373
Encroached RF*	2,176	–	–	2,176
Estimated remaining protected forest PF	0	0	0	0
Planted forests (private)	22,259	26,184	8,930	57,373
Unclassified state forest (USF)	322,521	292,522	94,656	709,699
USF notified for reclassification to RF	23,680	27,000	12,660	63,340
TOTAL	579,300	393,547	126,737	1,099,584
Total in district under control of FD (though 'notified' land, not formally 'gazetted')	258,200	101,841	35,811	395,852
Forest area controlled by Ministry of Land	377,521	292,522	94,656	709,699
* Similar activities occur in Bandarban and Khagrachari on non RF lands.				
Source: FD (Dhaka) as cited in ADB (2001b, p. 18).				



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Traditional houses