



CHARM Project Report 3

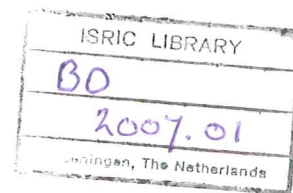


CHITTAGONG HILL TRACTS IMPROVED NATURAL RESOURCES MANAGEMENT

Bangladesh



**LANDUSE PLANNING AND ENVIRONMENTAL
CONTROL IN THE CHITTAGONG HILL TRACTS**



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Abbreviations

AC	Assistant Commissioner
ADB	Asian Development Board
BRDB	Bangladesh Rural Development Board
BWDB	Bangladesh Water Development Board
CD	Cooperative Department
CHARM	Chittagong Hill Tracts Improved Natural Resource Management
CHT	Chittagong Hill Tracts
CHTDB	Chittagong Hill Tracts Development Board
DAE	Department of Agriculture Extension
DC	Deputy Commissioner
DF	Department of Fisheries
DPHE	Department of Public Health and Engineering
DoE	Department of Environment
EU	European Union
FD	Forest Department
EPZ	Export Processing Zone
HD	Hill District
HDC	Hill District Council
LGED	Local Government and Engineering Department
NGO	Non-Government Organizations
RC	Regional Council
RHD	Roads and Highway Department
SALT	Sloping Agriculture Land Technology
SHCT	Sustainable Hill Cultivation Technology
SRDI	Soil Resource Development Institute
USF	Unclassed State Forest
WARPO	Water Resource Planning Organization

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1.1 Background

Natural landscape, cultural setting and ethnic composition of the Chittagong Hill Tracts (CHT) region are quite different from that of the rest of the country. The nomadic communities in the CHT started to change their livelihood and life style as they came into contact with the plain land culture and the modern development processes. The British first motivated the Jhum cultivators to switch to plough farming and also to expand the forest coverage (Adnan, 2004). Two major development projects-- the Kaptai Hydroelectricity Project and the Karnafuli Paper Mills were the only symbols of development, that is, show-pieces in the CHT during the Pakistani period. During the Bangladesh period, many resource development projects have been formulated, designed and implemented by different agencies of the Government, particularly by the CHT Development Board. But in reality, there has been very little progress in resource development and livelihood improvement of the CHT people. This is may be due to the prolonged conflicts in the region and also due to faulty nature of the project designs. The top-down approach of such development projects ignored local needs, and combined with weak and ineffective institutional settings, undermined the development goes of those projects in many ways. However, after the historic Peace Treaty, the socio-political atmosphere in the CHT became more congenial and it helped to develop trust among the various ethnic groups and concerned agencies. The CHARM project initiated during this post-treaty period has constituted a step forward toward natural resource mobilization and improvement of the environment in the CHT. The project envisages maximum utilization of land based resources and establishing sustainable land management alternatives to improve socio-economic and environmental settings in the CHT.

1.2 CHARM: An Introduction

The CHARM project is a cooperation project between the European Union (EU) and the Government of Bangladesh. Soil erosion, forest resource degradation, loss of biodiversity, landslides and flash floods are some of the common environmental concerns in the CHT.

Moreover, the area lags behind in the overall national development process due to the long standing insurgency and counter-insurgency activities. However, the post-conflict development measures in the CHT warrant sustainable improvement of its natural resources as well as overall environmental quality. The goal of the CHARM project is to establish sustainable natural resource management, improvement of agricultural production, reduction of soil erosion, protection of biodiversity and improvement of overall environmental quality of the region. One of the major work packages of the CHARM project is to review the environmental control and natural resource management process. The present report is a review of the existing land based resources, landuse planning and environmental control in the CHT.

1.3 Methodology

The overall goal of the CHARM project is to establish sustainable natural resource management in the CHT region. The livelihood of the people in this region depends solely on its natural resources. The overexploitation of such resources and in many cases, the implementation of poorly designed development projects not only pose new threats to resource exploitation but also gives rise to newer environmental challenges. The Kaptai Hydroelectricity Project is a typical example. The CHARM project thus aims to estimate the natural resource bases in the CHT and their major environmental challenges and it has been done mainly by reviewing available documents and through consultations with concerned stakeholders.

Since the British period, at least a dozen acts, laws, rules and regulations pertaining to the CHT issues have been adopted by different preceding governments. Among these, the CHT Manua, 1900, Hill District Council Act 1989, CHT Peace Treaty 1997 and the Regional Council Act 1998 are important documents. Such documents not only deal with the administrative measures but also relate to land based resource management. All available documents have been reviewed; published documents relating to resource development projects and sustainable environmental management have also been included in this review process.

Introduction

In addition to the review of relevant documents, field level consultations with concerned stakeholders have also taken place. The aim of holding such consultation meetings were to understand the types of natural resources, their sustainable utilization and the environmental challenges with regard to the degraded CHT of today.

1.4 Structure of the Report

This report on the CHT landuse planning and environmental control has been delimited in eight chapters. After the introductory chapter on the CHARM project and its background, the second chapter deals with a brief account of the geography, history and the people of the CHT.

The discussion also covers the characteristics of land ownership and the major sources of land related information. The characteristics of agricultural landuses, particularly Jhum and plough cultivations, have been mentioned in chapter four. In chapter five, forest based resources and the forest policies have been discussed. Major development projects and their socio-environmental consequences have been dealt with in chapter six. Concerned legislative measures, policy guidelines and institutional capacities in the CHT have been reviewed in chapter seven. Chapter eight concludes the study. Chapter three discusses the resource profile and the traditional ways of resource utilization.

2.1 Introduction

After a nine-month long war for freedom, Bangladesh emerged as an independent nation in 1971. Except for the Chittagong Hill Tracts (CHT), the rest of the country is homogenous in its landscape, language and culture. The CHT is unique in its topography, land based resource potential, ethnographic composition and socio-political history. Located in the southeastern part of the country and sharing borders with India and Myanmar, the CHT has experienced migration in both directions. As a result, diverse and complex influx of people of various ethnic groups has occurred in the CHT, which are its beauty and also a major development challenge in this region. Attempts had been made in the past to overexploit its people, to extract its natural resources and may be to improve or change the quality of livelihood of its people. There has always been a sense of misgiving, mistrust and mismanagement ruling both human and natural resources development scenes in this region. However, it was only after the historic Peace Treaty of December 1997, that scope for sustainable utilization of its land based resources and improvement of its environmental conditions (Khan, 2002) can be offered. It has thus been a timely act to assess and review the status of uses of land-based resources, land use planning measures and environmental quality of the CHT region.

2.2 Geography

The CHT is located between 21°25' and 23°45' North latitude and between 91°45' and 92°50' East longitude, covering an area of about 13,300 sq.km. Unlike the rest of the country, the CHT has a unique undulating topography of hills, valleys and plain lands and also a complex network of streams. The hill ranges are in north-south alignment and their heights vary from about 700 m in the north to more than 1000 m in the south. These tertiary hill ranges are the oldest geological formation in Bangladesh (Rashid, 1977). The CHT includes four major valleys of the Feni, Karnafuli, Sangu and Matamuhuri rivers and their tributaries. Some major valleys are the Changi, Maini, Raikhiang, and Sangu, these areas varying between 30 to 80 km in length and 2 to 10 km in width. These

valleys are highly suitable for agricultural activities. However, greater portions of these valleys, particularly the Karnafuli valley are now under Kaptai Lake, which accounts for about 40% of all available plain land in the CHT region (Roy, 1998). The rivers in the CHT run along the basins and valleys parallel to the hill ranges, mostly in north-south direction and then finally turn west before discharging into the Bay of Bengal.

Bangladesh is located within the humid, tropical, evergreen rainforest climatic zone of the world. The climate of Bangladesh is thus characterized by high temperature, heavy monsoon rainfall, narrow range of mean temperature, excessive humidity, dry winter and marked seasonal variation (Rashid, 1977). March to June is the summer season and November to February is the winter. Temperature ranges from a mean 10.2°C during the winter to 35.1°C during the summer. The CHT experiences orographic rainfalls and hence the most humid part of the country. Here the annual rainfall varies from 2200 mm to 3000 mm. Approximately 80% of rainfall takes place in May-September period in the form of torrential downpour and the rest months of the year remain nearly dry. The crop calendar and farming system of the CHT largely depend on the intensity and occurrence of timely rainfall.

According to Van Engelen et al. (2007) the soils of CHT are infertile in respect to other parts of Bangladesh, because they were formed from rocks, which generally contain few weatherable minerals. Additionally, the soils formed over unconsolidated sedimentary rocks (Dupi Tila formation) have predominantly kaolinitic clay, which provides them with a low capacity to retain nutrients. The fertility is further declining rapidly due to unsustainable resources management practices. The soils over siltstones and mudstones are better in this respect because they have mainly illitic clays, that have higher nutrient buffering capacities and are a mineral source of K and Mg. Except under natural forest or well-established tree crops, the content of organic matter is low. Due to the leaching effect during high monsoon rainfall, the nitrogen and

potash are washed out. Due to poor soil conditions, only 3.2% land of this region is suitable for agriculture, 15% is suitable for horticulture and 77% is only suitable for afforestation (Rafi and Chaudhury, 2001).

2.3 History

It is believed that the ancient hill people living in the CHT region migrated from outside, mostly from Tripura, Mizoram and Arakan. In the remote past, the area was regularly visited for hunting. A section of those hunters eventually settled in this region. However, the main stream of earlier occupancy in this region by the hill people, especially the Chakma, Tripura, Marma and Tanchangya was completed between the 15th and the 19th centuries (Adnan, 2004). Around the 1700s, due to political unrest among some ethnic groups in Tripura and Mizoram, many of them were forced to leave their area of residence and settle in the northern part of the CHT. Again in 1784, the kingdom of Arakan was attacked by Myanmar and as a consequence, about 40,000 refugees fled to the CHT from Arakan. The history of earlier settlement in the CHT, has thus been controlled both economically, such as the scope for hunting and gathering and politically, such as forced migration from the neighbouring regions.

During the Mughal rule in Bengal, the CHT remained a self-governing territory, with little control from the central Government, which later changed with the advent of the British rule. The CHT had been ceded to the British East India Company by Mir Quasim Ali Khan, the Nawab of Bengal, in 1760. The East India Company adopted the plan of non-interference in the internal affairs of the hill people and was satisfied with the taxes paid. However, in 1777, a military campaign was started in the CHT, when the Rajah Jan Bux Khan stopped paying the tax. At one stage of this conflict, Jan Bux Khan prohibited the entry of people from the plain land. This military operation continued for a decade and finally in 1787, Jan Bux Khan was compelled to submit to the British authorities. A peace treaty was then signed, whereby the CHT became a British tributary on promise of payment of taxes (Roy, 1998). Since then the British started interfering in the internal affairs

of the hill people and their erstwhile administration. For better control over the administration of the CHT, the area was separated from Chittagong and was named Chittagong Hill Tracts as a separate district in 1860. Thus the formal annexation the CHT into Bengal through Act XXII of 1860 was completed. However, in 1900, a more elaborate set of rules were passed, which came to be known as the CHT Manual, 1900. Till today this regulation is considered to be the only document that acknowledges the indigenous landuse practices, customary laws, traditional administration and civil, revenue and judicial systems, although there have been several amendments of many of the rules of this regulation. In 1920 the CHT was declared as a "Backward Tract" and in 1935 it was designated as a "Totally Excluded Area", which remained separate from formal links with the province of Bengal.

With the partition of Indian sub-continent in 1947, the CHT was placed under the Central Government of Pakistan. In 1962, a new constitution was adopted in Pakistan, which altered the status of the CHT from an "Excluded Area" to a "Tribal Area". During the Pakistani regime, a major development project, viz. the Karnafuli Paper Mills was established in the region in 1953. A new category of "Protected Forest" was established in 1962 to supply local bamboo and soft wood as raw materials to the mill where Jhum cultivation was prohibited. Moreover, between 1957 and 1963, the ambitious Kaptai Hydroelectricity Project was completed, with the inundation of 54,000 acres or 40% of the most fertile CHT plainland and displacement of 100,000 people, which accounted for more than 25% of the total CHT population from their homestead (Roy, 1998).

Bangladesh emerged as an independent country on 26 March 1971, attaining its final victory on 16 December 1971. During the process of drafting the national constitution of Bangladesh, voices were raised by different tribal groups to the constitutional right of the CHT for autonomy, retention and endorsement of the CHT Regulation, 1900 (Adnan, 2004), but were rejected outright; rather the new government wanted them to forgo their separate identities

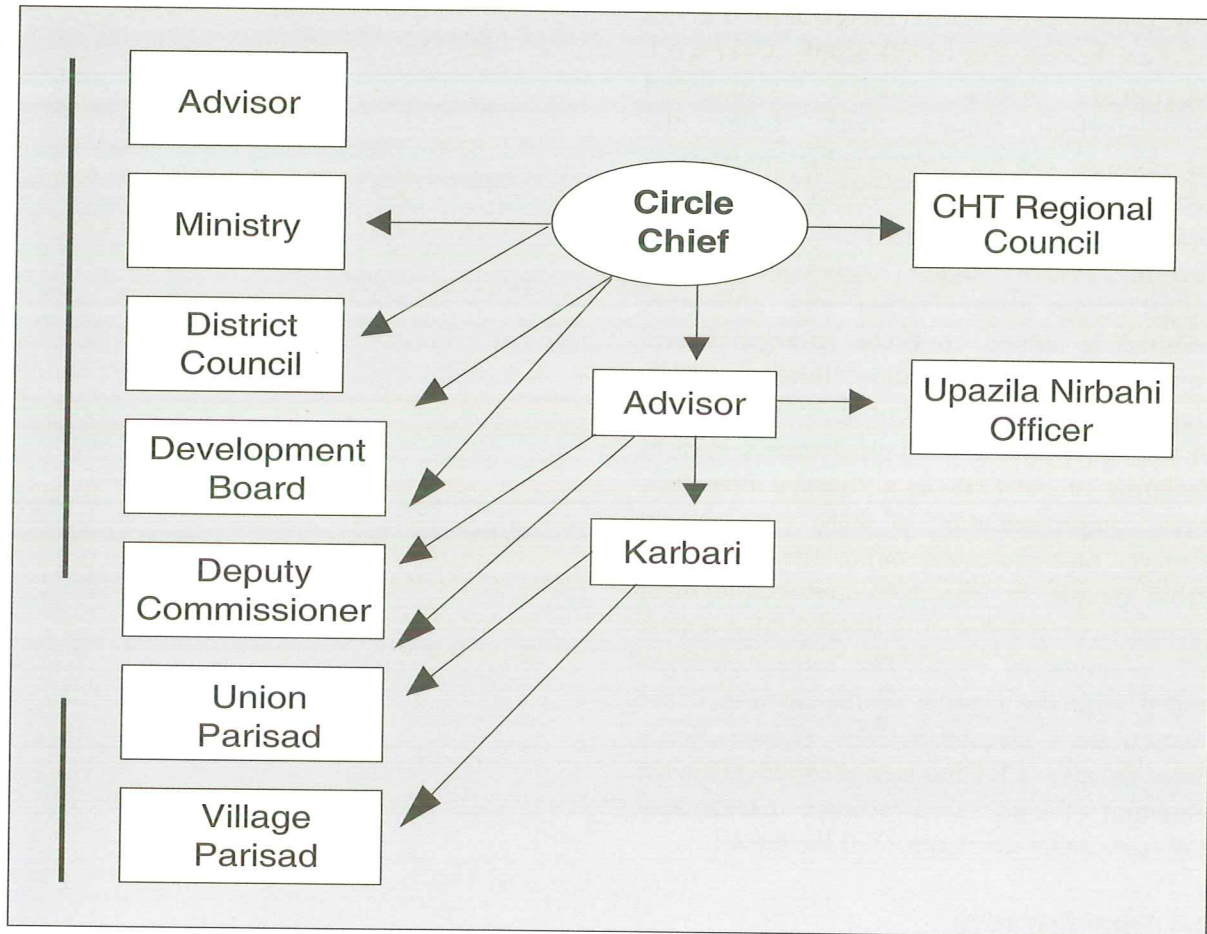
and mainstream themselves in the building process of a new nation. The newly adopted constitution of 1972 of Bangladesh did not mention the concerns of hill people of the CHT separately, which caused widespread dissatisfaction among them. Later the Government led the demographic engineering programme during 1979-1985 to resettle Bengalis from the plain land districts to the CHT region, which again aggravated their longstanding dissatisfaction and ultimately resulted in armed conflicts, insurgency and counter insurgency operation (Ibrahim, 2001). However, towards the end of the 1980s, a series of softer, welfare oriented programmes, such as declaring of the CHT as a "Special Economic Area", implementation of many development projects and increased opportunities for the tribal people in education and employment sectors were undertaken to develop trust among all communities there. The armed conflicts ended with the signing of the historic Peace Accord on 2 December, 1997 (Khan, 2002). Since then, the CHT has started experiencing the initiation of land based resource management and sustainable development of the region.

2.4 Administration

Within the Bangladesh territories, the CHT area is the only exception where both customary rules and constitutionally backed central government administration work in parallel (Figure-1). For centuries past, the customary laws and indigenous norms practiced by all ethnic groups in the CHT have been widely recognized, which also enjoyed a form of formal acknowledgement in the CHT Regulation, 1900. This Regulation is the only document that preserves many of the customary rights of the hill people to collect revenue, store land records, resolve local conflicts and conduct social justice. The Raja (King) is the supreme person of his Circle, who is assisted by a Headman from each Mouza and one Karbari from each village. For further discussion, please see section 7.3.

Chittagong Hill Tracts: An Introduction

Figure-1: The Administrative Tree in the CHT



It has been mentioned earlier that the British rulers had declared the CHT a separate district in 1860 and it was divided into three subdivisions- Rangamati, Khagrachhari and Bandarban. During the Bangladesh period, all these subdivisions have been upgraded as separate districts and the administration of each district is run by a DC (Deputy Commissioner), as is the case in all other parts of the country. Some statistics of each hill district is given in Table-1

Table-1: Statistics of Three Hill Districts in the CHT

Statistics of each District	Name of District		
	Rangamati	Khagrachhari	Bandarban
Area (sq. km)	6089	2590	4502
Total Population	401388	342488	230569
No of Upazilas	10	08	07
No of Unions/wards	50	37	31
Hill Population	223292	167510	110333
Bangali Population	178096	174978	120236
Population Density	66/sq.km	65/sq.km.	25/sq.km
Literacy Rate	36.5	26.3	23.8
Agriculture Labour Force	195305	163000	123555
Self Employed	102510	58005	60885

(Source: Adnan, 2004)

2.5 People

The CHT has been traditionally the homeland of eleven ethnic groups (hereafter described as hill people) of Mongoloid origin, who are ethnically more similar to the people living across the international border in Myanmar and the Indian States of Mizoram and Tripura. Only a century ago the hill people accounted for more than 90% of the total CHT population. Today the population sizes of the hill people and the Bengalis are nearly the same (Table-2). The vast majority of the hill people are Buddhists and only some of them are either Hindus or converted Christians. On the other hand, the Bengalis are predominantly Muslims, followed by Hindus and Christians.

Chittagong Hill Tracts: An Introduction

Table-2: Distribution of Population in the CHT by Ethnic Groups

Ethnic Groups	1981 Census		1991 Census	
	Total Population	Percentage	Total Population	Percentage
Bengalis	309918	41.23	473301	48.57
Chakma	212577	28.28	239417	24.57
Marma	122755	16.55	142334	14.61
Tripura	54375	7.23	61129	6.27
Murang/Mro	17811	2.37	22167	2.27
Tanchangya	17695	2.35	19211	1.97
Byom	5733	0.76	6978	0.72
Pankho	2278	0.30	3227	0.33
Chak	909	0.12	2000	0.21
Khang	1422	0.19	1950	0.20
Khumi	1188	0.16	1241	0.13
Lushai	1041	0.14	662	0.07
Total	751692	100	974445	100

Source: BBS, 1992; Adnan, 2004

In the 1991 census, the total population of the CHT had been 974445, which increased to 1342740 in 2001 census; an increase of 37.79 percent. As per of 1981 and 1991 censuses, the hill people accounted for about 60 percent and 52 percent respectively, which shows a gradual decline of the hill population and increase of Bengalis in the CHT. However, due to the Government backed resettlement of the Bengalis from plain land districts in the CHT area during 1979-1985, the ethnic composition in this region has changed dramatically. Such human engineering measures have created tremendous effect on the socio-cultural profile and land resource management processes in the CHT region. However, despite large scale resettlement of the Bengalis during the last two decades, the CHT still enjoys the lowest population density in the country, only 81/sq.km compared to the national average of 740/sq/km (Adnan, 2004). Such uneven population densities have given the room for considering rearrangement of population composition and exploitation of the available natural resources in the CHT area.

3.1 Land Classification

Land is the major natural resource and important source of livelihood in the CHT. Due to the scarcity of fertile plain land, the hill slopes have been traditionally used for Jhum cultivation. However, the expansion of Jhum practices remained confined only within the hill areas, leaving out the reserved forest of the Government. The construction of Kaptai dam in 1960 further threatened the availability of plain land for cultivation. About 40% of the most fertile land of this region was inundated due to the creation of the Kaptai Lake following the construction of the Kaptai dam. Scarcity of land

for plough and Jhum farming and horticulture, as well as the state owned forest expansion efforts posed a real challenge to land based resource management. The displaced people, many of whom were forced to migrate to neighboring countries and their resettlement programme, made the situation even more complex. However, in 1964, the Government of Pakistan engaged a Canadian company, the Forestal Forestry and Engineering International Company Limited (popularly known as Forestal) to survey the topography and soil quality of this region (Roy, 1998). The report by Forestal (1966) has classified the total 2359913 acres of land of the CHT into five categories (Table-3).

Table-3: Land Classification by Forestal (1966) and Landuse Potential

Classification	Land Type	Total Area		Landuse Potential
		Acres	%	
Type- A	Plainland	76466	3.07	All types of agriculture, mostly paddy and crops
Type- B	Gentle hill slope	67871	2.72	Terrace cultivation, both for crops and horticulture
Type- C	Hill slope	366622	14.71	Mostly for horticulture and partly for forestry
Type- D	Hills	1816993	72.91	Only for forestry and not suitable for any type of agriculture
Type- CD	Hill tops	32024	1.18	Forestry and horticulture only after deep terracing
		653	0.03	Settlement
		131637	5.28	Water bodies
		2492266	100	Total

Type-A mainly includes the plain land, which accounts for only 3.1% (76466 acres) of the CHT area. This type of land is suitable for all types of crops. Type-B accounts for 2.7% (67871 acres) of the CHT land, constituting mostly the gentle hill slopes. This land is suitable for terrace cultivation, both for agricultural crops and horticulture. Type-C accounts for 14.7% (366622 acres) land, mostly hill slopes, which are found suitable mostly for horticulture and partly for afforestation. Type-CD is ideally suitable for forestry but can be used for horticulture after deep terracing. These

are mostly at the hilltops and account for 1.3% (32024 acres) of the CHT. Finally, the Type-D is only suitable for afforestation and by no means for agriculture. This type of land occupies about 71.9% (1816993 acres) of the area in the CHT. The Forestal report is still considered as the best classification of lands of the CHT. Many of the recommendations made in this report on land use planning, particularly on forest and horticulture expansion have so far been adopted for implementation.

3.2 Resource Profile

The livelihood of the CHT people largely depends on the local natural resources available. Land and water bodies along with their innumerable plants, animals and minerals constitute the life support for the hill people, which include their dwelling, food, clothing, health-care, festivals and other activities (Khisra, 2002). A brief account of such resource profile is as follows (also see table 4).

3.2.1 Land-based Resource

As an agrarian country, the economy of Bangladesh primarily depends on its agricultural output and also on the uses of other land based resources. In case of the CHT, such economic dependency of the local people on land-based resources is even greater. Land is the sole means of livelihood and agriculture is the main occupation of majority people in this region. Based on farming system and production criteria, agriculture in the CHT happens to be mixed in character. At present Jhum and plough cultivation are practiced simultaneously. Jhum has been the traditional farming system in the CHT region for centuries. However, the British rulers, with a view to increasing revenue and for better administrative control, encouraged the hill people to accept and practice plough cultivation as well. During the 1870s, plough cultivation was introduced in the CHT by the Bengali farmers migrating from the plains of Chittagong. Since then Jhum and plough farming have been practiced. The production level of the traditional farming in the CHT is declining, average yields are down to about one-third as compared to the former levels, due to shortening of the Jhum cycle from 15-20 years to only 3-5 years for meeting increasing demands of food and increased land pressure. Voices are also being raised against Jhum farming based on environmental concerns, viz. to large scale forest burning, soil degradation and loss of biodiversity.

In the process of declining crop production from Jhum cultivation, an increasing number of the hill people in the CHT have accepted fruit gardening and horticulture, as an alternative means of income generation. In the Forestal report (1966), horticulture had been identified as the most potential new economic sector to

expand in this region. In the early 1970s, the hill people had accepted this agricultural practice enthusiastically, but prior to the Peace Accord in 1997, due to lack of preservation storage and packing facilities, marketing and above all, frequent search as conducted by the security people of horticultural products during transportation, many farmers lost interest in this potential sector (Roy, 1998). Tobacco is another major winter cash crop in the CHT, which is cultivated by the hill people and the Bengalis as well as multinational corporations.

3.2.2 Water-based Resource

Besides land based agricultural production either from Jhum or plough farming, other natural resource based livelihood sectors are fisheries, raising livestock, poultry and agroforestry. Due to the undulating topography and presence of hill ranges, there is a scarcity of water bodies in the CHT, which has limited the scope of expanding the fishery sector. However, with the construction of the great Kaptai lake, the fishery sector has expanded tremendously. Now, both the hill people and the Bengalis are involved in fishing in the lake. Out of the 3000 registered fishermen, at least 25% are hill people (Rafi and Chowdhury, 2001). The fish trade is primarily controlled by Bengali businessmen however. Due to over fishing of the Kaptai lake, resulting from large scale migration of the Bengalis to the CHT during 1970s -1980s, the fish resource in the lake region has been on the decline.

3.2.3 Forest-based Resource

Forestry has been considered as the largest sector in the economy in the CHT. The Forestal report (1966) suggests that more than three quarters of the CHT area is suitable for forestry. Since the British period, within the Reserved Forest, which is a major sector of revenue for the Government, the extraction of any forest-based resource by the hill people has remained completely restricted. However, the Unclassed State Forest (USF) is considered to be the common land for the hill people. They can extract and use forest based resources, such as bamboo, timber and firewood, vegetables, herbs and useful plants and they also hunt and trap birds and animals in those forests. These forest resources have traditionally been extracted for domestic uses, but in recent times due to

stressed livelihoods and a shrinking resource base, such resources are being sold in the market for cash earnings. The CHT, once replete with

forest based resources, is gradually being depleted of such bounties due to ever-increasing pressures of more mouths to feed.

Table-4: Major Natural Resources in the CHT and Stakeholders

Natural Resource Base	Resource Type	Uses / Products	Environmental Degradation	Consequences	Stakeholders
	Hill lands	Forest, rubber plantation	Deforestation, loss of biodiversity, massive soil erosion	Reduction of forest revenue, corruption of forest officers, illegal harvesting of forest products	Forest Department
	Hill slopes	<i>Jhum</i> farming horticulture agroforestry, forest resources (firewood, bamboo, cane etc), sma villages, homestead gardening	Topsoil erosion, nutrient decline, landslides	Reduction of vegetation cover, low productivity of land, economic hardship.	<i>Jhum</i> farmers, Forest Department, CHT Development Board, Headman/Karbaries NGOs
	Valley lands	Terrace cultivation, food grains and crop production, dwelling units tourism promotion	Excessive gully work and erosion, water logging after heavy rainfall. Excessive use of agro-chemicals.	Crops and houses damaged, vulnerable to flash flooding, human health problems.	Plough farmers, AED, CHT Development Board, NGOs
	Plain land	Food grains and cash crops	Inundation after heavy rainfall. Excessive use of agro-chemicals	Crops may be damaged economic hardship, human health problems.	Plough farmers, AED, CHT Development Board, NGOs
	Stones and sands	Use as construction materials in building, roads and highways	Aggravated landslides and soil erosion.	River course and river hydrodynamics may be changed, loss of biodiversity. Lands are rendered more vulnerable to impact of earthquakes	Construction firms, developers, DoE, small businessmen and contractors.
	Soil	Agricultural products such as crops, vegetable fruit garden, brick field, industries	Topsoil fertility decline and soil productivity decline.	Yield from agricultural land reduced. Farmers' economic hardship deep rooted.	<i>Jhum</i> farmers, plough farmers, CHT Development Board, SRDI, Forest Department, AED, DoE, brickfield owners and NGOs
Water Based Resources	Rain water	Source of drinking water can be stored for irrigation and household uses	Timing, duration and intensity of rainfall changing due to global environmental changes.	Heavy rainfall may cause soil erosion, flooding and water logging.	<i>Jhum</i> farmers, plough farmers Meteorology Department
	Lake and pond water	Source of fish culture: source of water for irrigation and household uses, tourist attraction	Water polluted due to direct disposal of solid waste and influx of pesticide and fertilizers from agricultural field	Poor water quality, health hazard and declining fish catch.	Fisherman, Fishery Department, Cooperative Department, Parjatan (tourism) Corporation
	Rapids/ waterfall	Source of irrigation and drinking water	Water polluted due to removal of vegetation	Scarcity of pure drinking water	Local people
Forest Based Resources	Wildlife Streams/rivers	Source of irrigation and drinking water	Lack of planned ecofriendly tourism promotion	Tourism industry remains in its infant stage.	Parjatan Corporation
	Bees	Tourist attraction Home to various wild animals, birds, reptiles and insects	Many wild animals migrated to neighbouring states, particularly after the Kaptai project.	Loss of animal diversity	Forest Department
		Source of honey and honey products, such as wax, jelly and propolis.	Expansion of rubber plantation and mono-species forest type	Decreasing plant diversity shrinks source of honey	Honey collectors, Forest Department
	Medicinal plants	Rich in herbal medicinal plant	Due to shrinking of forest based resources. herbal medicinal plant diversity being reduced	Scarcity of valuable life saving plants.	Kabiraj (local herbal physician)

3.3 Indigenous Knowledge and Resource Utilization

It has already been mentioned that the livelihood of the CHT people solely depends on land and water based resources and their utilization. Although in recent years some innovatory techniques, such as SALT and SHCT have been introduced, natural resource utilization in the CHT region largely depends on the indigenous knowledge and innovative techniques developed by hill people. Sharma (1998) identified more than 50 indigenous techniques/practices of natural resource utilization in the CHT, which are either related to land based or water based resources or both (Table-5).

Agricultural practices in the CHT are unique in their essential character. Although Jhum is still the major type of agricultural land use practice, many other traditional ways are practiced. Site selection for crop production, identification of soil quality, measurement of land productivity and improvement of soil fertility by adding ash as manure are some of the traditional ways of land resource management that prevail among hill people.

The CHT people build their dwelling units on top of the Chala (high) land, which are surrounded by wide varieties of plantations of crops, vegetables, fruit plants and large trees. The Baid (lowlands) lands are mostly used for various types of rice and crop production using rain water or traditional way by mustered irrigation water.

Bamboo is an important natural resource to shape up the livelihood, culture and religious practices of the hill people. It is used for constructing dwelling units, household and agricultural implements and for watershed management. The hill people thus make maximum efforts to conserving their bamboo resources and they only cut mature bamboo during the winter season.

Indigenous knowledge and techniques are also applied to harvest forest resources. Slash-and-burn methods are part of the management strategies used to prepare plots for agriculture. Such activities are carried out with due respect to the traditional norms and practices. For example, Jhumias refrain from felling a big tree and up rooting it, conserving at least some

big trees, particularly the banyan tree in the agricultural field and hold them in esteem as divine spirits. Jhumias also follow traditional guidelines for tree felling, particularly along stream side and in skidding and transporting big logs.

Scarcity of water for irrigation, household use and drinking purpose is a serious concern for hill people in the CHT. During the dry season, the situation becomes quite difficult and people have developed numerous indigenous techniques to hold rainwater and seepage water for farming and household uses. Some common practices are Godha, Thelya Thok, Jhurjhuri, Phour, Thakgalok and Kum and Bamboo container (see Table-5).

The valleys between two hills, arable land along stream banks and agricultural fields on hill slopes are particularly vulnerable to landslide and soil erosion. Hill people have developed various techniques of farming and traditional engineering measures to reduce such soil erosion. Common soil conservation practices include raising banana and bamboo plantations, logged barriers and cactus hedging. Many of these traditional practices are scientifically sound and environment friendly.

3.4 Land Ownership and Tenancy

The land rights in the CHT can be of two types-private right and common right. Private land right means the right of individuals, the hill people or the Bengalis, on any particular piece of land with full legal written document and land title. On the other hand, the customary rules practiced in the CHT for many centuries accede to the right of the hill people to common use of available land for Jhum cultivation, hunting and collection of forest products (Roy, 1998). It was the British Government who had twist claimed the ownership of all hill lands and instituted the first control/resistance to the unlimited use of these common lands. All types of activities were prohibited within the Reserved Forest areas, which accounted for about a quarter of the CHT land. However, limited common right to Jhum cultivation, use for homestead and use of forest resources were allowed, subject to the permission of the DC. Another resistance to territorial expansion of lands for common right was the introduction of plough cultivation in the plain lands and river valleys. The shift towards

such farming system was so speeded up that in the 1970s, only a very few tracts of fertile plain land (Type-A) was available for further settlement (Roy, 1998).

The need for and the notion of private land right had been absent in the traditional way of life among the CHT people. The customary practice is the allocation and use of land, either for Jhum or plough cultivation, carried out simply on the basis of oral allotment by the headman on behalf of the Circle Chief (Raja). No permanent allotment of agricultural land had been necessary in the past.

However, the third and the most severe setback to common right to lands has been the rapid influx of people from the plains to the CHT region, particularly since the Pakistani period. The amendment to Rule-34 of the CHT Regulation permitted the Bengalis to own land in the CHT. Such human movement became even faster when the State backed resettlement programme was initiated in the 1980s. Through this programme hill lands were allotted to newly

migrated settlers from the plain land districts. The new settlers were given necessary legal documents pertaining to their allotted lands, which in many cases had customarily been occupied and used by the hill people for ages without any legal documents. The obvious consequences were incidents of land grabbing, conflicts and violation of human right and also common right to lands. The ultimate result of such human engineering measures was the outburst of insurgency and counter-insurgency activities in the CHT. However, from 1989 onwards, any new settlement in the CHT region has been restricted without the permission of the CHT District Council. Land resettlement and registration in the CHT have now been largely frozen. Moreover, the historic Peace Treaty has given the hill people more rights to the CHT lands and authority for land management. The newly created Ministry of CHT Affairs, creation of Regional Council, formation of Land Commissions are some of the steps or measures taken in the CHT (more discussion in section 7.3) towards a better future.

Table-5: Indigenous Technology, Knowledge and Practices Pertaining to Resource Utilization in the CHT

Type of Uses	Indigenous Knowledge		Strength
	Name of the Practice	Technology	
Hill Agriculture	Site selection	Hill slope where bamboo grows well is considered to be a good site for agriculture. As such sites, soil moisture and microbial activities are high. Similarly hill slopes containing loose association withy soil are vulnerable to erosion and not suitable for crops.	Also good for building dwelling huts close to the site
	Soil test	When soil suspension with water tastes sour on one's tongue, the soil is considered good for tree plantation and when it tastes oily/slippy, it is good for crop production	Based on indigenous knowledge and cost nothing
	Hole in the slope	Holes are made in the hill slope with hand held Tagle and mixed seeds of paddy (75%), oil (20%) and vegetable, cotton and tohet (5%) are sown into those holes.	Minimum soil working and soil remains mostly undisturbed.
	Improvement of soil fertility	Ash produced from forest firing during Jhum field preparation is retained and during the initial rain, it gets mixed with soil and increases soil humus.	Increases the nutrients and water holding capacity of the soil, reduces insect attacks.
Silviculture and Horticulture	Hedging and planting	Along the fringe area between Chala (high terrace) and Baid (low plain land) a hedge of cactus (Fanimansa) is planted. Dwellings are erected on top of the Chala land. Farmers grows crops, vegetables, fruits and spices under the scattered forest trees in the Chala land. Baid land is used for rainfed crops.	Increases productivity, conserves soil and water, and reduces soil erosion
	Bamboo management	Tribal people make every effort to conserve bamboo resources. They do not cut bamboo during the rainy season. They cut only mature and over mature bamboo but not any young bamboo shoot.	Good for soil moisture conservation and gully control.
	Community forestland management	In the community forest land around the homesteads, the tribal people usually extract only the mature trees and the lands are not used for traditional hill agriculture. They only allow selective felling.	This practice causes least deterioration to the soil and selective felling system is better for watershed management.

Land Based Resources

Type of Uses	Indigenous Knowledge		Strength
	Name of the Practice	Technology	
Forest Harvesting	Tree felling	In case of preparing agricultural fields, the tribal people follow a traditional guideline. They do not cut any tree along the river course and keep a strip of plant belt at some distance on upside slope.	Water of the stream/river remains clean and cool
	Skidding	Kuda Kuda road is constructed from hill top to the river bank using small logs. Big logs are skidded down hill tops along this road on skidway	Does not induce soil erosion, as direct contact of felled logs with the soil is avoided
	Raft floating	Raft of bamboo, timber and thatching materials are transported long distances by floating along the stream course.	Inexpensive mode of resource transportation.
	Godha	Using earth, bamboo and wood, a traditional cross dam-called Godha is constructed across a stream flowing between two hill ranges to store water for irrigation. Water is spilled in to the field by using bamboo channels.	Water stored can also be used for fish culture, duck rearing and household uses.
Drainage and Irrigation	Thelya Thok	When the cross dam across the stream course is constructed much stronger using vertical and oblique wooden structures, it is called Thelya Thok. The excess water from upstream is drained out to lower terraces for irrigation.	Ensures community involvement. Environmentally sound.
	Terracing	In the hill slopes, farmers dig out about 3.5 m wide terraces. They plant two rows of pineapples in the terrace and then plant banana and Gamelina arborea at the edge.	Banana trees control soil erosion effectively and Gamelina sp. provides cash benefit.
	Jhurjhuri	About 1m diameter and 0.5-1 m deep Kua (Big hole) locally called Jhurjhuri is dug out on hill slopes of sedimentary rock where water oozes naturally through soil layers.	The water is free from debris, large insoluble particles. Cool and safe to drink.
Drinking Water Harvesting	Phour	Small tanks-locally called Phours (7mX8m) are constructed on hill slopes of 20o or more. Banks are raised upto 1 m height to store seepage and rainwater	Used for conserving water and indigenous fish culture.
	Thagalok and Kum	A spited bamboo pitch- called Thagalok is placed at gentle sloping in the course of seepage water along the rocky hill slopes and the water is collected in an earthen pitcher called Kum for drinking purposes. Vegetation on the upper slope is carefully maintained.	The water is quite clean and cool to drink.
	Bamboo container	Tribal people use cylindrical bamboo water containers to store water for drinking and household purposes. They usually make such containers from the <i>Neohouzeaua dulloa</i> bamboo sp. which have well spaced nodes. One bamboo container can hold up to 1 litre of water. 5-6 such containers are bound together and placed in a bamboo basket called Turong.	Water remains cool for a long time
Soil Conservation	Banana plantation	In the moderate to steep by sloping land, banana are planted by farmers as cash crop. The roots of banana plants are quite extensive and hold big chunks of soil. Moreover, their broad big leaves keep the rain water out as the rains cannot hit the soil directly.	Good for income generation as well as soil conservation
	Bamboo plantation	Valleys between two hills and arable land along stream bank are vulnerable to erosion, which can be reduced considerably by producing bamboo culms at those locations.	The fibrous root system of bamboo is an excellent soil binder.
	Logged barrier	To prevent soil erosion and run-off on hill slopes, usually two or three layers of logs are laid as a wall around the hillock. These are generally used where gully formation has started and there is a danger of further enlargement.	Particularly useful where logs of minor values are available
Cultural Belief And Faith	Hunting	For hunting wild pigs, a group of people drive those wild animals by beating drums and making noise and trap them in a net. Then they kill the wild pigs by a weapon called Honta quite crudely.	Easy way of meat procurement

Type of Uses	Indigenous Knowledge		Strength
	Name of the Practice	Technology	
	Dyeing	Tribal people dye their own yarn with traditional plant materials such as blue or black dye from Kalma or Indigo leaves, red from Rang gatch tree, yellow by mixing turmeric and bark of mango and green by mixing turmeric with indigo.	Most tribal people wear traditional colourful dresses
	Worship	For worship and faith of the tribal people, at least one big tree, preferably a banyan tree is left in the agricultural field as a divine spirit. They also keep banyan trees at the graveyard.	The tree roots help soil conservation and the canopy extends shade during hot summer

Source: After Sharma (1998) and Field Level Consultation

3.5 Land Related Information

Land related information at the national level is available from the UP Land Officer's office, Upazila AC Land's office, Sub-Registrar's office and Deputy Commissioner's office. In case of the CHT region, both general land administration of Bangladesh and the customary land administration specially adopted for the CHT lands are in parallel operation. The land recording system in the CHT thus poses an obscure, incomplete and complicated picture. The nomadic lifestyle of the tribal people had never perceived the importance of permanent land ownership and their legal registration title on land. However, it is only since the British period that the legal right of land ownership was felt and during the last two and a half decades, the situation has assumed critical dimensions. Land related information, particularly the location, size, ownership and occupancy of land has become very important. During the 1980s, when most of the resettlement programme of the plain land people was executed in the CHT region, each settler was given the legal right of his allotted land with necessary title and documents from the office of the Deputy Commissioner. Documents of such land settlements are available in the DC's office. However, the long lasting customary administration, which got its legal framework under the CHT Regulation, 1900, the office of the Circle Chief has been the key place to register and preserve land related information, particularly on Jhum cultivation. On behalf of the Circle Chief, the Headman of each Mouza

collects and keeps all land related records. He has to make an inventory of every Jhum family including the name of the family head, number of family members, records on Jhum tax and their last five years' possession status of Jhum farms in his Mouza. The Headman thus has the full information on all lands of his Mouza. As the Headman is assisted by a Karbari from each village, who is traditionally a senior person of that village, might also keep some records on lands of his own village. All these documents, particularly the records on revenue collection are finally submitted to the Circle Chief, who places those to the Deputy Commissioner or the District Officer.

4.1 Nomadic Farming

Jhum cultivation is the traditional way of farming in the tropical mountain regions, which embodies close relationship and dependency of livelihood on land-based resource. Such subsistence farming system has been practiced also in India, Indonesia, Laos, Thailand, Nepal, the Philippines, Myanmar, Malaysia, and Africa. In the CHT region, Jhum is practiced by almost all ethnic groups, including the settling Bengalis. However, the majority of Mros, Tripuras and Marmas (40-80%) are currently engaged in Jhum farming and the involvement of the Chakmas is relatively lower (about 20%). Some (<2%) settlers (Bengalis) also practise Jhum. At present, a total of 35,000 families, covering about 185000 people are engaged in Jhum farming (Rafi and Chowdhury, 2001; Adnan, 2004).

The hill people, as part of their traditional culture, have been producing crops for their subsistence by Jhumming and till today, most of them have little knowledge of the market economy dynamics and their relationship with surplus crop productions. Jhum has been practiced in the CHT for centuries and is regarded by almost all ethnic groups as an essential part of their nomadic cultural heritage. However, due to over exploitation of Jhum lands, reducing the tenure of Jhum cycle, loss of biodiversity and the resettlement environmental degradation, the whole issue of Jhumming in the CHT region is now a major concern. The debate on how sustainable this traditional Jhum farming is and how far it meets the national and regional economic needs and the relevant environmental considerations have already sensitized the academics, policy makers and all stakeholders.

4.2 Traditional Jhumming

Traditional Jhumming in the CHT is practiced on 3-4 acres of land at hill slopes, which is typically covered with shrubs and trees of different types. The cutting, cleaning and burning of the vegetation, except large trees, are undertaken during the dry season to render the land suitable for Jhum cultivation. No ploughing, spading or other form of tilling is

used in the preparation of traditional Jhum land. Holes are made on the ground at regular interval and mixed seeds, such as rice, cotton, pulses, oilseeds, and vegetables are sown there. These crops are grown, matured and harvested at different time periods of the year. Traditionally, after harvesting of crops, the land would be left fallow for 15-20 years which is called the Jhum cycle, which facilitated natural regeneration of biomass on the cleared hill slopes. Under such circumstances, Jhum cultivation need not be detrimental to soil fertility, although most trees in the Jhum plot are eventually cut down. The yield from such fields would be reasonably adequate, which would sustainably support traditional livelihood (Schendel et al, 2001).

It is important to note that in the past the traditional Jhumming system was in harmony with the nature and was environmentally sustainable and regenerative. Traditional Jhumias claim that they would ideally prefer small patches of suitable land, most preferably bamboo forests for Jhum cultivation. They usually do not cut tall trees in the Jhum field. But if it is necessary to cut any of such trees, they only cut them at about one metre above the ground level and allow the stump to grow again. Traditionally, Jhumming had been prohibited on or near the river banks and the flow of the natural water courses had never been stopped or diverted due to Jhum cultivation. In the past, Jhumming was only confined to the middle slope of hills, leaving hill tops and lower slopes under vegetation. Moreover, due to the long Jhum cycle, the threat of loss to biodiversity was minimal and Jhum can be regarded as a form of "managed forest" form of agriculture.

In 1875, the British Government stamped 28% of the CHTs as Reserved Forest and the remainder as Unclassed State Forests, which was open for Jhum farming. The Jhum cycle would then be extended up to 25 years and about 2.5 sq. km. of Jhum land could then be earmarked for 25-50 persons for their subsistence living (Tripura, 2005).

4.3 Modified Jhumming

The centuries old traditional Jhumming failed to keep place with the increasing needs of the

rapidly growing population which put stress on Jhum lands increasing by reducing the Jhum cycle to less than 5 years. By the 1970s-80s, this period of Jhum cycle dropped to 2-3 years in many places (Schendel et al, 2001). Traditional methods of ground preparation have also been modified and innovated methods have been introduced. Instead of digging spaced holes, the entire hill slope is now burnt, cleaned and soils are prepared by using spades. As a result, the entire top soil on a hill slope is loosened to make it ready for cultivation. Since 1970-80s, along with traditional Jhumming crops, turmeric, ginger, corn, banana, jute and other cash crops have been grown and since the 1990s teak, gamari and other forest species are being raised in the Jhum fields as well (Shelley, 1992).

Due to expansion of market economy and increased demand of food crops, the traditional system Jhumming has now collapsed. Due to the shortening of the Jhum cycle as drastically, after Jhum harvesting the fallow period is not long enough to allow regeneration of natural vegetation and recovery of soil potential, which ultimately leads to soil degradation and loss of soil fertility (Adnan, 2004). Due to the general decline of productivity of land for Jhumming and reduction of yield to about one-third of what it was, the farmers now cannot make a living even below the subsistence level from Jhum farming.

4.4 Jhum and Environment

Traditional Jhumming does not allow intensive soil tillage. Only holes are dug by Tagel and mixed crops are sown in those holes. Such practices were not proved to be detrimental to the natural environment (Shelley, 1992). However, due to the rapid increase of population and overexploitation of land resources, the modified Jhum practices have led to massive soil working, tilling and ploughing. Burning and clearing of forest/vegetation covers along a slope lead to massive soil erosion from hill slopes during the rainy season. It results in rapid silting up of streams and tributaries as well as valuable plain and fringe lands. Shaheed (1994) has shown that soil loss from well covered slope ranges from 2.7 to 7.2 t/ha/yr, but it rose to 103 t/ha/yr from a clearly felled slope. Such erosion scales also vary with cropping patterns and intensities thereof. For example,

cultivation of ginger, turmeric, aroids, cassava and sweet potato in a Jhum field requires large scale soil working and hence serious soil loss occurs in such fields. Shaheed (1994) estimated that the annual soil loss from a pineapple field would be in excess of 200 t/ha. Natural factors, such as steep slope, unstable geology and short periods of heavy rainfall are the major causes of removal of fertile topsoil and substantial loss of soil fertility at Jhum farms, which lead to major land degradation of the hill slopes (Khisa, 1998).

Burning in the Jhum fields also has negative consequence to hill ecology due to destruction of forest resources, particularly the loss of biodiversity. Moreover, burning produces smoke and increases carbon dioxide in the atmosphere and other greenhouse gases, contributing to global warming (Assaduzzaman, et al, 1997).

However, the Jhum farmers especially and many members of their ethnic communities today feel that overexploitation may damage the natural environment and cause land degradation, but in their opinion the traditional Jhumming has been in harmony with the nature. Jhumming does not need any chemical fertilizer, the ash produced from burning acts as fertilizer and indigenous pesticide. Unlike the traditional plain land farming, the crops produced in traditional Jhum farms are, therefore, disease-free. Nowadays the use of pesticides and synthetic fertilizer is more common in Jhum, but effectiveness is low as productivity is still declining (J. R. Olarieta pers. Comm.). Roy (1998) however, argues that it is not the Jhumming, rather unsustainable forest management practices and the unplanned development measures of the Government that have led to deforestation and degradation of the natural environment of the CHT region.

4.5 Plainland Farming

The British Government always encouraged plough cultivation rather than practicing the traditional Jhum. This was not because of low yields of Jhum crops or any environmental concern, but for better management of those nomadic people and ensured regular collection of taxes (Shelley, 1992). Although it was not easy to shift from traditional Jhum farming to plainland plough cultivation, Government attempts have been successful. During the

1870s, plough cultivation was first introduced in the CHT by the Bengali farmers, which was later adopted first by the Chakmas, followed by the Marma, Tripura and other ethnic groups. However, by the end of the 19th century, nearly all available plainlands of the CHT were under the plough (Roy, 1998). At present, plainland plough activities are the highest among the Chakmas (about 45%), followed by the Bengalis (about 40%) and Marmas (about 36%) (Adnan, 2004).

In 1960, due to the construction of the hydroelectricity project dam at Kaptai, the vast plainlands of about 54,000 acres, which alone accounts for 40% of the best plough land of the CHT region were submerged in Kaptai lake. This created a serious man-made disaster jeopardizing plough farming and livelihood of the plainland farmers, mostly the Chakmas (Roy, 1998; Shelley, 1992).

4.6 Innovative Farming

Because of soil degradation, low yields from traditional Jhum farms and demand for additional foodgrains to support the increasing population in the CHT, consideration of alternative approaches to Jhumming and farming techniques is required. The goal of seeking such innovative farming systems should increase crop production, conserve soil quality and fertility and protect the natural environment. Since 1997, Zabarang experimentally introduced the SHCT (Sustainable Hill Cultivation Technology) as a pilot project (Zabarang, 2005). This innovative approach urges a single family to produce yearly lasting short-term crops (such as rice, banana, turmeric, ginger, vegetable etc), two to five-year lasting mid-term crops (such as horticulture) and up to ten-year lasting long-term products (such as mango, jackfruit, karai, gamari and other woody plants) in the same plot at the same time.

Ghona is a fairly popular farming system among many local ethnic groups for rice and vegetable production (Siddique et al, 2000). Ghona (embankment) is generally formed at the foothills between ridges or spurs, where water supply from running water sources (Chhara) are available. An artificial management of watershed is required for the formation of

Ghona. The eroded sediments from the hill slopes are trapped up in the Ghona until the land fills, becomes, flat and suitable for farming. Rice paddies, both aus and aman are the main Ghona farming system products.

Adopting SALT (Sloping Agriculture Land Technology) has also been suggested as an alternative practice that includes terracing the hill slopes to protect topsoil erosion and reduce soil degradation in the CHT (Kamal, et al, 1999). ICIMOD proposed SALT farming has been tested and found effective in crop production in Punjab, the Philippines and Nepal, but unlike those areas, hills in the CHT region are too sandy and rocks are not suitable for terraced walls. However, hedgerows of suitable indigenous plants, such as *Thysanolaena maxima* can be used to mark the crop line under SALT system with a view to reducing soil erosion (Alam and Khisa, 2000).

4.7 Horticulture:

About 100,000 people had lost their hearths and livelihood due to the Kaptai project. Although a number of rehabilitation projects were undertaken to settle those displaced people, many of them had lost their tiller's occupation and shifted to either horticulture or fishing (Kamal et al, 1999). Following the recommendations of Forestal Report (1966), The Government initiated a number of attempts to encourage fruit gardening. Considering the economic return and available external supports, thousands of hill people enthusiastically accepted horticulture in lieu of Jhumming. Initially, the horticulture projects were successful, drawing the hill people to it as an alternative means of livelihood (Adnan, 2004). However, due to bad communication and transportation, absence of storage and marketing facilities and lack of credit support, fruit gardening has not expanded as desired. Roy (1998) contested that fruit gardening, tree plantation and private forestry in the inaccessible remote areas are not economically feasible in the region due to problems of transport and access to markets.

4.8 Decision Making Process

Land use planning, land based resource management and environmental control require

a set of planning and decision practices instituted either formally at institutional level or informally, that is, in the customary daily life.

4.9.1 Institutional Decisions

A number of institutional settings and political processes are involved in the policy dialogue, project design and implementation stages of land based resources utilizations programmes. Civil servants, particularly the Chairman and senior staff of the CHT Development Boards play a significant role in the decision process in land use planning and resource management. Elected representatives, such as the MPs, the Chairmen of the Regional Council and the Hill District Councils also play vital role in the political processes and resource mobilization programmes.

4.9.2 Customary Practices

Views of rural farmers should ideally be reflected in the policy level decisions of resource utilization. However, day to day resource mobilization, household activities and landuse practices are directed by traditions and customary values. In a family, the household head bears the main responsibility of taking major decisions relating to Jhum cultivation, selection of seeds, location of a new site, irrigation measures, crop rotation, harvesting and marketing. In every such case, the household head is assisted by other family members, senior and experienced persons at the village level and relatives. In case of an important decision, some form of consultation takes place between the active members of the family, both male (father, elder brothers, sons) and female (wife, mother) and other earning members. The consultation mainly occurs in the leisurely family meetings after supper at night and or during the breaks while the family works in the agro-forestry plantation and home-garden maintenance (Khan and Khisa, 2002). Women, as it is in the case in other parts of the country, have very little to say in the family level decision making process. Major resources which surround life and living of rural families are homestead land, community plantation, livestock and credit facilities (Khan and Khisa, 2002). Decision related to the utilization of such resources is controlled by men. However, women have more voices in the decisions relating to household chores, handicrafts and agro-forestry (Khan and Khisa, 2002).

5.1 Forest Classification

The CHTs have been under dense natural forest cover for centuries. During the Mughal period (1526-1700), some forests had been cleared for agriculture. However, during the British period, most of the forest resources of the CHT remained under the control of the British rulers. Following up on the Indian Forest Act 1865, a policy produced by a Conservator of Forest (1875) has been considered the foundation of forest classification, management, administrative set up and Jhumming status of the hill people in the CHT (Kamal et al, 1999). Reserved forests were under the management of Forest Division and the district forests, under the DC. No Jhumming or any kind of cultivation and activities were allowed in the reserved forest areas. However, Jhumming and harvesting of forest products, such as hunting and collection of firewood and bamboos for domestic purposes were allowed only in the district forests.

5.2 Forest Resource Management

Forests are governed by the major land use practice in the CHT and are the single largest source of economy of this region (Gain, 1998; Adnan, 2004). The soil quality and land topography of the CHT is such that more than 75 % of this area is suitable for forest growth (Forestal, 1966). The forests in the CHT are both Government and privately owned and managed. At present about 25% of the entire region is marked as Reserved or Protected forests under the control of the Forest Department and have either natural tropical species or single species of teak or rubber (Kamal et al, 1999). There are some patches of privately owned forest, which usually have plantation of teak or gamari species. Despite strict control of the Forest Department, the volume of natural and plantation forests under the Reserve forests is significantly declining. The most serious problem in the Government owned forests is the illegal sale of forest resources in the black market done in conjunction with corrupt forest officers. Such deforestation rates in the CHT are far higher than that occurring in other countries of South Asia and possibly they are the highest in the world (Roy, 1998). led to adverse environmental consequences for the CHT (Roy, 1998; Adnan, 2004), as the roots of rubber trees eventually dislodge the surrounding soils and accelerate soil erosion. In an area of rubber plantation, nothing else can be grown for years when rubber production ceases, which again leads to serious loss of biodiversity too.

5.3 Forest and Livelihood

The hill people in the CHT region have traditionally harvested forest resources for domestic purposes. Hill people consider forests as common property and would like to exercise their social right to communal uses of these resources. Traditionally, they have been exploiting the forest resources in harmony with the nature. Even today, the hill people collect bamboo, timber and fuel wood, forage for food, vegetable, roots, herbs and other useful plants from the forest areas. Hunting, fishing and bird trapping is practiced for own consumption. However, increased population pressure has created scarcity of forest products due to over-harvesting of forest resources and lack of suitable lands for Jhum farming. Therefore the people of the CHT have been compelled to alter their attitude to forest resources and their livelihood. In contrast to their traditions and due to economic hardship, the hill people now-a-days extract timber, bamboo, fuel wood and other forest products to earn cash they need to support themselves.

5.4 Rubber Plantation

Current policies encourage the promotion of rubber plantation in the CHT both by the public and the private sectors. Rubber plantations were started in this area in the 1970s under the initiative of the CHT Development Board. Since 1979, large tracts of up to 100 acres of Unclassed State Forests (USF) had been leased out to private entrepreneurs for rubber plantation. The beneficiaries of those leaseholds were mostly the influential Bengali elite of which most of them have never even resided in the CHT (Roy, 1998; Adnan, 2004). Allocation of the USF land to the private entrepreneurs for rubber plantation, of course, ignored the customary right of the hill people to collect forest based resources and use of land for Jhum cultivation. However, the granting of such valuable forest land does not necessarily mean that such lands have properly been used for development of rubber plantation. In many cases, timber, bamboos and other resources have been extracted from such areas and the plots remain unused even for decades.

Rubber plantations, both by the public and the private sectors, gave rise to serious criticisms on the ground that this monoculture plantation has led to adverse environmental consequences for the CHT (Roy, 1998; Adnan, 2004), as the roots of rubber trees eventually dislodge the surrounding soils and accelerate soil erosion. In an area of rubber plantation, nothing else can be grown for years when rubber production ceases, which again leads to serious loss of biodiversity too.

6.1 Kaptai Hydroelectricity Project

The Kaptai Hydroelectricity plant is the single mega project of the Government that has altered the land use pattern, social life, cultural profile and environmental setting in the CHT. The Kaptai project was undertaken with US financial and technical support by the then Pakistani Government in 1957 and was completed in 1963. A massive artificial reservoir, the Kaptai lake of about 1400 sq.km has been created by damming the Karnafuli river at Kaptai, which has inundated a total of 54,000 acres of the most valuable plough land of the Karnafuli, Chengi, Kassalong and Maimi valleys of the CHT. The old city of Rangamati was also submerged. This mega project forced more than 100,000 people, which accounted for more than a quarter of the then total CHT population, to be ousted from their homesteads and become refugees (Roy, 1998). Many of those farmers even migrated to India. The lake has inundated not only valuable plough lands, Jhum lands and 180 sq. km of Reserved Forest, but also the residential palace of the Chakma Raja (Chakma Circle Chief). The adverse effects of this hydro-electricity project included population displacement, loss of plough land and Jhum lands and in many cases, change of occupation of displaced people, either by force or by choice. A significant number of Jhum cultivators gave up their traditional farming and turned to horticulture. Such massive relocation of hill, valley and plainland people in the CHT region, gave rise to intense resentment among the local people against as it had been a Government led population displacement.

6.2 Resettlement Programmes

There have been a number of resettlement programmes taken up by the Government to settle the Jhumia and landless farmers, who have been displaced from Kaptai lake area. Each family had an average of 6 acres of agricultural land before the flooding. Since it was not possible to reallocate the same amount of land to each family, a maximum of 3 acres land was provided (Adnan, 2004).

During the resettlement programme, each farmer had the option either to move to a higher ground within the same mouza or to nearby designated rehabilitation areas. Displaced Bengali farmers were given special consideration during relocation as they were mostly settled in the best plainland areas. Out of the total 10,000 ploughing and 8,000 Jhumia displaced families, it was possible to settle about 15,000 by 1966. Of the rest of the families, about 3000 were given assistance to earn livelihood as fishermen around the lake (Kamal, et al. 1999).

6.3 Settlement of Plainland People

In the wake of the Kaptai project human disaster, another massive programme of Government led settlement of the Bengali families from the plainland districts in the CHT area, which generated immense tension and unrest in the CHT region. In 1979, the Government made a drastic change to the prevailing land Law of the CHT, through an amendment to article 34(1) of CHT Manual, 1900. This amendment allowed allotment of 5 acres of hilly land, 4 acres of mixed land and 2.5 acres of plough land to each newly settling Bengali family from the plainland districts. A total of 300,000 acres of land was required to settle about 25,000 such families (Roy, 1998). Generally, such lands had been in the possession of the hill people for ages, according to their customary laws, but without any proper title and registration. As a consequence of this resettlement, the man-land relationship between the hill people and newly settled Bengalis generated immense tension in this region and in many cases had turned into social unrest and bloody conflicts. It was only after the Peace Treaty of 1997 that the situation has improved and now a congenial atmosphere prevails in this region for sustainable regional development.

7.1 CHT Regulation, 1900

Migrants of different ethnic groups from the neighboring states had settled in the CHT region many centuries ago. Those primitive societies never felt the need for any formal legislation to run their daily life. The ethnic groups had developed their own customary rules pertaining to land use practices, utilizing natural resources, performing economic activities, resolving local problems and conducting justice and trials (Shelley, 1992). At one stage, the King assumed the supreme authority to protect their customary law.

However, in 1881 the Government of Bengal gave a formal shape to the traditional societies in the CHT and divided the region into three circles. The head of each circle was the Circle Chief, traditionally known as the Raja (King). The Mong Circle is located in the north (Khagrachhari area), the Chakma Circle is located in the middle (Rangamati area) and the Bohmong Circle is located in the south (Bandarban area). Each circle is divided into Mouza or revenue units at grassroot level headed by respective Headmen.

The CHT Regulation of 1900, popularly known as the CHT Manual, 1900, is the first major legal document that has accorded some rights to the CHT people to justice and administration (Khan, 2002). The hill people favor this Manual because it has acknowledged many of the customary rules prevailing in their traditional societies, particularly the Chief-Headman-Karbari structure. However, the Regulation vested all judicial, financial and administrative authorities with the DC. The DC, however, is obliged to consult the Circle Chief on any important matter on the CHT. In the Manual, 1900, the CHT has been recognized as an Excluded Area, where no settlement is allowed without the permission of the DC. The Chief and his office bearers (Headman and Karbari) are simply involved to collect taxes and enjoy limited power to resolve local conflicts. However, an important role played by a Headman is to lease out lands to hill people for cultivation. The Headman in each Mouza is the most important person authorized to keep land related records, acting as the revenue officer at the grass-root level.

7.2 Legislative Measures

Since the British period, at least a dozen attempts have been made to streamline the CHT legislative measures. The CHT has accounted for the highest number of reformation of laws and rules, either on the issues of land resource development, administrative purposes or for more socio-political control. The British were the first to shape up such legislative measures. In 1860, an Act was passed to declare the CHT as a separate district in Bengal. In 1892, a set of rules was passed to regulate the administration of this region. In 1900, elaborate rules on land and land management were passed and included within the CHT Manual. However, there had been a series of amendments to this manual, particularly to Rule 34 on land settlement and allotment. In the constitution of Pakistan passed in 1956, the CHT retained its status as an Excluded Area. In 1962, a new constitution was adopted, where the status of the CHT was changed from that of an Excluded Area to a Tribal Area (Adnan, 2004). In 1971, the Pakistan Government made an amendment to Rule 34 and permitted the Bengalis to own cultivable land in the CHT region.

In November 1972, the Parliament of Bangladesh adopted its new constitution, which paid no special attention to any of the demands of the CHT leaders on the issues of autonomy of the CHT region, endorsement of the CHT Regulation, 1900, constitutional acknowledgment of the offices of the Circle Chiefs and halting further settlement of the CHT land to the Bengalis. In 1979, the Government made a drastic change in the land law on the CHT and lands in the CHT could now be allotted to any deserving person migrating to the CHT from the plainland districts. This Government backed human engineering caused tremendous negative effects on the socio-cultural setup in the CHT as well as man-land relationship of this region. The consequence of this resettlement programme was the outburst of long lasting insurgency and counter-insurgency activities.

The Hill Districts Council Acts-1989 were adopted for each of the three districts: Rangamati, Bandarban and Khagrachhari, instituting an elected Chairman from the hill people and members representative from all gender and ethnic groups. Since then no land can now be allotted to any settlers without the permission of the Deputy Council and virtually all resettlement programme now remain halted (Tripura, 2005). After the signing of the historic

Peace Accord in 1997, there had been a number of legislative changes, including the CHT Regional Council Act-1998 and Land Commission Law, 2001.

The socio-political dispute in the CHT centers around the issue of the individual's erstwhile customary rights to both private and common use of hill lands.

Table-6: Rules/Regulations/Laws Related to Land Management in the CHT

Name of the Act/Rule/Regulation	Characteristics and Major Land Related Issues	Strength	Weakness
CHT Manual, 1900	CHT was divided in to three circles, each under a Circle Chief (Raja). A Headman in each mouza acts on behalf of the Chief and is responsible to collect revenue, keep land related records and solve local disputes. Creation of massive Reserved Forest area and restriction to local people access to collect resources within this Reserved Forest. The Regulation went under number of amendment particularly on the issues of migration and settlement of non-tribal people from plainland to the CHT area, land settlement and executive and judicial power of the district administration.	Strong tribal identify, formal acknowledgement of tribal traditional administrative institute as Circle Chief (Raja) and his office.	More focus on revenue collection from each circle and little attention to resource utilization and resource management
CHT Land Acquisition Regulation, 1958	The Deputy Commissioner has the power to acquire any land, which is legally owned and positioned by a person or group, within the CHT region for the interest of the public.	Has the probation for appeal to higher authority- the Divisional Commissioner	The Deputy Commission has been given the highest authority, even to assess the vale of compensation.
Hill District Local Government Council Act. 1989	Three separate Acts (No IXX, XX and XXI of 1989) have been approved to create Hill Districts Local Government Council of Rangamati, Khagrachhari and Bandarban districts. The council can perform thirty three different types of actions, of which at least twelve are related to land resource improvement and environmental management.	Chairman is to be elected from the tribal people; tribal has majority of members over non-tribal. The Chief can attend the council meeting.	In areas of agricultural and forest the activities of the council overlaps with the activities of other agencies of the government and some cases become misleading.
CHT Peace Treaty, 1997	Hill District Local Government Council is renamed as Hill District Council. Without the permission of the council no land, including the khas lands can be leased out, sold purchased or transferred. Government will not be able to acquire or transfer any land, hill and forest within the jurisdiction of the council without its approval.	Circle Chief, all ethnic groups and women group have been given more legal authority to reflect their voice at policy planning and implementation stages of any land resource based programme. Have improved the trust between the Government and local agencies on the issues of land management.	Have generated a sense of insecurity and dissatisfaction among non-tribal people on the issue of land based resource utilization.
CHT Regional Council Act, 1998	The significant outcome of the Peace Treaty- 1997 is the establishment of the CHT Regional Council by an Act (no 12) in 1998. The CHT Development Board will work under the supervision of the council. Land development measures, tribal rules and social justices will also be under the jurisdiction of the council.	As the Charmain of the council and majority of the council Members are to be elected from the hill people, they think this council as their own institution.	The interests of migrated plainland settlers have not been properly accommodated.

7.3 Policy Assessment

Some of the existing policies of the Government are directly related to resource utilization, land-environment relationship and land resource management in the CHT region. There are other policies also which are not directly related but have the potential to affect the land use practices and land management of the CHT. These policies have been reviewed under the study using the criteria of the characteristics and major land related issues and their strengths and weaknesses. Policies which have been reviewed in connection with this study are the National Forest Policy, National Water Policy, National Environment Policy, National Industry Policy, National Agriculture Policy and the National Tourism Policy (GoB, 1992a, 1992b, 1994, 1999a, 1999b, 2005). The main aim of such reviewing was to find the gaps among the existing policies on the issues of land resource management and environmental control in the CHT. Table-7 presents the policy review activities carried out according to the criteria mentioned.

7.3.1 National Forest Policy

Since the British regime, the Indian Forest Policy has been revised many times. The Forest Policy is possibly the only policy in Bangladesh which has been subjected to a series of revisions with attempts of updating its implications. The First Forest Policy was enacted in 1894, which was later modified in 1904. The policy aimed at administering the state forests for public interest and all forests on hill slopes were brought under protection (Choudhury, 1972). During the Pakistani regime, the policy was revised in 1955 and then again in 1962. In both cases, the purpose was to accelerate the harvesting of timber in the CHT (Banik, 2002). Soil and wildlife conservation were considered. After the emergence of independent Bangladesh in 1971, the Forest Policy of 1979 viewed the forest as an area of economic return for the Government and encouraged setting up new forest resource based industries (FMP, 1993). However, the latest Forest Policy of 1994 is a policy professing national economic growth and is in consistence with the National Environment Policy (Kamal et al, 1999). This Forest Policy was reformulated to implement a 20-year Forest

Master Plan (FMP). Attempts are made to conserve bio-ecology, biodiversity and conservation of the remaining habitats of birds and animals within the existing forest areas. The policy statement seems quite relevant and sensible to the people of the CHT region because the policy encourages private initiatives in raising plantations, particularly rubber plantations. But the Government plan to enhance the Reserved Forest by facilitating single species plantation and acquisition of new lands to increase the coverage under reserves will be extremely harmful for the local people. It is true that there is a high level of dependency of the local people on forest based resources now. Without considering the life and livelihood of local people and excluding their meaningful participation, the formulation of any policy and its implementation would be meaningless and would give rise to increasing mistrust among them.

Table-7: Existing Policies and Regulations of Bangladesh relating to Land Resource Management and Environmental Control in the CHT.

Policy Type	Characteristics and Major Land Related Issues	Strenghts	Weaknesses
National Forest Policy, 1994	The forest has been considered as an area of major economic return for the government. Encourages setting up new forest area, particularly rubber plantation under private initiatives	Conserving bio-ecology, biodiversity and conservation of remaining habitats of birds and animals within the existing forest areas	Interest of the hill people has been undermined, weak monitoring system and failure to stop corruption.
National Water Policy, 1994	Encourage mini hydroelectricity power projects using the hill land topography, expansion of tourism, protection, restoration and conservation of wetland environment and its biodiversity	Conserving bio-ecology, biodiversity and conservation of remaining habitats of birds and animals within the existing forest areas	Issues relating to the CHT water resource management and catchment development have not been dealt with separately.
National Environment Policy, 1992	Strengthening the activities related to the reduction of land degradation, improvement of soil fertility and protection of forest, lakes and other ecosystems against the negative impacts of development activities.	Protecting lakes and ponds against degradation for maintaining the aquatic environment and facilitating drainage.	Activities related to project implementation and monitoring need to be improved
National Industry Policy, 2005	Stops unplanned establishment of industries, encourages private investment and environment friendly industrial development.	Conservation of biodiversity for ecologically critical areas, improvement of soil quality and preventing land degradation.	Out of the five Government nominated persons to the NCID, CHT representation is not guaranteed.
National Agriculture Policy, 1999	Preserves and develops land productivity, preserves existing biodiversity of crops, promotes environmental friendly sustainable agriculture and development of effective irrigation systems.	Expanding agro-based industries and promoting storage and marketing facilities for agro-based products.	Jhum farming practice and its environmental implications have not been taken care of.
National Tourism Policy, 1992	Development, preservation and maintenance of tourist resources and attractions and creation of tourism friendly image of the country.	Promoting eco-tourism and projecting natural, historical and religious attractions to foreign tourists.	Poor marketing and publicity of potential tourist attractions that exist. Unstable socio-political environment.

7.3.2 National Water Policy

The National Water policy is an important document envisaging sustainable use of water resources of the country. Bangladesh needs to have sound arrangement of sharing water resources with its neighboring countries, particularly with India as unilateral withdrawal of surface water resources from common rivers by the upstream countries would lead Bangladesh to experience severe water crises especially during the lean period. Bangladesh suffers from the problems of excess water during the monsoon and too little water during the winter months. However, the Water Policy of Bangladesh has professed an amount of control on water resource management (both surface and sub-surface). The aim of the policy is to

ensure the availability of water to all parts of the society and to encourage both public and private entrepreneurs to participate in water development processes. The policy also suggests institutional reformation for good governance of sustainable water resource utilization modes. WARPO has been held responsible for delineating the hydro-ecological regimes of the country. The CHT happens to be a separate hydro-ecological zone and hence there is need for separate planning guide for its river basins and sub-basins development. As per the national water policy, the Kaptai Hydroelectricity Project must be multipurpose, multidisciplinary and integrated in its nature. But despite its considerate tourism potentiality the lake remains unexplored in this regard. Promotion of tourism on the water bodies, as mentioned both in water

and tourism policies, the CHT region deserves special exploratory attention. The Kaptai lake, Boga lake, and the Karnafuli and Sangu rivers could be the rendered as focuses of tourist attraction.

7.3.3 National Environment Policy

Development measures and conservation strategies are generally in conflict with each other. Therefore, the aim of the National Environment Policy has been to ensure sustainable environment friendly development activities. The policy also aims to protect the country from all possible natural disasters, conserving its soil, water and air from various types of pollution. The policy guide includes environmental conservation strategies for landuse, agriculture, industry, water resource, wildlife conservation and forest resource management, many of which should receive priority attention for the CHT region. However, the policy suggestions have not so far been properly followed or implemented in the CHT. Fire wood is the main source of fuel there but little has been done to reduce the use of forest wood as fuel with any attempt to develop or improve alternative sources. No effective measures have yet been taken to stop hill cutting, land leveling and stone mining. The Government had, at one time identified twelve sites as "Ecologically Critical Areas" in the country and a few other sites have subsequently been added to the list. But despite its sensitive and fragile environmental condition, the Kaptai lake remains to date an area where pollutants from various sources are being dumped. The sedimentation rate of the lake is high.

7.3.4 National Industry Policy

The vision of the Industry Policy is to develop the capacity of the country to generate up to 30-35 % GDP from the industrial sector by the next one decade. The policy aims to spread industrialization throughout the country. Planned "Special Economic Zones" will be established in areas where raw materials are abundant, labour force and good infrastructural facilities exist. The CHT has adequate port facilities and is well connected through water ways, but its infrastructures need to be improved for its rapid industrialization, particularly for agro-based industries. Out of the 33 thrust sectors of the country, the CHT

deserves special attention for exploring the possibilities of at least nine types of industries there, such as agro-based industries, flower plantation, oil and gas, tourism, furniture, herbal medicine, commercial plantation and handicrafts. The CHT has immense potentiality for the development of an EPZ, particularly for the utilization of agro-based resources and raw materials.

7.3.5 National Agriculture Policy

The economy of Bangladesh depends primarily on agriculture. Agriculture is the single largest contributor to the GDP and it is also the largest employment sector. Crop production systems of the country are labour intensive, which largely depends on the mercy of nature. However, the scarcity of arable lands, lack of landuse planning and low yields of crops are the challenges to Bangladesh agriculture. However, the agriculture of Bangladesh is now in the stage of transformation from subsistence to commercial farming. The National Agriculture Policy aims to preserve and develop land productivity, promote environment friendly sustainable agricultural production and create opportunity for establishing agro-processing and agro-based industries. The policy encourages the expansion of horticulture and the CHT has considerable potential in this regard. What happened in the CHT is, horticulture could initially attract the local farmers, both hill and plainland people, but subsequently, lack of storage, transportation and marketing facilities emerged as major constraints to expanding this farming system there. The DAE may provide the regional agro-meteorological data to the farmers. But the predictions for Kaptai lake water level variation are not available from the DAE, which results in the farmers being threatened with inundation of their fringe land-farms. The policy promotes research on soil and agro-forestry, biodiversity of crops and improved crop varieties, but it has not addressed the major land use practices of the CHT region, which is the Jhum farming.

7.3.5 National Tourism Policy

Tourists are attracted by various natural and cultural objects. The aim of the National Tourism Policy is to promote this multi-dimensional sector and to attract both foreign and local tourists. The CHT region is rich in

unique natural landscape and cultural settings. Out of the seven areas of tourism development in the country, three major ones viz. Chittagong Metropolitan Area, Sonadia-Cox's Bazar-St. Martin Islands and the CHT happen to be located in Chittagong region. Among the three, captivating hill topography, water bodies (rivers and lakes) and tribal culture of the CHT should attract tourist especially. The CHT also offers ample scope for further development of eco-tourism in the country. Despite immense scope, as documented in the Policy, it has not yet been possible to show-case or project the tourism potentiality of the CHT to the outside world. The marketing and publicity programme, both by the public and the private sectors need to be enhanced. Poor infrastructure and social and political unrest are the major constraints to tourism expansion in this region.

It can be concluded from this review of policies that most of the national policies support the management of natural resources at the CHT. However, despite its unique characteristics, there exist very little acknowledgement on consideration of the CHT deserving special attention in some policy formulation, strategy development and implementation processes. The National Tourism Policy and the National Agriculture Policy could be mentioned as examples of such negligence. Formulation of policies in Bangladesh generally is dominated by a top-down approach, which needs to be reversed in general, especially in case of the CHT. Very little consideration has been there to include and acknowledge the indigenous knowledge while developing policy documents, particularly with regard to the CHT issues. The review also shows that there exists a lack of institutional capacity and cooperation in policy implementation. The overlapping policy issues need synergy and better intra-organizational coordination. Moreover, most of the acts, rules, regulations and policy issues on CHT matters primarily address administration and revenue collection and there is very little consideration about natural resource management specifically.

7.4 Institutional Capacity

The success of land based resource management and effective implementation of land related projects largely depends upon the existing institutional capacity. Land use

planning and environmental controls practiced there by different agencies of the Government, NGOs' concerned individuals and the civil society. It has thus been necessary to assess the policies, legal framework, rules, regulations, guidelines and human resource development model of the concerned institutions in the CHT. Some important institutions involved in the environment and land based resource management on different scales and levels in the CHT are as follows:

- ◆ Ministry of CHT Affairs
- ◆ Regional Council
- ◆ Hill District Council
- ◆ CHT Development Board
- ◆ Circle Chiefs and Headmen
- ◆ Government Agencies and Departments
- ◆ Non-Government Organizations
- ◆ Financial Institutions

7.4.1 Ministry of CHT Affairs

A new ministry on the CHT issues called the Ministry of CHT Affairs was created in 1998 for the realization of socio-economic development and sustainable resource management in the region by the Government. The Ministry is headed by a full Cabinet Minister, who is aided by a very high profile advisory council, which includes MPs, Circle Chiefs, representatives from the Regional Council and Hill District Councils. This newly created Ministry has taken over the functions of the former Special Affairs Division of the Prime Minister's Office on CHT matters. The Ministry promotes a direct communication between the Minister in the Central Government in Dhaka and the Regional Council, Hill District Council and CHT Development Board working in the field. The Ministry deals with the development projects on land resource management and considers the foreign-funded NGOs' projects to be implemented in the CHT (Rahman, 2000).

7.4.2 CHT Regional Council

The CHT Regional Council was established in 1998 in appreciation of the Peace Treaty executed in 1997. The Council is headed by a tribal Chairman, with representatives from all ethnic groups, including women and the

Chairmen of the three Hill District Councils. The functions of the Council are to supervise and coordinate the development activities of the three Hill District Councils as well as the CHT Development Board. The Chief Executive of the Regional Council is a Joint Secretary of the Government. The Council is a product of the Peace Treaty and the hill people regard it as their own organization. The Regional Council has the trust and the capability of the locals in safeguarding their interest. The Council keeps liaison between the field organizations and the Ministry. The Regional Council has the authority to ask the Government to take necessary steps to change any inconsistencies between the CHT Manual, 1900 and other existing laws. However, the development activities of other organizations, particularly the programmes related to land based resource management and improvement of socio-economic conditions of the CHT people are also looked after by the technically expert permanent officers of the Council.

7.4.3 Hill District Council

Three separate Hill District Local Government Councils for Rangamati, Khagrachhari and Bandarban districts were established through the enactment of three separate Acts in 1989. However, each of the Councils had been renamed as Hill District Council by an amendment in 1998. Each Council is headed by a tribal Chairman directly elected by both tribal and non-tribal local people. The Council also includes 20-30 elected members representing each ethnic group, including both tribal and non-tribal women. The Chief Executive of the Council is a Deputy Secretary of the Government, who acts as the Secretary to the Council. Major functions of the HD Councils relating to resource management and environmental control are coordination, implementation and review of projects related to agriculture and forestry, livestock development, fisheries, land and land management, Jhum cultivation and environmental protection and development. The Council can formulate and implement plans on subjects related to land based resource improvement. The Council has necessary authority to constitute different committees, headed by a member of the Council to supervise, coordinate and assist specific development projects. An example of such a

committee created by Rangamati Hill District Council is its Agriculture, Fisheries and Livestock Committee.

7.4.4 CHT Development Board (CHTDB)

The CHT Development Board (CHTDB) is an autonomous body of the Government responsible for implementing various development projects in the CHT region. The Chairman and a Vice-Chairman of the board are appointed by the Government. The Chairman is the Chief Executive of the Board, who enjoys the status and rank of a Deputy Minister of the Government. The Deputy Commissioners of the three hill districts are ex-officio members of the Board. Another four Board Members are appointed by the Government. Three Circle Chiefs are the members of its consultative committee to advise the Board in formulating and implementing development projects. At present, a civilian MP is the Chairman of the Board, but in the past, a military General had always headed it. The CHT Development Board is a development organization of the Government operating at field level and thus requires trained professional staff to formulate, implement and coordinate its development projects. Since the establishment of the CHTBD in 1976, a number of development projects have been implemented to settle landless Jhumia people. The Joutha Khamar Settlement Scheme (1976-1983) was initiated by the Board to settle about one and half thousand of such families who were engaged in horticulture, fisheries and livestock rearing. Similarly, under the CHT Multipurpose Development Project funded by the ADB, land as allotted to about two thousand landless people for raising homesteads, agro-forestry and rubber plantation. The goal of the CHTDB is to support the hill people in their efforts towards maximum utilization of resources and improvement of their quality of life, but there have been allegations that some of the activities and programmes of the Board have been biased to benefit the settlers more against the interest of the hill people (Adnan, 2004).

7.4.5 Circle Chief and Headman

The Circle Chief is locally known as Raja and his office has been functioning as a traditional customary institution in the CHT region for

centuries. However, it is only since the British period that this customary institution was accorded a legal framework under the CHT Regulation, 1900. The entire CHT region was divided into three Taxation Circles under three Circle Chiefs: the Chakma Circle, the Bomong Circle and the Mong Circle. The three Chiefs were responsible for collecting revenue and maintenance of law and order in their respective circles. The functional authority of the King and his office has attained its status among the tribal people through ages, which evoked as a symbol of their cultural heritage, customary institutional strength and ethnic identity. A Taxation Circle is divided into Mouzas, the lowest taxation units and villages, the lowest dwelling units. A Headman is appointed in each Mouza by the DC, as nominated by the Circle Chief to work on his behalf and each Headman is assisted by a Karbari from each village. This traditional institutional framework is so deeply rooted among the tribal people that it plays a vital role in local land resource management and the successful implementation of any land based programme. After the signing of the Peace Accord in 1997, each Chief now has the legal authority to represent in the Ministry of CHT Affairs as Advisor, certify a person as tribal or non-tribal and can attend the Hill District Council meetings to express his opinion. He also acts as an advisor to the Deputy Commissioner.

7.4.6 Government Agencies and Departments

Various agencies and departments of the Government working at national level are also in operation in the CHT region. Some of those organizations involved in project formulation and implementation, infrastructural development, resource management and environmental protection are LGED, RHD, DoE, FD, DAE, BRDB, BWDB, DF, SRDI, Cooperative Organization and District/Upazila administration. The Deputy Commissioner (DC) not only plays a vital role in regulating general administration of the district but does also coordinate among the various sort agencies and departments there. The DC is also the key person with regard to land settlement in the CHT region.

7.4.7 Non-Government Organizations (NGOs)

The Non-Government Organizations have been playing a very vital role in socio-economic development and implementation of many land based resource improvement and environmental management projects in the CHT region. Since the Peace Accord, there has prevailed an atmosphere for promoting development activities on land based resource utilization which are sustainable, participatory and beneficial to the local people (Tripura, 2005). At present, more than 50 NGOs are active in this region, of which 36 are local and the remaining few are national or international (Rahman, 2000). Some important local NGOs are Green Hill, Zabarang, Kabidang, Pajureco, Tanguya, Toymu, Mro Chat etc.

NGOs in the CHT carry out activities on diversified development issues, among which some noticeable programmes are on agriculture, horticulture, nursery development, homestead gardening, social forestry, agroforestry, fishery, poultry farming, livestock farming and protection of biodiversity and the environment. Some NGOs are also involved in this region which are research and socio-environmental studies, of which Bangladesh Centre for Advanced Studies (BCAS) and the University of Chittagong are worth mentioning.

7.4.8 Banks / Money Lending

Projects relating to livelihood improvement, resettlement or resource base mobilization require credit supports. Credits are available from formal banks, informal money lenders; locally called Mahajons and a few financial institutions. The credit facilities from the formal institution in many cases appear to be biased to some ethnic groups and gender and their execution process lengthy, complicated and corrupt. The interest rates of the micro-credit facilities operated by many NGOs are quite high. A simplified credit system is thus required as a measure in resource mobilization and livelihood improvement of the CHT people.

The above discussion on the existing institutional capacity of the CHT region for resource utilization and environmental planning, both at the Government and NGOs

Legislation, Policies and Institutions

level makes some common features evident, viz. lack of well trained and expert support staff, inadequate physical facilities, piece working policies, rules and regulation, lack of coordination, weak monitoring system and poor job accountability and corruption, particularly

in the Government offices. Effective management and strong mechanism for coordination and cooperation among the concerned and related institutions are to be put in place urgently.

Table:-8: Institutional Capacity to execute Land use Planning, Land-Based Resource Management and Environmental Control in the CHT

Name of Institution (Stakeholders)	Status	Composition and Activities Relating to Land Resource Management and Environment	Strength and Achievement	Weakness and Further Improvement
Ministry of CHT Affairs	Central Government organ in Dhaka. Has been established as a follow-up measure after the historic Peace Accord.	Headed by a Cabinet Minister; includes one Secretary and two Joint Secretaries; responsible for budgetary matters, controls the activities of the RC, HDC and CHTDB; implements development projects related to socioeconomic development and land resource utilization.	Includes a very high profile Advisory Committee concerning the Circle Chiefs, MPs, representatives from the RC and the HDC. Quite effective in developing mutual trust between the Government and various stakeholders in the CHT.	Should have a section on research, monitoring and documentation; should have more qualified and trained professional staff; the Advisory Committee should be more functional
Regional Council	An elected body. Out come of the historic Peace Accord.	Headed by a tribal Chairman indirectly elected by the HD Council; has elected representatives from all ethnic and social groups including women;	The most trusted organization in the field level. Supervises and coordinates general administration, such as execution of tribal laws, customs, social justice as well as development activities of the CHT Development Board and the three Hill District Councils.	The RC should have a multidisciplinary expert team to supervise and coordinate the programmes on land resource utilization and sustainable environmental management. Should not take the responsibility to implement the development projects at the grass root level.
Hill District Council	An elected body at the district level. Has been renamed from the former Hill District Local Govt. Council as agreed upon during the Peace Accord process.	Headed by a tribal Chairman directly elected by the local people; includes elected representatives from all ethnic and social groups including women; the Circle Chief can attend the meeting to express his opinions.	The most powerful institution in the field level; can formulate and implement plans related to land development. Deals with a large number of organizations, both Government and Non-Government at the grassroot level; has direct links with the Regional Council and the Ministry of CHT Affairs. Performs a crucial role in the development of the district.	Under staffed, both in number and in professional expertise; weak planning and monitoring systems; tends to bypass the RC in implementing many programmes. Minimum qualification and eligibility standards for the post of Chairman and members should be prescribed;

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Name of Institution (Stakeholders)	Status	Composition and Activities Relating to Land Resource Management and Environment	Strength and Achievement	Weakness and Further Improvement
CHT Development Board	An autonomous body of the Government; head office is in Rangamati and branch offices in all three hill districts	Headed by a Government appointed Chairman enjoying the rank and status of a Deputy Minister; staffed by technical people; responsible for preparing, executing and supervising development projects	The Board has implemented/ is implementing land based projects such as agriculture, irrigation, horticulture, afforestation, rubber plantation, community forestry, homestead gardening, pisciculture and Jhumia rehabilitation; has long standing expertise in and tradition of project implementation	The process of project identification is faulty and old-fashioned; top-down in nature; does not include systematic field survey and people's participation; mostly emphasizes infrastructural development rather than attending resources management and socio-economic improvement. Requires adequate training of its staff, should adapt bottom-up approach to project identification and implementation.
Circle Chief and Headman	Traditional institutional norms based upon customary values and practices	The Circle Chief called Raja is the head who is assisted by a Headman from each Mouza. The major functions of each Circle Chief are to collect revenue and deposit that to the Government treasury, settle disputes and represent the circle in various Governments offices as an advisor.	The Raja and his office is a cultural symbol. This semi-formal institution is very deeply rooted among the tribal people and it has been working effectively in revenue collection, local land management, protecting forest and other resources, regulating Jhum cultivation and bamboo cutting, keeping land related recording and resolving local disputes and conflicts.	Not very strongly aided by the existing laws and regulations, except the CHT Regulation, 1900. The Headman should have a minimum level of education and training, particularly in executing legal matters, land rescoring and survey.
Government Agencies and Departments	Central Government organs operating nationwide including the CHT region	Some important offices are LGED, Department of Environment, Forest Department, Cooperative Organization, Department of Agriculture, Department of Fisheries and District/Upazila administration.	The Forest Department set up its Jhum Control Division, Horticulture Board supported fruit gardening, LGED constructed rural infrastructures, etc.	Inadequate physical facilities, insufficient policies, laws and regulations, bureaucratic in nature and weak coordination. Requires consistent action plan for resource development, training of staff, improvement of reporting quality and ensuring accountability and transparency.
NGOs	More than 50 local, national and international NGOs are now active in the CHT.	Major projects implemented by the NGOs are on agriculture, horticulture, nursery development, homestead gardening, social forestry, agro-forestry, fishery, poultry farming, livestock farming and protection of biodiversity and environment.	NGOs have an already established role in assisting the resource development programme in the CHT region. After the Peace Accord NGOs' involvement in the region has expanded. Mostly funded by donor agencies. Successful in developing trust among the local people on development issues.	Lack of coordination between Government and NGO activities. Auditing, management and staff training programmes of the NGOs need to be strengthened. NGOs should have their research units. Documentation and information dissemination processes should be more transparent.
Financial Institutions	Formal banks, <i>Mahajans</i> , financial institutions, NGOs			Process execution should be simple with low interest rates and corruption free.

Conclusion

Bangladesh emerged as an independent sovereign country in 1971 with the aim to create conditions that would let people live peacefully and in harmony as various religious, social and ethnic groups. It is the constitutional right of each Bangladeshi citizen to own land and use land based resources in an equitable manner in any part of the country, until and unless otherwise defined. Similarly, the right to conserve, uphold and disseminate the cultural heritage of each individual or groups is acknowledged constitutionally. Unfortunately there have been occurrences of discord and insecurity among the people of different ethnic and social minority groups, particularly on the issues of land ownership and uses of land based resources. The exploration and uses of land-based resources in the CHT has suffered disturbances, both socio-politically as well as environmentally. There has been perceived an increasing trend of resource scarcity; the issue of environmental consideration also concerns many in this region now. The situation has assumed alarming proportions during the last two decades especially because of the widespread conflicts and disagreements.

The food system and subsistence of the local people in the CHT has long been entirely dependent on land and land-based activities. In recent years, resource availability in the CHT has declined drastically due to both natural growth of population and migration of people into the area. Moreover, the unconcerned and nonchalant natural resource planning of the Government has not been successful and hence rejected by the CHT people.

Due to rapid loss of arable land and shortening of the Jhum cycle, which used to be the principal sources of subsistence production in the CHT, the long-term adverse impacts on the regional and national economy are unavoidable. As the total land area in the CHT has remained unchanged and there is little scope of any further expansion of the arable land coverage, it has to be kept in mind that the economical and environmental consequences of any further unplanned resource exploration will lead the region to a very weak and unsustainable future. It is thus necessary now to rethink the issues

relating to migration and resettlement programmes, further extraction of natural resources, deforestation and destruction of vegetation cover, loss of biodiversity, erosion of surface soil, decline of soil fertility and pollution of land and water bodies.

The CHT have already faced the bitter experiences of large scale population displacement due to the Kaptai Hydroelectricity Project, Government backed resettlement of the Bengalis from plainland districts and the outburst of insurgency and counter-insurgency operations. However, after the Peace Treaty, there is a perceived trend of developing trust among the different ethnic groups there. It is the time now to take positive steps towards sustainable utilization of local natural resources and protection of the environment without any delay. This CHARM project could be a solid step forward to achieving a sustainable land resource management programme and effective environmental control in the CHT.

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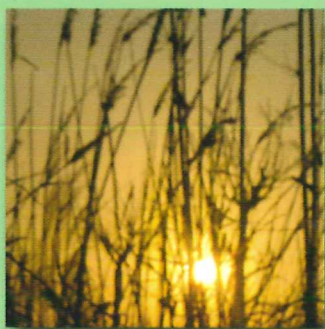
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The environment in the Chittagong Hill Tracts (CHT) is under pressure. New methods must be developed, applied, and tested for sustainable management of the natural resources. Practical information is required at both the field and policy level. The Chittagong Hill Tracts improved natural Resources Management (CHARM) project aims at building capacity of different stakeholder groups for promoting sustainable natural resources management in the Chittagong Hill Tracts (CHT). CHARM targets a better understanding of sustainable management of the natural resources and the provision of an improved information basis for decision making with involvement and participation of target groups.



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