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Political ecology of the degradation of forest commons in the Chittagong Hill Tracts of Bangladesh

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SUMMARY

Indigenous people have widely been blamed for degrading South Asia's montane forest resources through the practice of shifting cultivation, yet some studies have revealed that indigenous people used forests in a sustainable way for centuries until external intervention. The history of external intervention in the forests of South Asia is more than two centuries old. The process of degradation of forest resources requires understanding of the political and social processes that condition access, control and management of the land and resources involved. The Chittagong Hill Tracts (CHT) of Bangladesh, a part of the Himalayan region, underwent essentially the same socio-political and historical processes as many other countries in the region and had very similar experiences in forest management. By examination of policies and associated effects on CHT forest over the past two centuries, this paper reveals that the process of forest degradation in the CHT started during the British colonial period with the nationalization of forests, establishment of reserve forests (RFs), management of forests by government agencies and weakening of traditional institutions. The process of degradation was accelerated by: privatization of forest land for the promotion of sedentary agriculture, horticulture and rubber plantation; the construction of a hydraulic dam on the Karnafuli River; the settlement of lowland people; and the constant conflict between indigenous people and the Forest Department. The degradation of CHT forests is not only the result of traditional agricultural practices, but also of many other factors including inappropriate policies and programmes.

Keywords: Bangladesh, Chittagong Hill Tracts, forest degradation, mountains, South Asia, state policies, tribal communities

INTRODUCTION

The Hindu-Kush Himalayas stretching from Afghanistan to Myanmar have extensive and diverse forest cover and are home to about 150 million people, more than half of whom belong to tribal communities. The majority of these forest dwellers depend on traditional agriculture, clearing land through slash-and-burn practices, growing a variety of crops using hoe and stick and raising livestock. Forests are crucial to their survival (Guha 2001).

Before the British colonization of India, a large portion of the montane forests were under the jurisdiction of local communities (Edmunds & Wollenberg 2001). After colonization, the colonial government gradually established control over such resources in almost all countries in the region, abolishing traditional community resource management systems under the pretext that local people were not able to manage resources effectively (Fisher 1989; Edmunds & Wollenberg 2001; Guha 2001) and nationalizing major productive forests in greater India (present day Bangladesh, India and Pakistan) during the 19th century (Poffenberger 2000). The Forest Department (FD) was created in 1864 with responsibility for managing forests, particularly reserve forests (RFs). In 1865, the first forest law was enacted giving vast powers to forest officials to protect forests from overexploitation. To consolidate the laws relating to forest use and management, including the transportation of forest products, the British colonial government enacted the Indian Forest Act 1927, which allowed the government to expand RFs by annexing any kind of forest, authorizing the government to declare more forests as RFs in the name of better management. As a result, about 90% of the natural forests in South Asia were kept under state control until the 1980s (Poffenberger 2000; Nizamani & Shah 2004). Even countries that were never colonized, such as Nepal and Bhutan, nationalized forests and put them under the jurisdiction of highly centralized bureaucratic organizations following the British colonial system, Nepal in 1957 and Bhutan in 1969 (Wallace 1981; Karki *et al*. 2000; Kollmair & Muller-Boker 2002).

Despite rigid management systems and well-trained forest cadres with scientific knowledge of silvicultural management, the centralized bureaucratic system failed to prevent deforestation (both conversion of forest land into non-forest uses and degradation of forest quality that impairs the forest's capacity to produce goods and services). With the exception of Bhutan, forests were degraded severely in all South Asian countries. According to a 1980s estimate, 35 million hectares of forest were degraded in India, over half of its total forest area (Poffenberger 2000). In Nepal, two million hectares of forests were destroyed in just 11 years from 1964 to 1975 (Wallace 1981, p. 19). In Pakistan, forest cover

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was reduced from 25% to 2% (Nizamani & Shah 2004). The deforestation rate was also very high in the Chittagong Hill Tracts (CHT) of Bangladesh (Adnan 2004).

Shifting cultivation has been regarded as a major cause of deforestation (FAO [Food and Agriculture Organization of the United Nations] 1984; GoB [Government of Bangladesh] 1971; World Bank 1991; UNEP [United Nations Environment Programme] 1992; Sanchez 1994; Myers 1995), although some scholars (Thapa & Weber 1990; Angelsen 1995; Contreras-Hermosilla 2000; Delang 2002) argue that while shifting cultivation might contribute to the process of deforestation, it is not solely responsible.

The causes of deforestation have long been an issue of debate. While some (such as Burgess 1992; Myers 1995; Rudel 1994) consider the rapid growth of human and livestock populations as a major driver of land-use change and deforestation in developing countries, others (such as Boserup 1965; Tiffen *et al.* 1994; Kollmair & Muller-Boker 2002) find population growth a means of reversing deforestation and environmental degradation by facilitating innovations and the adoption of new technologies.

Geist and Lambin (2002) and Casse *et al.* (2004) argued that whether technology mitigates or causes deforestation depends upon market opportunities, state policies and institutions. If technology is not accompanied by appropriate policies and institutions, the advancement and adoption of new technologies may accelerate deforestation by facilitating large-scale logging, transportation and processing.

Hardin (1968) believed unclear property rights, which make it difficult to exclude any individuals and groups from using a resource, were the major cause of overexploitation of resources, particularly as human beings are largely guided by self-interest. While Hardin (1968) considered people as selfish, competing to exploit common property resources (CPRs) for their personal gain, leading to the destruction of common resources, others (see Ostrom *et al.* 1999; Weiss 2001; Dietz *et al.* 2003; Dolsak & Ostrom 2003) consider people, as social beings, are guided not only by personal gain but also by social norms and values. Thus there may be substantial conservation potential in people who can organize themselves and maintain resources in a sustainable way. For thousands of years people have evidently managed resources in a sustainable way by designing appropriate rules, regulations and sanctions, and lack of proper institutions or an environment unfavourable to developing such institutions are major causes of the depletion of resources including forests (see Ostrom *et al.* 1999; Weiss 2001; Dietz *et al.* 2003; Dolsak & Ostrom 2003). National policies and laws may shape the institutions that govern resource use and management and also influence the overall environment in which institutions are organized and function (see Peluso 1992; Repetto 1998; Pfaff 1999; Contreras-Hermosilla 2000; Lindayati 2003; Thapa & Rasul 2006). Policies that allow excessive logging and logging concessions, misplaced development priorities, expansion of agriculture and market distortions stemming from inappropriate policies and laws are the major drivers of deforestation in many countries in Asia and elsewhere (Thapa & Weber 1990; Geist & Lambin 2002; Casse *et al.* 2004).

However, contemporary policies and laws are the outcome of past legacies; policy making takes place within the context of past policies and past social and institutional arrangements (see Amin 1989; Bryant 1997; Guha 2001; Kothari 2002; Klepeis 2003; Lange 2004). To understand the process of deforestation, it is therefore important to examine the historical processes and forces that have influenced forest management (Somanathan 1991; Bryant 1997; Barton 2001; Kothari 2002; Lange 2004).

The degradation of forest can not be fully understood without understanding the political and social processes that condition access, control and management of resources (Niemeijer 1996; Bryant 1997). The CHT of Bangladesh, a part of the Himalayan region, underwent essentially the same socio-political and historical processes as many other countries in the region and had very similar experiences in forest management. Bangladesh evolved as a sovereign independent nation through a long process of political and administrative changes extending over a period of several centuries. As part of greater India, Bangladesh was colonized by Britain from 1760 until 1947. Following independence, it became a part of Pakistan and remained so until its emergence as an independent nation in 1971. Policies and laws adopted during different politico-administrative periods have had a direct bearing on forest commons in the CHT.

An analysis of past policies and laws can offer valuable insights into, and an understanding of, the causes of deforestation (Sandewall *et al.* 2001; Hurst 2003). By examining the policies and praxis in the CHT over the past two centuries and their effect on forest commons, this paper attempts to provide an alternative explanation for the degradation of forest commons in the CHT.

METHODS

The study area

The CHT is located in Bangladesh (21.25–23.45° N, 91.45–92.50° E). Geographically, it is a part of Hill Tripura and Arakan Yoma branching off from the Himalayan range and continuing to the south through Assam and Hill Tripura of India to Arakan of Myanmar. The topography consists of hills, ravines and cliffs, the hill ranges being generally 450–620 m high. Geographically and culturally this region is distinct from the rest of the country. Twelve ethnic groups (Chakma, Marma, Tripura, Mro, Bawm, Tanchangya, Kheyang, Pankhu, Chak, Lushai, Khumi and Rakhain) comprise the majority of the population in the area. These people live in forest frontiers, depend heavily on forest resources for their sustenance and wellbeing; most practise agriculture, primarily shifting cultivation, as the main source of livelihood. Raising livestock, collecting bamboo and other non-timber forest products, trading and selling labour are other sources of livelihoods.

With an area of 13 183 km^2, the region covers about one-tenth of Bangladesh's land area. It is surrounded by India to the north and east, Myanmar to the south-east, the Chittagong district of Bangladesh to the west and Cox's Bazar to the south-west. Two-thirds of the area is characterized by steep slopes and the remaining area by an undulating topography. Steep slopes combined with heavy seasonal rainfall (2032–3810 mm yr^{-1}) impose limits on arable agriculture; 73% of the land in the CHT is suitable only for forests, 15% for horticulture and only 3% for intensive terraced agriculture (Forestal [Forestal Forestry and Engineering International Ltd] 1966).

Sources of information

Information on CHT forest management was drawn mainly from secondary sources, including colonial reports, official documents (i.e. gazetteers and official correspondence), diaries of colonial administrators and travellers, books, journals and censuses. This information was supplemented by information from primary sources, including field visits conducted between January and December 2005, non-participant observation, discussions and key informant interviews. Key informants were carefully selected in order to obtain information and views from all key stakeholders, such as local people, traditional institutions, forest officials, revenue department, the business community and civil society. Important key informants were circle chiefs, tribal leaders, elderly persons, village headmen (*mouza*), forest officials, timber traders and retired government officials who had relevant knowledge; some them were directly involved or closed to different events and processes, such as circle chiefs and mouza headmen. After building a rapport with key informants, the purpose of the interview was clarified to facilitate frank provision of information and opinion. Key informants were interviewed with checklists. Although there were certain common elements in the checklists, slightly different checklists were used, based on the expertise and knowledge of the informants, to capture all aspects of forest management. Some of the most useful key informants (such as circle chiefs, tribal leaders and forest officials) were interviewed more than once. Information received through primary sources was triangulated by comparing and evaluating them against different sources to avoid any biases.

RESULTS

Colonization, national policies and the status of forests

Bangladesh evolved as a country through political and administrative changes extending over several centuries. Policies and laws on land use, agricultural development and tenure adopted during different periods have had a direct bearing on forest commons in the CHT. Here I analyse how changes in policies and laws have influenced the status and condition of CHT forests in the pre-colonial, British colonial and post-colonial periods.

Pre-colonial period (before 1760)

Anecdotal evidence suggests that before the colonial period (1760) forests and land were the common property of the village community of indigenous tribal societies. Land rights were based on customs and usage, and resources including forests were held in common by communities as a whole. While individual community members had specific rights of use, the community as a whole exercised rights of access and use over common lands (Roy 1996, pp. 25–28). Individual rights included the right to collect fuelwood, fodder, timber and non-timber forest products; a particular *jhum* (plot of land where crops were under shifting cultivation; Khan & Khisha 1970); sufficient land for a home; and the right to hunt, fish and graze cattle on common lands. However, when a particular plot of land was no longer in use (for example an old jhum or abandoned house) then land rights were automatically transferred back to the community (Roy 1996, pp. 25–28).

Before colonization, the CHT was covered with dense forests of valuable trees (Lewin 1869). The typical mode of agricultural land use involved clearing a patch of forest or shrub land by slash and burn, growing a variety of crops on the same plot for one or two years, and then moving to another plot. While clearing vegetation for jhum, important tree species were kept (M.K. Alam & M. Mohiuddin, personal communication 2001). Settlements were temporary, small and isolated as shifting cultivators moved from one place to another when the fertility of their farm plots declined. Timber had little commercial value because of the economic isolation and lack of transportation facilities. Large forest areas, relatively small populations and little opportunity for the commercial use of forest products contributed to the maintenance of forests.

British colonial period (1760–1947)

The CHT came under British colonial rule in 1760 and remained under colonial rule until 1947. From 1760 to 1860, like other parts of colonial India, the CHT was ruled by the East India Company (the Company) as representative of the British Government. The Company administration did not make any direct intervention in policy and administrative matters in the CHT, including forest management (Serajuddin 1971), and largely followed a policy of exclusion and isolation, keeping the tribal people out of mainstream society and the economy (Barua 2001). The Company focused on the collection of tribute from the tribal chiefs through Bengali middlemen.

In 1857, the British Government took over the direct administration of the Indian colonies from the Company. In 1860, the CHT was designated as a separate district (Mohsin 1997) and the colonial government introduced several policies to establish so-called scientific forest management. Attempts were also made to maximize the revenue from forests. In this pursuit, the colonial government nationalized nearly all the CHT forest in 1871. Between 1871 and 1885,

three-quarters of CHT land was declared government forest land. The remainder, excluding some privately-owned land obtained through leasehold or freehold, was declared *khas* (government-owned fallow land). One-quarter of the government forest land (3484 km^2) was declared reserve forest (RF), where all traditional rights of indigenous people, including the collection of fuelwood, fodder and *jhuming* (practice of shifting cultivation), were completely denied. The rest of the government forest land was declared unclassified state forest (USF). The management of RFs was the absolute responsibility of the FD. The management of khas and USF land was the responsibility of the Deputy Commissioner (DC), representing the central government. The DC was given full authority to take care of land-related matters (GoB 1971; Roy 2002). These interventions radically altered traditional forest management systems and marked the beginning of a highly centralized forest management system. The state became the absolute owner of land and forests, while tribal people's traditional rights to forest resources were curtailed, particularly in RFs. Their traditional forest rights were converted into privileges and were controlled and determined at the discretion of government officials. As a result, indigenous people's traditional conservation responsibility also disappeared.

Moreover, forests were opened to commercial exploitation. The government also encouraged the extraction of forest products and invited Bengali traders to extract timber from forests. Elephants were used to carry timber from inaccessible areas. Due to the increased extraction of timber, the annual average revenue derived from logging by the Chittagong Forest Division increased 10-fold in just four years (from Rs 11 000 in 1862–1871 to Rs 102 000 in 1874–1875; Cowan 1923 cited in Khan 1998, p. 164). This trend continued for a few years and timber regularly was transported from Chittagong by ship (BDR [Bengal District Records] 1978; Hunter 1876).

The process of deforestation was further intensified by the demand for wood for railway tracks (Damadoran 2005, p. 119) and a large trade in railway sleepers developed from the port of Chittagong (Lewin 1869), 30 000 sleepers being exported within two years (Mohsin 1997, p. 90).

Unfettered timber extraction led to a shortage of commercially valuable trees within a very short period. In 1875, the then Conservator of Forest of Bengal visited the CHT (GoB 1971) and foresaw the possibility of a shortage of good timber trees within a short period. To ensure the supply of commercially valuable trees, the British Government adopted a policy to replace multi-purpose trees with commercially valuable teak trees. As teak was not a native species, seeds were imported from Myanmar and grown in CHT nurseries (Cowan 1923, p. 19). To facilitate teak plantation, multi-purpose trees were chopped down, undermining the livelihoods of indigenous people who depended heavily on such trees for food, fodder, fuelwood and medicines. Moreover, clear-felling for teak plantation had an adverse affect on the local ecology by exposing soils to the heavy monsoon rains and sun for at least 4–5 years until they were again covered by tree canopy. There was also little undergrowth in teak forests. Indigenous people protested against this policy and resorted to uprooting the young seedlings at night (Khan 1998, p. 165), which resulted in conflict between the FD and indigenous people. To consolidate its grip over forests, the government introduced the Forest Act 1927, which authorized the FD to extend areas of reserve and protected forests, and enforce regulatory and punitive measures for any violation of the law.

To establish full control over the local people, in 1892 the British administration had also replaced the traditional governing institutions with the mouza (headman) system (Ascoli 1918). Traditionally, there were two governance systems functioning in the CHT. In the Chakma Circle, under the circle chief there was a *dewan*, head of a *gozas* (a subgroup among Chakmas) or *septs* (clan), and under the *dewan* there were *khijas* (appointed by dewan to represent him) in every village. In the Bhomomg Circle, under the circle chief, there was a *roaja* (village headman) in every village. Villagers chose the roaja and concerned tribe members chose the dewan. Both systems were based on the principle of selection of leaders by the concerned community (Ascoli 1918, pp. 92–93). This democratic local governance was replaced with a highly centralized system that entailed the appointment of mouza by the DC based on the nomination of the circle chiefs (Rafi 2001, p. 26). As the headmen were appointed by the DC, they were not accountable to the local people who they represented. Instead, they were accountable to the circle chiefs and the DC. This change weakened the traditional institutions that controlled the use of forest resources by outsiders, giving outsiders open access to forest resources and affecting the management of CHT forest resources.

The FD also failed to assert effective control over forest resources owing to the remoteness of the area, difficult terrain and inadequate and inefficient human and logistical resources. This, combined with the abolition of the customary local governance and resource management systems, made the forests open to virtually everybody. Prior to the nationalization of forests, tribal people used to manage and use forest resources based on mutually agreed rules and regulations. Such institutional arrangements had prevented forest encroachment by outsiders (Thapa & Rasul 2006). The abolition of the customary resource management system led to the indiscriminate exploitation of forest resources, including clear-felling. To address this problem, the FD bolstered its staff strength and increased forest patrols. In 1905–1906, the FD filed 120 legal cases involving 1059 persons charged with forest-related offences, including encroachment on RF for jhuming (Khan 1998). As a result, the bitterness between the FD and indigenous people further increased and became public discontent. To address public grievances, the government had to relinquish its absolute control over the Maini RF, covering an area of 873 km^2.

In an effort to reconcile the objectives of the local people and the FD, a new forest management system called *tanguya*

Table 1 Evolution of forest management in different political/administrative eras. CHT = Chittagong Hill Tracts, FD = Forest District, CPR = common property resource, RF = reserve forest and NTFP = non-timber forest product.

Political administrative era	*Major policy changes*	*Implication*		
		Livelihood of local people	*Ecology*	*Management of forest resource*
Colonial era (1760–1947)	Nationalization of land and forests Establishment of reserve forest Land and forest laws formalized Community property regime to state property regime Commercial extraction of timber Introduction of private ownership and provision of land leases for settled agriculture	State as the absolute owner, community rights curtailed Availability of CPR land and forests decreased Increased monetization	Monoculture of teak Loss of biodiversity Pressure on forest resources increased	Responsibility for management shifted from indigenous people to FD; local responsibility for forest conservation disappeared Traditional management practices broke down Community resources became 'open access' resources due to ineffective control by government Conflict started between FD and indigenous people Multi-purpose trees replaced with teak monoculture in some areas Forest resources started depleting
Post-colonial era, Pakistan period (1947–1970)	Encouraged immigration of lowland people Abolished special status of CHT Hydroelectric project Improved road networks Industrial use of forest products	CPR land and forest further reduced Access to forest resources further curtailed through protected forests and industrial use Increased monetization Both subsistence and commercial production	Population pressure increased Vast areas submerged under water Large number of people displaced; some rehabilitated in RF Created pressure on land resources Ecological disturbance	Number of jhumia increased and shortened jhum cycle Jhum expanded to RF Encroachment on RFs Increased extraction of forest products for industrial purposes Degradation of forest resources Conflict between FD and people further increased
Bangladesh period (1971 onwards)	Planned settlement to CHT Afforestation programme in CPR area Privatization of CPR for rubber plantation, private tree farming and other uses	CPR land and forests further reduced Livelihood options further reduced due to insurgency and armed conflict Increased dependency on extraction of NTFPs for subsistence Limited wage earning Increased monetization	Further pressure on land and forest resources Reduction of biological resources due to indiscriminate extraction of NTFPs for subsistence Increased soil erosion	Conflict between FD and tribal people reached an extreme stage Ineffective government Control; most part of CHT became 'open access' resources Increased illegal felling Most of CHT denuded

was introduced. This agri-silvicultural system allowed the indigenous people, with the permission of the FD, to clear a patch of vegetation by slash-and-burn, plant tree saplings and inter-crop annual crops until the tree canopy covered the ground. Although this system allowed the indigenous people to grow necessary food crops, it required the removal of the natural vegetation, thereby reducing biodiversity. This system of forest management failed to address indigenous people's grievances because they had rights neither to the trees that they had grown, nor to the land where they had grown. Moreover, under tanguya, many trees useful to local communities but of less market value had been replaced by commercially-valuable trees such as teak (Sivaramakrishnan 2000, p. 80).

During the British period, agriculture and plantation were given priority over forests. Land covered with shrubs and small trees was considered wasteland and non-timber forest products were considered weeds. Land leases were provided to promote sedentary agriculture and tea plantation, which further encouraged the clearing of forests and shrub land. Planters recklessly devastated the forests in their vicinity to supply their requirements (Hunter 1876, p. 210; Stebbing 1922, p. 433). Tobacco plantation was patronized during that period, which also had adverse effects on forests (Hunter 1876, p. 204). Because of all of these factors, dense forest with multi-purpose trees became depleted and several important species disappeared from accessible areas (Table 1).

Post-colonial period

After independence from British rule, the CHT tribal people expected the national government to redress the injustices that they had suffered and restore their use rights over their ancestral lands and forests. However, both Pakistan and Bangladesh followed colonial policies as far as forest management was concerned. Moreover, this period witnessed the intensification of deforestation primarily due to the construction of a large hydroelectric dam and policies encouraging the migration of lowland people to the CHT. Until its emergence as an independent nation in 1971, Bangladesh was part of Pakistan. Therefore, it is essential to compare how the policies adopted before and after independence influenced CHT forest resources.

Pakistan (1947–1970)

In relation to the use and management of forest resources, the Pakistani Government followed the British policy of commercial extraction, as well as intensifying forest use for industrial purposes, continuing to plant teak and attempting to use softwood and shrubs considered useless during the British period. A new government agency, the Forest Industries Development Corporation (FIDC), introduced mechanized logging that facilitated the extraction of timber from areas previously inaccessible (Adnan 2004, p. 122). To use local raw materials, paper, rayon, timber, pulp, plywood and match manufacturing industries were established in the CHT (M. Rahman, personal communication 1998), and a large forest area earmarked for the extraction of these materials. In order to keep their production costs at a minimum, these industries were also given special concessions for raw material collection, as in India (Gadgil & Guha 1993, p. 199). For instance, the Changraghona paper mill received a 99-year guarantee in 1953 in relation to the collection of raw materials from five RFs covering an area of 592 km^2 at concessionary rates (Asian Development Bank 2001, p. 14; Van Schendel *et al.* 2001). As a result, the extraction of forest products, particularly bamboo and softwood, which had not previously been extracted owing to their low economic value, increased substantially.

It was anticipated that the establishment of industries based on forest products would have a positive impact on the local people and economy, as well as reducing pressure on forest resources by providing non-farm employment opportunities to local people. However, these benefits did not materialize because both professional staff and wage labourers were hired from outside the CHT (M. Rahman, personal communication 1998). Contracts for the supply of raw materials were also sub-contracted to outsiders. A large number of Bengali itinerant traders were sub-contracted to supply forest products to these industries, although some tribal people were engaged in the collection of raw materials and received wages for collecting and transporting forest products to the nearest stream and river points.

To meet the increased demand for electricity by industry and urban areas, the government constructed a hydroelectric dam on the Karnafuli river at Kaptai in the early 1960s. The reservoir created by the dam inundated *c.* 22 000 ha of land (about 40% of the best arable land in the CHT) and displaced *c.* 100 000 people (Sopher 1963). Some of the affected people who had permanent land titles were rehabilitated in the RFs. The creation of the reservoir accelerated the extraction of forest products by making many previously inaccessible areas accessible by boat.

The government also created protected forests where shifting cultivation and the collection of forest products were restricted. Having no other alternative to secure their livelihood, some shifting cultivators were compelled to encroach on the RFs. In this way, a major portion of the Kasalong, Sitapahar and Reinkhyong RFs was destroyed. A study funded by the Asian Development Bank reported that 65% of the Reinkhyong RF had been destroyed by *jhumias* (shifting cultivators). The people who encroached on the RF became more marginalized and vulnerable to eviction and poverty owing to tenure insecurity and physical and social isolation. As in RFs, no customary rights were recognized; indigenous people were under constant threat of eviction by the FD.

The pressure on forests was further reinforced by the government policy of encouraging lowland people to migrate to the CHT. Some immigrants from India had settled in the CHT during the early 1950s. In the 1960s, the government abolished the special status of the CHT in the name of integration of the region with the national mainstream, thereby prompting a large-scale inflow of lowland people into the CHT. As a result, within a decade the non-tribal population in the CHT increased fivefold, from 26 000 in 1951 to 119 000 in 1961 (Table 2).

To facilitate the collection of raw materials, roads were constructed during this period to connect the main urban centres of the district to Chittagong and Cox's Bazar, the two important business centres in the region. The extraction of forest products increased considerably, and combined with repeated shifting cultivation with a short fallow period led to the severe degradation of forests (Forestal 1966; GoB 1971, p. 113) (Table 1).

Table 2 Human population of Chittagong Hill Tracts, 1872–1991 (Hunter 1876, pp. 35–37; Chittagong Hill Tracts District Gazetter 1906, p. 5; Adnan 2004, p. 57). Population density calculated by excluding area under reserve forest.

Year	*Population, n*	*Non-tribal population, n (%)*	*Population density (people per km^2)*
1872	63 054	381	7
1881	101 597	n/a	10
1891	107 286	n/a	11
1901	124 762	4962	13
1951	287 274	25 736 (9)	30
1961	385 079	119 375 (31)	40
1974	508 199	135 673 (27)	52
1981	746 026	304 252 (41)	76
1991	974 445	473 301 (49)	100

Table 3 Deforestation in Chittagong Hill Tracts 1969–1998 (from Adnan 2004, p. 251).

Year	*Total forested area in CHT (ha)*
1969/1970	1 234 413
1979/1980	1 188 259
1989/1990	833 198
1997/1998	778 138

Bangladesh (after 1971)

Bangladesh inherited degraded forests in the CHT from the Pakistani regime. With the intention of conserving the remaining forest, immediately after independence the Bangladeshi Government banned the extraction of timber from RFs. Soon after that, government imposition of high tariffs on the import of timber in order to earn more foreign currency led to a considerable hike in timber price, as there was a serious shortage of timber (Huq 2000).

The large profit margin on timber provided a strong incentive for large-scale poaching of forest products. Despite a ban on commercial logging, influential businessmen and politicians continued to engage in this activity, in collaboration with officials from the FD and other agencies (GoB 1993; Huq 2000, p. 80; Adnan 2004). By the early 1990s, illegal logging became so rampant that 'logging trucks could be observed leaving Rangamati in the direction of Chittagong every ten minutes' (Van Schendel *et al.* 2001). Both state and unclassified forests continued to be degraded (Table 3). The Kasalong RF was reduced by 40% in three decades (from 150 000 ha in 1963 to 89 000 ha in 1991). Likewise, the Reinkhyong RF was reduced from 382 000 ha in 1963 to 251 000 ha in 1991 (BFRI [Bangladesh Forest Research Institute] 2000). The Sitapahar RF was so badly degraded that the Forestry Master Plan (GoB 1993) recommended abolishing its status as a RF. According to a 1993 estimate, more than 100 000 ha of CHT RF had become bare land (Adnan 2004, p. 126). Excessive logging had not only destroyed the forests, but also led to further ecological damage. Where protective vegetation had been removed, the soil was exposed to the monsoon rains and eroded rapidly resulting in landslides and the sedimentation of streams, rivers and the reservoir (Van Schendel *et al.* 2001).

In response to the environmental problems arising from deforestation, the government further strengthened regulatory measures to control illegal logging. Extraction and transit regulations concerning timber from privately owned lands were also made stricter (Roy 2002). Permits for private plantations were used to smuggle out timber poached from government forests. While legal measures were not able to control illegal logging (Uttam 2000; Roy 2002; Adnan 2004), they constrained tree plantation on private farmlands (Rasul 2003; Adnan 2004).

The government policy of resettling people from other areas in the CHT accelerated pressure on the already dwindling forest resources. In 1978, the Bangladeshi Government implemented a resettlement programme in the CHT. About 25 000 Bengali families were resettled in CHT unclassified state forest areas (Barua 2001). In 1991, the population density of the CHT reached 100 people km^{-2} (Table 2). This high population pressure, combined with lack of alternative livelihood opportunities, compelled the shifting cultivators to significantly reduce fallow periods (Rasul *et al.* 2004; Thapa & Rasul 2006). The repeated burning of forests for short-rotation shifting cultivation led to secondary forests being replaced by shrubs and grasses in many areas (Arya 2000).

Rather than improving the management of forest resources by mustering support from the local people, the government adopted a policy of expanding RFs, following the British colonial policy. In 1992, the government declared about 50 000 ha of additional forest land as RF, and 42 000 ha of unclassified state forest land was leased out to private entrepreneurs for rubber plantation and horticulture (Sk. Mutahar Hossain, Secretary, Ministry of Chittagong Hill Tracts Affairs, personal communication 21 September 2006). In Bandarban district, more than 14 000 ha of land has been leased out for rubber plantation (Table 4). Most of these entrepreneurs were outsiders belonging to the elite class. Adnan (2004, p. 128) reported that 'along the road from Bandarban to Bangalhalia, the privileged recipients of

Table 4 Land leased out for rubber plantation in three upazila (sub-districts) of Bandarban district, in the Chittagong Hill Tracts. Source: Office of the Deputy Commissioner, Bandarban Hill District, Chittagong Hill Tracts.

Name of upazila	*Name of mouza*	*Number of plots (n)*	*Total area leased out (ha)*
Lama	Faitong	30	304
	Soroi	85	860
	Gozalia	33	334
	Fasiakhali	318	3219
	Doluchari	146	1478
	Yangchha	183	1852
	Dordoroi	20	202
	Lama	3	30
	Chhagalkhaiya	3	30
	Bara Bomu	5	51
	Chhoto Bomu	2	20
	Lunain	3	30
	Chambi	46	466
	Lemu Palong	25	253
	Sagu	67	678
Alikadam	Toinah	10	101
	Toinfa	52	526
Nakkhyongchari	Ghumdhum	28	283
	Tumbru	80	810
	Eidgarh	102	1032
	Retu	21	213
	Bakkhali	13	132
	Alikhong	55	557
	Dochari	12	121
	Sonaichari/ Baishari	85	860
Total		1427	14 442

forest land included family members and relatives of past or present ministers of the national government, members of the parliament (MPs), bureaucrats, journalists and other professionals. While 30 of the allotters were Bengali, one of them was a 'tribal' MP belonging to the ruling party.' Many of these absentee leaseholders left their plots underdeveloped as most of them did not have any knowledge or interest in rubber plantation (Mohsin 1997). They had leased the forest land speculating that they would be eligible to get credit at special interest rates in the name of rubber plantation (Gain & Moral 1996; Mohsin 1997; Adnan 2004).

Migration of lowland people, expansion of RFs, and leasing out of community land for rubber plantation and other purposes led not only to an acute shortage of land and forests, but also to armed conflict and accelerated degradation and deforestation. My discussions with several forest officials revealed that enmity between the FD and indigenous people had reached such an extent that many forest officials posted in the CHT were not in a position to visit remote forest areas and to speak about effective control and management.

As a result of government control of forests previously used by indigenous people following customary rules and regulations, the incidence of conflicts between the local people and the FD officials increased considerably. A survey in the Rangamati district of the CHT found that about 70% of the criminal cases in the magistrate's courts in 1998 were related to the abuse of forests (Roy 2002, p. 140). This not only strained relationships between FD officials and local communities, but also created enmity inhibiting the sound management of forest resources. The enmity between the FD and the indigenous people had reached an extent such that it became difficult for the FD to implement any development programmes in the CHT. The FD failed to implement a CHT afforestation project after receiving funding from the Asian Development Bank. Even the government had to exclude the CHT from its Social Forestry Rules 2004, owing to resistance by tribal leaders who feared that the FD would use the social forestry programme to gain further control over unclassified state forests (CHTRC [CHT Regional Council] 2003).

Bangladesh introduced forest policies in 1979 and 1994 for better forest management. Although the forest policy of 1994 recognized for the first time the necessity of participation by the local people and private entrepreneurs in afforestation and reforestation programmes, it did not provide sufficient incentives for participation, particularly for local people (Table 1). Instead of mustering support from local people to protect and manage forest resources, the government was still enhancing regulatory and punitive measures to protect forests.

DISCUSSION AND CONCLUSIONS

Shifting cultivation is not solely responsible for CHT deforestation. Many factors, including national policies and laws, are responsible for this situation. The process of deforestation originated during the British colonial period, with the pursuit of revenue generation through the nationalization of forests, weakening traditional institutions and alienating indigenous people from traditional forest management. The colonial government imposed a European model of forest management without due consideration of local realities; in contrast to Europe, in Asia millions of people inhabit and depend on forests for subsistence purposes.

Teak monoculture for commercial purposes replaced multi-species natural forests containing a variety of trees, shrubs, medicinal and edible plants. This not only affected the livelihoods of indigenous people, but also adversely affected the CHT soil, water, wildlife, vegetation, ecology and environment.

The British government relied on rules, regulations and policing by strong bureaucratic agencies for forest management. Successive post-colonial governments pursued the same policies and further tried to consolidate state control over forests. Instead of mustering support from local people, the government further tightened regulations and strengthened policing and regulatory measures. In spite of its huge regulatory power, the FD failed to protect forest resources for several socioeconomic and political reasons, including limited resources, poor motivation, low people-orientation, inefficiency and corruption. Instead of protecting forests, some forest officials colluded with timber merchants to receive a share of the illegal timber trade. Local people, who earlier used to prevent outsiders from using local resources, now collaborated with outside businessmen for quick cash. The centralized bureaucratic management combined with inefficiency, corruption and the indifference of the local people led to most forests becoming open access and degraded.

Forest management in the CHT is a classic example of the alienation of land and forests from indigenous people and the transfer of resources from poor to rich, local to outsider, periphery to centre. During the colonial period, the forests of the CHT were exploited by the British to generate revenue and build their industries. During the Pakistan period, the forests of the CHT were used to supply cheap industrial raw materials and enhance the profits of alien industrialists. Even after the independence of Bangladesh, communal land was leased out to rich people for rubber plantation without considering the need for the sustained growth of forests or the livelihoods of the poor local people. Thus the CHT forests were never considered a renewable resource that needed to be managed and used following ecological, biological and social principles.

Poor management led to the depletion of forest resources and the degradation of the natural resource base. Vast areas of formerly forested land are now classified as wasteland and barren hills. This has not only undermined the ecology, environment and livelihood options of the indigenous people, but has also reduced the trust and confidence between ethnic communities and the government, the social solidarity which provides the basis for sustainable resource management. Social tension intensified, which in turn led to an armed conflict in the region. The cessation of the armed conflict through the Peace Accord of 1997 between the government and tribal

leaders has raised the aspirations of tribal people to regain their rights over communal land and forests. The Land Commission established to settle the long standing dispute in the CHT has yet to be activated. As a result, the traditional rights of the indigenous people over communal land and forests are not yet fully recognized.

The non-recognition of indigenous people's rights to natural resources has become a crucial factor constraining the effective management of CHT forest resources. A similar situation prevails in different parts of other developing countries in South and South-east Asia including north-east India, northern Thailand and Indonesia. Although this problem originated during the colonial period, it still remains unresolved even after five decades of independence in India, although a bill has recently been passed by the Indian Parliament to return tribal people's land and forest rights (GoI 2006).

The findings of this study have important policy implications. This study clearly shows that establishing state control over CPR resources and enacting stringent rules and regulations are not enough to ensure the sustainable management of forests and other natural resources. In other countries such as India, Nepal and Thailand, where the customary rights of indigenous people were superseded by the state under the guise of better resource management, natural resources including forests have also undergone accelerated degradation (Wallace 1981; Thapa & Weber 1990; Kaosa-ard & Rerkasem 2000; Grafton 2000; Delang 2002; Hazra 2002).

Common property resources can not now be managed properly without the active involvement of the people who depend on those resources. Experiences from community forestry in Nepal and Joint Forest Management (JFM) in India clearly show that when local people are formally given responsibilities, they can manage forests effectively. In Nepal, about a quarter of forests are now managed by 14 000 Forest User Groups (Nurse & Malla 2006). In India, about 14 million ha of forest land is managed by communities in collaboration with the FD. In Bangladesh, more than 40 000 ha of land have been brought under tree cover by poor people through social forestry programmes and *c*. 50 000 km of strip plantation along roads, railways and canal embankments (Muhammad *et al*. 2005). Many degraded forests in Nepal and India have regenerated under community management (Nurse & Malla 2006).

POLICY RECOMMENDATIONS

The Government of Bangladesh should design appropriate policies involving the local people in forest management, allowing them to develop appropriate institutions to manage and use forests sustainably. It should legitimize the traditional rights of tribal people in accordance with the International Labour Organization Convention on Indigenous and Tribal Populations (Convention 107) of 1957, which was ratified by Bangladesh. The expansion of new RFs should be stopped in line with the demands of indigenous people. The gazetted notifications of the 1980s and 1990s concerning the creation of new RFs should also be revoked. To safeguard the interests of tribal people, the Forest Act of 1927, in its application to the CHT, might be amended in consultation with the regional and hill district councils, circle chiefs and village headmen. Land leases granted to rich people for plantation should be cancelled and that land brought under community management with active support of the FD and non-governmental organizations. In addition, the usufruct rights to degraded RF should be given to the communities adjacent to such forests. Forest management should be reoriented towards the sustainable management of all components of forests including trees, shrubs, grasses and non-timber forest products, rather than the management only of timber-producing tree species. Policies favouring industry over forestry, rich over poor, and outsider interests over local people need to be removed.

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