

Land Policies, Land Management and Land Degradation in the Hindu Kush-Himalayas

Bangladesh Study Report

**A. Kamal
M. Kamaluddin
M. Ullah**

**International Centre for Integrated
Mountain Development
Kathmandu, Nepal
1999**

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Preface

The Mountain Farming Systems' Division of ICIMOD, with support from the Global Mountain Programme, initiated a comparative study on the effect of land policies on land management and degradation in six regional countries; Bangladesh, Bhutan, China, India, Nepal, and Pakistan; sharing the Hindu Kush-Himalayan mountain range. One study was commissioned in each country. The exception to this was India where two studies, one in the Northwest and one in the Northeast, were conducted to capture the diversity and size of the Indian Himalayas. Each of the country studies was carried out by a team of experts from biological as well as socioeconomic disciplines.

The study was based on a concept paper developed by Professor Piers Blaikie in association with ICIMOD staff. The Team Leaders of the country studies came to ICIMOD in May 1997 to discuss the concept paper and agree on the methodology and operational aspects of the project. Each of the studies was to investigate four sectoral policies, e.g., Agriculture, Forestry, Wildlife and National Parks, and Tenure and Property Rights. Additionally, each study looked at the national and or provincial environmental policy and its implementation. The idea was to investigate thoroughly all the sectoral policies and their impact on land management. Each of the studies also chose one particular issue of interest for the country or area that had a significant impact on land management. The study period was between June-October 1997 and final reports were presented in a workshop at ICIMOD in early November. Subsequently, the reports were revised for publication.

We believe that, by publishing these studies, ICIMOD will facilitate an important contribution for a wider audience, in the Hindu Kush-Himalayan region and beyond, who would benefit from the detailed information and analysis of this very important topic.

ICIMOD would like to acknowledge the contribution of Professor Piers M. Blaikie, of the University of East Anglia, U.K., in the design and implementation of this study. From within the Centre, Professor Blaikie was assisted by Dr. Syed Zahir Sadeque, Social Scientist, ICIMOD, and Dr. Tej Partap, Head, Mountain Farming Systems and coordinator of the Global Mountain Programme at ICIMOD. In addition, a multidisciplinary advisory team of ICIMOD professionals, namely, Dr M.Banskota, Dr N.S.Jodha, and Dr T.S.Papola, provided valuable inputs during the study.

Tej Partap

Syed Zahir Sadeque

Abstract

The present study on land policies, land management and land degradation in the Chittagong Hill Tracts (CHTs) of Bangladesh is part of an overall effort by ICIMOD to assess the impact of land policies on land management and land degradation in the Hindu Kush-Himalayan region. The study highlights that the CHTs vary in important ways from other parts of the HKH region. First, the CHT region has both hills and plains with forest and agricultural lands. Second, it is inhabited equally by recently settled migrants from the plains and the hill tribes. The 1900 instrument of administration distinguished this area from the rest of the country until 1998, resulting in a variation in land policies for the CHTs and those for the rest of the country.

The study indicates that because of the resettlement issue and conflicts arising, it may be unrealistic to relate directly the process of land degradation in the CHTs to the impact of land policies. The policy initiatives indicate that it was recognised that there is less land pressure in the CHTs, so more people can be encouraged to migrate to the hills. Second, land policies recognised traditional shifting cultivation as a damaging practice and discouraged it. Interestingly, new settlers brought with them the knowledge and practice of settled plough farming to the CHTs which caused more soil erosion from farmlands. However, land policies have so far not taken this fact into account and are silent about it. Policies in place favour forest conservation and resettlement of shifting cultivators outside the forests.

The study concludes that holistic land policies are needed to integrate the hill people with the mainstream process of development in Bangladesh, if land degradation in the CHTs has to be curtailed and the ultimate goal of sustainable environmental management achieved

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Chapter 1

Chittagong Hill Tracts: A Profile

1.1 Introduction

This Bangladesh country report is an outcome of research on land policy, land management, and degradation in the Chittagong Hill Tracts (CHT), the south-eastern extension of the Hindu Kush–Himalayan (HKH) region, commissioned by the International Centre for Integrated Mountain Development (ICIMOD) in May 1998. The study looks at how policies have influenced land utilisation and management practices and to what extent such practices have contributed to land degradation.

Since the CHTs are different in some important ways from other regions of the HKH, the choice of four main areas of policy that affect land management posed some problems. As one enters into the complex reality of land use and management in the CHTs, it becomes increasingly clear how irresponsible development policies distort the traditional land management and land-use practices of a population group that is a minority on the national demographic map.

The other important exception one needs to take into account is the special characteristics of the CHTs with a distinct duality in many respects. The region is both hills and plains with forest and agricultural lands, inhabited almost equally by recently settled migrants from the plain and the hill people. They speak different languages and practise both plough and swidden cultivation for horticulture and agriculture. However, the most important element that distinguished CHT so long from the rest of the country is the Regulation of 1900 that was the instrument of administration until 1989 and, in essence, still effective in May 1998. What it actually means for CHT policy processes is a special status for the region. It also means that most national policies do not have any relevance for CHTs either in terms of enactment or participation in the policy-making processes.

For this work, the research team adopted a broad interpretation of land policy to include any policy taken by the state and other institutions that affected use and management of land directly or indirectly. Keeping the limitations in mind, five main policy

areas are discussed in the relationship between policy and outcome with regard to land use and land management in the CHT region in order to suggest improvements in land policy-making in the HKH region.

The report is organized as follows. Chapter 1 is an introduction to the geography, demography, and history of the CHT region. It is intended to highlight the specific reality of the CHTs within the nation state of Bangladesh. Chapter 2 presents the five key issues selected: property regimes and entitlements; forestry; agriculture; wildlife and national parks; and development projects; displacement, and resettlements. Chapter 3 deals with the overall national framework for directing development efforts with emphasis on sustainability and maintenance of the environment. Chapter 4 is a detailed discussion of people's property and the entitlement structure. Forest policy is discussed in Chapter 5. Wildlife and national parks are discussed in Chapter 6 and agriculture in Chapter 7. Chapter 8 deals with development projects, displacement, and resettlement of the hill people, while Chapter 9 deals with the issue of land degradation. Chapter 10 pulls together the main conclusions.

1.2 Geography

The eastern branch of the Himalayas, turning south and southeast through Assam and the Tripura states of India, enters the greater Chittagong district across the Feni River leaving a wide plain to the west to the sea coast in line with the eastern boundary of Noakhali district. The plain is wide in the north and becomes narrow towards the south. The ranges are covered with dense forest in successive waves of hills and hillocks; as they move east, a straight narrow range runs southward parallel to the coast with a wide plateau in between the two. The hill and forest areas of the greater Chittagong district were separated in 1860, and the district

of Chittagong Hill Tracts was created. The eastern range, which is an offshoot of the Himalayan branch, extends further east to Assam in India and the Myanmar border. This is now the Chittagong Hill Tracts (CHT) district of Bangladesh. Its total area is 13,295 sq. km. (BBS 1995). The CHTs consist of three districts, namely: Rangamati, Khagrachari, and Bandarban. It lies between latitude 21° 25' and 23° 40' N and longitude 91° 55' and 92° 45' E. The CHTs are a bridge between South and Southeast Asia, with close proximity to India and China. They are also home to more than a dozen ethnic groups.

Geophysically, the CHT contain four major valleys formed by the rivers Feni, Karnaphuli, Sangu, Matamuhari, and their tributaries. These are the Changi Valley, Maini Valley, Rainkhiang Valley, and Sangu Valley. These valleys are 30–80 km in length and 2–10 km wide. They run parallel to the hill ranges stretching from north to south. The height of the hill ranges varies between a few hundred metres to over 1000 m. They are the oldest geological formation in Bangladesh. The rivers mostly flow over the basins and valleys in between the hills from north to south and at the final stage bend towards the west and empty into the Bay of Bengal. The valleys are highly suitable for agricultural and horticultural activities. Some flourishing trading and industrial towns have developed in the river basins. As the rivers of the area flow through steep slopes with powerful currents, they are good sources for generation of hydroelectricity.

Climatically the CHTs are situated in the humid tropical, evergreen rainforest zone. Rainfall induced by the monsoon averages 250 cm per year. The summer season stretches from March to June, and the average summer temperature is 30° C. Winter is between November and February with an average temperature of 20° C.

However, summer temperatures may rise to 40–42° C and winter temperatures may fall to 4–5° C.

Geographically, and in surface and soil condition, the hill districts are completely different from the rest of the country. When the country was divided into 19 districts, the CHTs used to be the largest district of the country (recently the country was divided into 64 districts).

1.2.1 Rangamati

Rangamati, the biggest of the three hill districts, has an area of 6,089 sq. km. The tribes of this district include the Chakma, Marma, Tripura, Tangchangya, Lusai, Pankoo, Khiang, and Murong. Khagrachari is in the north of the CHTs, with Bandarban in the south, Chittagong in the west, and Mizoram State of India in the east. The district has 2,318 sq. km. of reserve forest and 2,271 sq. km. of unclassified forest. The *thana(s)*¹ of the district are Rangamati Sadar, Kawkhali, Naniarchar, Langdu, Baghaichari, Barkal, Rajasthali, Bilaichari, and Kaptai. It has 49 unions and 164 *mouja(s)*².

1.2.2 Khagrachari

Khagrachari has an area of 2,590 sq. km. with reserve forest spread over 103 sq. km. and unclassified forest over 1,094 sq. km. Tripura State of India is to the north, while Chittagong and Rangamati are on the south, Mizoram State of India in the east and Chittagong and Tripura State in the west. The *thana(s)* of the district are Khagrachari Sadar, Dighinala, Paanchari, Mahalchari, Matiranga, Manikchari, Ramgarh, and Lakhmichari. It has 35 unions and 118 *mouja(s)*. The tribes of this district include the Chakma, Marma, and Tripura.

1.2.3 Bandarban

Bandarban has an area of 4,502 sq. km. consisting of 751 sq. km. of reserve forest and 2,125 sq. km. of unclassified forest. The *thana(s)* of the district are Bandarban Sadar, Ruma, Roangchari, Thansi, Naikhangchari, Alikadam, and Lama. It has 28 unions and 96 *mouja(s)*. Rangamati district is to the north, while Myanmar is in the south and east, and Chittagong and Cox's Bazaar are in the west. The tribes of the district are the Marma, Murong, Tripura, Tangchangya, Bawm, Chak, Chakma, Khiang, Khumi, Lusai, and Panko.

1.3 Brief History

In 1760, Mir Qasim Ali Khan, the Nawab of Bengal, ceded the CHTs to the East India Company. The East India Company adopted a policy of non-interference with the internal affairs of the tribals, as it was satisfied with the taxes paid. However, in 1777, Chief Sher Daulat Khan, stopped paying taxes. The East India Company reacted by sending troops and a war of attrition continued until Jan Bax Khan, son of Sher Daulat Khan, yielded to Warren Hastings in 1785. Jan Bax Khan, at one stage of the conflict prohibited the entry of people from the plains, but the measure proved counter productive as the British rulers retaliated by stopping supplies of necessities from the plains. Jan Bax Khan was compelled to submit to the British authorities. During the tenure of Rani Kalindi (1832-1837), the British started interfering in the internal affairs of the tribals. As the British felt it expedient for administrative purposes, the area was separated from Chittagong in 1860 and named the Chittagong Hill Tracts' District. However, with the annexation of Lushai hill, the CHTs were demoted from the status of a district to the status of a subdivision. Raids by the Kuki tribes com-

¹ A *thana* is a sub-district

² A *mouja* is a revenue unit. It may or may not conform to an actual village.

pelled the British administration to bring in some administrative reforms and resulted in the enforcement of the Chittagong Hill Tracts' Regulation of 1900.

The development and changes that followed the partition of India in 1947 have had serious implications for the hill people, particularly in the areas of land dis-possession and disturbance to their economic and cultural life.

In 1959, the indigenous police force was disbanded and officers were scattered. The Basic Democracy Order enforced in 1959 contributed to the militarisation of the CHTs. Formulation of the new constitution of Pakistan in 1962 also lessened the traditional power of the ethnic leadership, and a systematic but clandestine colonisation of the hills by Bengalis began. In 1964, president Ayub Khan of Pakistan abolished the 'special status' of the CHTs. Since then Regulation 1 of the 1900 Regulation—better known as the Hill Tracts' Manual—has enjoyed a peculiar status. It is not recognised under the constitution, but it has never been annulled. Between 1900 and 1964, the Regulation left customary tribal

laws and lesser civil and criminal powers with the chiefs and headmen. Among other things they could settle land disputes. With the abolishing of the 'special status', the ethnic leadership lost control over land, among other things. Since then, the land rights' situation in the CHTs has deteriorated with large-scale Bengali settlement, and the presence and power of the military increased.

1.4 People

According to the census of 1981, the population was 784,000. In the 1991 census the population was estimated at 974,200; an increase of 23.3 per cent. Of the total population of 1981, about 60 per cent were local tribal people. The remainder were mainly from other parts of Bangladesh with a steady flow of new settlers, mainly land-less rural people. The statistical yearbook of 1990 shows in-migrants of 20,008 in 1951, 50,513 in 1961, 90,849 in 1974, and 9,998 in 1981. The ethnic composition of the population has been important in deciding various policy issues; Table 1.1 shows the ethnic distribution of population in CHTs in 1991.

Table 1.1: Distribution of Population in CHTs by Ethnic Groups (1991)

Ethnic group	Total population (approx.)	Percentage
Bengali	500,000	50
Chakma	240,000	24
Marma	143,000	14
Tripura	61,000	6
Murong	2,200	2.2
Tanchangya	1,900	1.9
Byom	700	0.7
Pankho	450	0.35
Chak	200	0.20
Khang	200	0.20
Khushi	200	0.20
Lushai	120	0.12
Mro	66	-

Note: 20 per cent of the Bengali population in CHTs is temporary.

CHTs have the lowest population density in the country; combined together the population density is 210 persons per square mile (81 persons per km²) as opposed to the national average of 1,917 persons per square mile (740 persons per km²). The low population density gives authorities reason to draw the conclusion that there is land available; a proposition rejected by CHT tribal people and others who know that cultivable lands (especially

for rice, which is the staple in Bangladesh) are minimal in the hill districts compared to other districts of the country.

The literacy rate in 1981 in CHTs was a little lower than the national average (18% in CHTs, 19.7% for Bangladesh). The female literacy is far lower than the national average (8.5% in CHTs, 13.2% for Bangladesh), while the difference in the male literacy is negligible.

Chapter 2 Key Policy Issues and Reasons for Prioritisation

2.1 National Environmental Strategy

The Ministry of the National Environment Conservation and Environmental Control has announced that the government will provide 1000 ha of land to the CHTs for the purpose of forest conservation.

terraced; this is hardly 0.4 ha for every 10 people.

2.3 Forest Policy

The CHTs are overwhelmingly a forest region. The Bangladesh Forest Department reported that 1000 ha of forest in the CHTs were destroyed in 1971.

Chapter 2

Key Policy Issues and Reasons for Prioritisation

2.1 National Environmental Strategy

By first looking at the National Environmental Strategies and Environmental Action Plan (NEMAP), it is intended that a macro-view of the environmental strategies currently in practice is presented. The evolution of environmental strategy and its action plans reflects a particular awareness of the planners which no doubt influences implementation processes.

2.2 Property Regimes, Tenure and Tenancy

Ownership of land is the most sensitive form of property right that provides access to resources. CHTs, with a population of a little over a million, cover more than a tenth of the country. Only 3.2 per cent of the CHT land surface, basically flatlands, is suitable for all-purpose plough agriculture. Another 2.9 per cent is suitable partly for fruit gardening and partly for agriculture, but only after slopes are

terraced; this is hardly 0.4 ha for every 10 people.

2.3 Forest Policy

The CHTs are overwhelmingly a forest region. The Bangladesh Forest Department recognises three categories of forests in CHTs. These are Reserved Forests (RF), Protected Forests (PF), and Unclassed State Forests (USF). Out of a total area of 1.3 million ha, RF cover 322,000 ha or about 24 per cent; PF cover 14,038 ha or about one per cent; and USF cover 997,000 ha or about 75 per cent (ADB 1976). Forest products are the main source of household energy in CHTs. Forests also provide grazing for cattle and timber for the rest of the country. CHTs' forestry's importance in the maintenance of biodiversity and environmental conservation is well recognised.

2.4 Wildlife Conservation Policy

The CHTs were once the abode of rich wildlife. The wildlife now face a serious

threat from poachers and illegal commercial interests. As a result, current national forestry policies are committed to increasing the amount of protected areas to 10 per cent of the reserved forest land by 2015. Both biodiversity conservation and livelihood considerations have to be taken into account when developing wildlife and biodiversity projects.

2.5 Agricultural Policy

Agriculture in the CHTs is critically important for sustaining the food–population balance. Although only a small percentage of land is available for agriculture, it provides a livelihood for most people. As far as food production is concerned, CHTs have a clear advantage over the rest of Bangladesh. Plough cultivation and *jhumming* are the two forms of cultivation in CHTs.

2.6 Development Projects, Displacement and Settlement of People from the Hills and Plains

The Kaptai dam and hydroelectric plant built between 1957 and 1963 with USAID funding is perhaps the principal cause of recent dispossession of tribal land in CHTs. The artificial Kaptai Lake, created from the construction of the dam, submerged 650 sq. km. of prime farming land which accounted for 40 per cent (approx. 26,000 ha) of the total cultivable land—possessed mainly by hill people. This severely disrupted the population–resources balance and required the resettlement and ‘rehabilitation’ of those displaced. Subsequent resettlement of plains’ people for security reasons, and consequent displacement of hill people, and current resettlement following the peace process have important policy implications for land use and land management in CHTs.

Chapter 3

Environmental Strategy

Over the past six years in Bangladesh, pressure from multilateral banks and bilateral aid agencies to undertake a range of environmental and resource plans has resulted in a series of environmental strategy documents and other reports. They include a National Environmental Management Plan and several natural resource status reports.

3.1 Scope and Objectives

In the late 1980s, the National Conservation Strategy (NCS) was expected to identify obstacles to conservation and sustainable development and prescribe actions to overcome them in an integrated, cost-effective manner. The terms of reference called for the establishment of links between conservation and national development goals.

Undertaken in two phases, the strategy aimed to incorporate environmental considerations into the development planning process. It proposed to do this by developing a framework to address natural resource conflicts occurring in the course of socioeconomic development. The duties

and responsibilities of all relevant ministries were to be clearly spelled out. The major objective of the NCS was to provide guidelines for development practitioners on means to preserve or improve the environment while pursuing the goal of sustainable development. The strategy covered the following sectors: agriculture, conservation of genetic resources, cultural heritage, energy and minerals, environmental education and awareness, environmental pollution, fisheries, forestry and forest conservation, health and sanitation, human settlement and urban development, industry, land management, livestock, natural hazards, population, rural development and NGO activities, transportation, water resources and flood control, and wildlife management and protected areas.

Two initiatives contributed to the decision to undertake the NCS: the 1980 World Conservation Strategy and a 1984 request from NORAD to IUCN to undertake a state of the environment report for Bangladesh. In the appraisal mission for this report, recommendations for a National Conservation Strategy were made to the Department

of Environmental Pollution Control (DEPC). Unfortunately the DEPC had a limited mandate within the government, and initially the government did not endorse the recommendation. However, with the assistance of IUCN, interest in the NCS was revived within the government and the development assistance community. This was done mainly by emphasising the magnitude of conservation and development problems in Bangladesh and the need for strategic planning to address them. Environment and development issues were also receiving a great deal of attention from donors and the government at that time.

The NCS was prepared in two phases. Phase I produced a prospectus with an overview of environmental issues and the status of natural resource use and degradation; and it also spelled out the organization and methodology for Phase II, including a work plan. The prospectus identified 20 areas, including major economic development sectors and likely environmental issues in each area.

The Ministry of Agriculture and Forests had overall responsibility for the NCS until the creation of the Ministry of Environment and Forests in 1989. Before January 1988, when Phase II began, the Ministry of Agriculture and Forests set up a task force of 22 secretary-level members of relevant ministries. Chaired by the Minister for Agriculture and Forests, the task force was to oversee strategy preparation and provide overall guidance. However, the task force never met. As part of the consensus-building process, seven sectorial workshops were held to present sectoral write-ups prepared by the NCS secretariat. These sectors were land resources, genetic diversity, forestry, wildlife, agriculture, energy and minerals, and fisheries and water resources. Experts, senior government officials representing key institutions, and academics in related fields attended these workshops.

There was little substantive participation in NCS preparation by government agencies, NGOs, or semi-governmental institutions and almost no participation from the private sector. Opportunities for consultation were limited to the workshops. The NCS document is largely the product of a group of academics and government officials. Dialogue on the issues among policy-makers, decision-makers, resource-users, and the public was weak. A wide participation programme could have developed a better profile and level of awareness and given the NCS the momentum and support needed for its adoption and implementation. As it stands, the NCS has been marginalised by other initiatives and has fallen into obscurity. The failure of the task force to function left a void in the stewardship of strategy preparation. Without the backing of key government officials, many government institutions were either slow or not interested in participating in NCS preparation (Earth Scan 1997).

3.2 National Environmental Strategies and Action Plan

After the emergence of Bangladesh as a sovereign country in 1971, the first enactment dealing with an environmental subject was the Water Pollution Control (Amendment) Act 1973. The first major piece of legislation on the subject, however, was the Environmental Pollution Control Ordinance 1977 which created an Environmental Pollution Control Board. This Board was assisted by a Pollution Control Cell, which grew into the Department of Environment Pollution Control, and subsequently to the Department of Environment.

In 1989, a decision was taken to create a Ministry of Environment and Forests. The ministry is responsible for environmental matters at the national level and works with ministerial agencies to ensure that environmental concerns are taken into account in

the formulation and execution of development policies. Besides the departments of Forests and Environment, the Ministry oversees the activities of Bangladesh Forest Industries Development Corporation (BFIDC), the Forest Research Institute (FRI), the Institute of Forestry and Environmental Sciences (at Chittagong University), and the National Herbarium.

3.2.1 National Environmental Policy 1992

The National Environmental Policy was officially announced in 1992 with the following objectives.

- Sustenance of the ecological balance and overall progress of the country through protection and improvement of the environment
- Protection of the country against natural disasters
- Identification and control of activities that pollute and degrade the environment
- Ensuring environmentally sound development in all sectors
- Ensuring sustainable, long-term and environmentally sound utilisation of all resources
- Active association with environment-related international initiatives to the extent possible

The National Environment Policy embodies environmental policies for 15 sectors: agriculture; industry; health and sanitation; energy and fuel; water development, flood control, and irrigation; land; forests, wildlife, and biodiversity; fisheries and livestock; food; coastal and marine environment; transport and communication; housing and urbanisation; population; education and public awareness; and science, technology, and research.

Environmental policies on forest, wildlife, and biodiversity have the following objectives.

- Conserve, expand, and develop forests to sustain the ecological balance and meet socioeconomic needs and realities
- Include tree plantation programmes in all relevant development schemes
- Stop shrinkage and depletion of forest land and forest resources
- Conserve wildlife and biodiversity, strengthen related research, and help dissemination and exchange of knowledge in specific areas
- Conserve and develop wetlands and protect migratory birds

Environmental policies on land have the following objectives.

- Formulate a balanced and environmentally sound national land-use policy and plan
- Prevent land erosion, preserve and increase soil fertility, and expand activities for conservation and environmentally sound management of newly accreted land
- Encourage land-use systems compatible with various ecosystems
- Prevent the spread of salinity and alkalinity of land

3.3 National Environmental Management Action Plan

The National Environmental Management Action Plan (NEMAP) is a plan of the Government of Bangladesh prepared by the Ministry of Environment and Forests. NEMAP is considered the basis for consolidating programmes and interventions aimed at promoting better management of scarce resources and reversing present trends of environmental degradation. NEMAP is intended to build on the general principles set out in the National Environmental Policy by proposing concrete actions and interventions in a number of priority areas. The current plan is applicable for the period from 1995-2005. The first

phase of the NEMAP was carried out in 1992 by national consultants who identified certain areas of concern. The second phase was carried out in 1993 by national and international consultants who prepared a list of projects. The order of priorities was arrived at after discussion with government officials. The third phase was carried out in 1994 through a series of discussions and workshops in which people from all walks of life participated.

The NEMAP has been developed with assistance from UNDP. Other organizations and their members involved include the Association of Development Agencies in Bangladesh and their various local-member NGOs, the Coalition of Environmental NGOs and their members, the Department of the Environment, and the Bangladesh Centre for Advanced Studies. The consultative process was developed through an intensive dialogue between all partners to allow maximum coverage of the country and input from as many sectors as possible. There were 23 grass roots' level workshops covering all the main agro-ecological zones. Participants included women, farmers, fishermen, officials, educationists, NGO workers, businessmen, elected representatives, and others. Six one-day regional workshops were held. A national workshop was held in June 1994 to consolidate the findings and recommendations of all the workshops. Finally, the NEMAP was published by NEMAP Secretariat, Ministry of Environment and Forests (NEMAP 1995).

NEMAP is the basis for promoting better resource management, making people aware of environmental problems, and reversing the present trend towards environmental degradation. It is expected to identify key environmental problems. Since these may change over a period of time, NEMAP will have to evolve in response to change. The action plan is meant to be implemented not only by the government

but also by NGOs and individual citizens and communities. The management interventions are all essential but the more urgent ones have been given greater importance.

3.3.1 Main Environmental Issues

For the purpose of management, implementation, acquiring necessary funds, and enabling all agencies to initiate or implement their own programmes singly or in combination with other agencies, the NEMAP has identified the following as main environmental issues.

- Institutional issues: intersectoral coordination, ensuring people's participation, monitoring of NEMAP, legislation, and methodology of people's participation
- Sectoral issues: health and sanitation, forest, biodiversity, natural hazards, education and awareness, industry, water, agriculture, energy, fisheries, land, housing, and transport
- Local issues: salinity and shrimps, coastal marine, Barind Tract, wetlands, hill cutting, and Madhupur Tract
- Long-term issues: regional water-sharing, urbanisation, climate change, and research and development

The main environmental issues on land resources and forestry and biodiversity are highlighted here.

3.3.2 Land Resources

Virtually, all available land is utilised for agriculture, forestry, fishing, settlements, and urban development. It is felt that land-use priorities have to strike a balance between the needs of these competing sectors. Major land-use conflict arises from uncoordinated action amongst the ministries and agencies concerned with land management. Yet, little attention has been paid to formulating a national land-use

policy to conserve and make optimum use of this natural resource.

Gradual loss of agricultural land, loss of soil fertility, soil degradation, landlessness, distribution of *kha(s)* land, and a cumbersome land registration system are important issues that have been addressed by the NEMAP. A number of specific actions has been proposed (Table 3.1).

3.3.3 Forestry and Biodiversity

Forests are in decline in Bangladesh and have reached an all-time low in recent years. About half of the forest land has lost tree cover. In the past, forest management concentrated on industrial wood production with little regard for watershed protection, preservation of genetic diversity, wildlife preservation and manage-

ment, and the needs of local people. As a result, forest losses remain unchecked. Although South Asia had an annual deforestation rate of 0.6 per cent for the period from 1981-1990, Bangladesh reached 3.3 per cent annually. This latter rate excludes forest fallow and new plantations of about 37,000 ha annually. Projected losses are three per cent to the year 2000 (FMP 1993). Deforestation results from clearing land for agriculture, principally *jhumming* (shifting cultivation). About 60,000 families engaged in *jhumming* are involved in an area of about 85,000 ha of hill forests (FMP 1993), excluding CHTs where about one million people *jhum* in an area of 1.32 million ha (Khisa 1995).

In the past, felling rates exceeded the forests' ability to regenerate in sufficient qual-

Table 3.1: Key Issues and Specific Actions Suggested in NEMAP for Land Resources

Key issues	Recommended Actions	Type of Action	Actors/ Agencies	Specific Actions
Unsustainable land use	Development of sustainable land-use management	Policy	MoLand, agricultural research organizations, universities, community organizations/ NGOs	Action research/farm research
	Study of indigenous sustainable land-use practices	Project	Research organizations, community organizations/ NGOs, people	Study to increase efficiency of the production system and its application
Loss of soil fertility	Soil fertility status survey and classification of soil according to fertility; appropriate care for soil nutrient deficiencies	Project	SRDI, research organizations, universities	Survey projects on soil fertility conservation and mapping
Management of degraded land	Inventory of degraded land, its mapping and recommendation for appropriate use	Project	SRDI, SPARSSO, research organizations	Survey and mapping

Table 3.1: Key Issues and Specific Actions Suggested in NEMAP for Land Resources (cont'd)

Key issues	Recommended Actions	Type of Action	Actors/ Agencies	Specific Actions
Status of land resource: inventory, classification and legal status	National land-use survey in collaboration with research institutions and private sector	Project	Directorate, DLR, research organizations, private sector	Land-use survey, land classification on the basis of physical uses and legal status, and formulation of recommendations for subsequent replication
Age-old land registration and records of land rights' system	Modernisation of land registration and land rights' recording system with computer assistance such as GIS	Policy/ Project	DLR, MoLand, research organizations	Pilot study and formulation of recommendations for subsequent replication
Absence of land policy providing provision for land-use planning and addressing the policy, and land reform/ land fragmentation/ land tenure/ landlessness/ land settlement such as distribution of <i>khas</i> lands	Formulation of comprehensive land policy	Policy	MoLand	Formulation of land-use plan; land reforms incorporating agrarian and tenure structure; programmes for giving <i>khas</i> lands for settlements to the poor and encouraging environmentally sound and sustainable land-use patterns
Soil conservation issues	Soil conservation measures in areas with high soil erosion	Project	DoF, CHTDB, community organizations/NG Os, people	Pilot project to develop appropriate agroforestry practices, plantation and land-use practices for the conservation of soil with active participation of local people

Source: NEMAP 1995

Notes: CHTDB: Chittagong Hill Tracts' Development Board; DLR: Directorate of Land Records; DoF: Department of Fisheries; MoLand: Ministry of Land; SRDI: Soil Resource Development Institute; SPARRSO: Space Research and Remote Sensing Organization

ity and quantity. Removal of remaining natural forests and replacement with low-yielding plantations are not effective as a mecha-

nism to sustain resources. Existing methods of clear felling (followed by burning), have caused soil erosion, productivity loss, and

substantially reduced biodiversity. Plantations with monocultures of exotic species on a large scale do not maintain biodiversity. Monocultures, although created for economic reasons in Bangladesh, are susceptible to disease. In some cases, the species planted are inappropriate to sites and intended uses (FMP 1993).

Key issues associated with forests, wildlife, and biodiversity include encroachment of forest land for agriculture and human settlement, depletion of forest resources, and

replacement of natural forests by commercial plantations. Management of wetland within forests is still poor, and these should be rehabilitated to develop an ecologically viable and socioeconomically acceptable system. These issues have been addressed by the NEMAP and a number of specific actions has been proposed (Table 3.2).

Legal Enactment

The Department of Environment under the Ministry of Environment and Forests is le-

Table 3.2: Key Issues and Specific Actions Suggested in the NEMAP for Forestry and Biodiversity

Key issues	Recommended Actions	Type of Action	Actors/Agencies	Specific Actions
National forest policy	Formulation of a new national forest policy suited to the present and future social, economic, political, and environmental needs of the country together with adequate and appropriate legislation for implementing the policy	Policy/Advocacy/Project	MoEF, in collaboration with MoL, MoE, MoLaw, MoLGRD, MoLF, MoE, MoA, MoI, MoP, MoTourism, MoIWDFC, Cabinet Division, FD, people's representatives, community organizations/NGOs, people	<p>Reviewing and studying existing forest policy, laws, rules and regulations, related sectoral study reports, Forestry Master Plan, National Conservation Strategy, National Environmental Policy 1992, NEMAP and preparation of national policy with people's participation.</p> <p>Consultation with local people living in and around forests, private forest owners, homestead tree garden owners, local landless people, destitute women, marginal farmers, unemployed and underemployed people; taking their opinions</p>

Table 3.2: Key Issues and Specific Actions Suggested in the NEMAP for Forestry and Biodiversity (cont'd)

Key issues	Recommended Actions	Type of Action	Actors/Agencies	Specific Actions
Institutional reforms for forestry	Separation of authority and enterprise functions in government organizations; providing fully fledged (functional and financial) autonomy to the enterprise system; enterprises formed should promote private sector, cooperative sector, and organized people's participation	Policy/Advocacy	MoEF in collaboration with MoEstablishment, MoFinance, MoLGRD, MoP, Cabinet Division, FD, people's representatives, journalists and community organizations/NGOs, people	and views for formulating the new National Forest Policy Reviewing and studying the Forestry Master Plan, consultation with all relevant actors, and preparing a Project Concept Paper
Depletion of forest resources	Giving highest priorities to forest conservation, augmentation of forest resources tree resources development in rural areas, and increasing forest and tree cover in the country.	Policy/Advocacy	MoEF, FD, community organizations/NGOs	Adopting and implementing an adequate and appropriate national forest policy through people's participation and participatory enforcement through targetted groups. Improved management of state forests and plantations, maintaining sustainability, productivity, environmental soundness, equity based on properly prepared forest management plans and

Table 3.2: Key Issues and Specific Actions Suggested in the NEMAP for Forestry and Biodiversity (cont'd)

Key issues	Recommended Actions	Type of Action	Actors/Agencies	Specific Actions
				implementing the same through people's participation. Improved management of homestead forests and providing support for developing private nurseries. Updating forest and tree resources' inventory information, forest and tree cover maps, and maintaining them on the Resource Information Management System (RIMS)
	Awareness development	Advocacy/ Policy	MoEF, FD, television, radio, newspaper, video film, community organizations/ NGOs, people	Media campaign; extension; television and radio programmes; short films, exhibitions, seminars, and symposia, newspaper articles; essay competition at educational institutions
Conservation of wildlife	Giving priority to the protection of wildlife, birds, frogs, lizards, and snakes.	Policy/ Advocacy/ Project	MoEF, FD, DoF, law enforcing agencies, community organizations/ NGOs, wildlife and nature conservation societies, people	Inventory to assess the present status of wildlife; birds, frogs, lizards, snakes; and evaluate their types and quantities available Prohibition of hunting and trapping of wildlife and their hides; hunting,

Table 3.2: Key Issues and Specific Actions Suggested in the NEMAP for Forestry and Biodiversity (cont'd)

Key issues	Recommended Actions	Type of Action	Actors/Agencies	Specific Actions
Conservation of biodiversity	Biodiversity protection	Policy/Project/Advocacy	MoEF, MoLF, FD, BFRI, people's representatives, conservation organizations, wildlife and conservation societies, community organizations/NGOs, people	trapping and disturbances of migratory birds and aquatic birds; large-scale commercial exploitation of selected frog, lizard and snake species through appropriate legislation Conservation of germplasm in seed stores, clonal orchards, botanical gardens and zoos Awareness development through media, television, radio, newspapers, seminars, symposium
	International collaboration to conserve biodiversity.	Policy/Advocacy	MoEf, MoP, FD, other related institutions and ministries	Development of a biodiversity commission with neighbouring countries for developing strategies to conserve shared resources and promote genetic interchange

Source: NEMAP 1995

Notes: BFRI: Bangladesh Forest Research Institute; FD: Forest Division; MoA: Ministry of Agriculture; MoE: Ministry of Energy; DoE: Department of Environment; MoEF: Ministry of Environment and Forests; MoFinance: Ministry of Finance; MoI: Ministry of Industry; MoIWDFC: Ministry of Irrigation, Water Development and Flood Control; MoL: Ministry of Lands; MoLaw: Ministry of Law; MOLGRD: Ministry of Local Government and Rural Development; MoLF: Ministry of Livestock and Fisheries; MoP: Ministry of Planning; MoTourism: Ministry of Tourism; NGOs: non-government organizations.

gally mandated to formulate environmental policies for all development sectors in Bangladesh and promote environmentally friendly activities in the development process. The government has approved the NEMAP proposed by the Department of

the Environment under the purview of the National Environmental Policy 1992. The current NEMAP is a well-discussed plan. There is a declaration that environmental impact assessment should be carried out for all major development projects. The

government promulgated the Bangladesh Environmental Protection Act 1995 and the Environmental Protection Regulation 1997 in the light of the National Environmental Policy 1992.

Concerns and Criticisms

Grass roots' level workshops, professional and other interest-group workshops, and questionnaire surveys trying to capture people's perceptions have demonstrated adequately that people at the grass roots' level are quite aware of the problems. Many people, both male and female, from a wide geographical range have reported environmental concerns related to the forestry sector. Most of these concerns are about the rapid depletion of forest resources, both natural and village forests.

Understandably the NEMAP process has been subject to criticisms; some of them justified. These have come from many sources—including grass roots' participants, academics, government officials, NGOs, journalists, and others. The NEMAP steering group considers such criticism not only healthy but an integral part of the NEMAP process to allow for learning from mistakes and making corrections. A number of criticisms were raised in a paper by Zahir Sadeque. He gave a reasonably accurate description of the genesis of the NEMAP over the last few years and how the present participatory process came about. He then made a number of observations and critiques of the current phase. These are summarised in the following passage.

"The consultative process was 'less than optimally participatory'. The summary of the NEMAP circulated was overly simplistic, covering only 15 environmental problems. The problems identified were 'instead of being regional or location specific, rather national and generic in nature'. The final document is concerned with 'developing a grandiose project list'. There is no

prioritisation in the plan. The composition of the team of consultants engaged for writing the plan was 'overly water-expertise inclined' and neglected other disciplines such as botany, agriculture, fisheries, wildlife, industrial and urban planning, social services, economics, and planning. The documentation process 'lacked intellectual leadership aimed at synthesising the country's needs, priorities, and planning goals'. The plan is 'still too consultant-driven'. The MoEF 'should have been more proactive in providing the guidelines and philosophy upon which the plan should have been built'. Many of these criticisms are valid and, deserve to be given careful consideration."

3.4 Impact of the Environmental Policy

Many sectoral agencies have started to follow the environmental policy directives for preparing and executing development plans or projects. For example, the Forestry Sector Master Plan is largely an environmental plan to reverse the destructive trend of deforestation. The current five-year Action Plan of the Forest Department contains five programmes designed especially for direct and visual public benefit (FAP 1993). These programmes involve environmental management, participatory forestry, non-wood forest products, wood-energy conservation, and bamboo development. Every citizen of Bangladesh benefits from an improved environment. Participatory benefit programmes are the basis for assisting the government's poverty alleviation efforts. Energy conservation lowers the demand for fuelwood or animal dung and reduces pressure on forests and improves agricultural production. The bamboo development programmes help offset effects of forecast reductions in bamboo, a major domestic construction material for the rural population.

Many NGOs are also involved in promoting tree-planting activities to prevent de-

forestation. The Directory of Environmental NGOs in Bangladesh, compiled by the Association of Development Agencies, lists 369 NGOs that are involved in forestry extension programmes directly or indirectly related to environmental conservation (Mahtab 1992). NGOs have exhibited notable success in afforestation on homesteads, embankments, school grounds and other similar places, and on encroached forest land. In the afforestation programmes, NGOs have provided seedlings of fruit and fuelwood trees to beneficiaries, either through purchasing such inputs from the government or through nurseries raised by the beneficiaries themselves. NGOs now execute their programmes following the directives of the current National Environment Policy through participatory arrangements. Several NGOs have demonstrated conclusively that poor and landless people can protect natural forests and

afforest unused and bare forest land, if opportunities are provided. For example, Proshika, a leading NGO in Bangladesh, has successfully protected 286 ha of sal (*Shorea robusta*) forest through involvement of the landless poor, and these included women (Hoq and Alim 1995).

However, long-term impacts of the NEMAP on the ground will depend on the continuity of the consultative process. Specific steps to be taken immediately are activating the National Environmental Council headed by the Prime Minister, ensuring the dissemination of information and monitoring public responses to the NEMAP, and assisting sectoral agencies and community organizations, including NGOs, in preparing their own environmental guidelines and executing their development programmes under the broad policy directives of the current National Environment Policy.

Chapter 4

Property Regimes, Tenure and Tenancy

4.1 Land Title and Revenue Administration

Two types of land tenure are observed in CHTs: private (freehold) and usufruct (leasehold). The latter is the most contested form of property between the hill and plains' peoples.

In the CHTs, a big difference exists between 'flatland' and 'jhum' land. Land titles for flatland were introduced as early as 1900. Such land has always been limited—about 110,000 ha at its peak and now 60,000 ha after dam construction. Holders of land titles have full rights to transfer lands to anyone legally recognised as CHT residents. This system has, over a period of time, resulted in much of these lands being owned by comparatively few landholders who lease them out or cultivate them with the help of landless workers. While flatland is an object of property, *jhum* land is not owned by anybody. It is common property. However, to the state it is Unclassed State Forest (USF). People simply use the land for *jhumming* or, nowadays, for agroforestry or fruit cultivation. They are

traditionally concerned with rights of use not with ownership. This has serious implications for safeguarding their interests.

To understand the nature of rights over land in CHTs one needs to go back to history. The Chakmas, the most numerous among the tribals of the CHT, had a relatively settled way of life compared to other tribes. Although their *jhum* cultivation was nomadic, their 'parent' villages were stationary (Serajuddin 1984). Fixed settlements made collection of tribute and support of a tribal hierarchy possible. Mughal rulers recognised two domiciled *zamindar*(s) or chieftains as the local collectors of revenue. These two chieftains controlled CHT revenue collection until 1860. Initially, they collected revenue from their own clans only. However, gradually, with increased power, they collected from other hill people living under their jurisdiction. Originally collection was not organized. However, when the British acted in concert with the hill chiefs, escape became difficult.

The British encouraged a permanent model of cultivation, i.e., plough cultivation. Re-

claimable lands were leased out to tenants. Such leasing was known as *amalnama*, and it amounted to little more than permission to cultivate land within certain areas, subject to provisions regarding payment of rent. Since 1921, tenants received permanent and heritable rights to all *amalnamas* for plough cultivation. The government could resume actual possession of the land that had been reclaimed should occasion arise, but it had to pay tenants fair compensation. *Jhumias* took to plough cultivation on a large scale after 1947.

The concept of traditional land rights is not well understood by people migrating from the plains. Once a hill person has been displaced it becomes extremely difficult to re-occupy land that has been taken by a settler. The occupier pays a tax to the chief, part of which goes to the government. 'Jhum land 'belongs' to the one who occupies it first and registers with the headman.' In this context, the state is the ultimate owner of all land in CHTs.

4.2 The Regulation of 1900

In May 1900, the Chittagong Hill Tracts' Regulation 1900 came into effect. The Regulation (Rule 34) substantially restricted possession of land by outsiders but did not ban it totally. Plains' people could acquire land for rubber plantation or any other plantation on a commercial basis for industrial and residential purposes. Restrictive measures on migration from outside CHTs were imposed in the sense that no non-hill person could enter or reside in CHTs without obtaining a permit from the Deputy Commissioner.

Restrictions on the operation of a 'free land market' were imposed. No lessee or sub-lessee could sell, gift, or mortgage the whole or any part of a holding without the previous sanction of the Deputy Commissioner. Unauthorised transfers were not recognised and were discouraged in the man-

ner that the Deputy Commissioner resumed the land either to hold as *khas* or resettle. Partitioning of holdings was also discouraged in the sense that it required the prior permission of the Deputy Commissioner or Sub-Divisional Officer. The rights of sub-tenants were protected and they could not be ejected except on grounds of inefficiency, failure to clear up rents, degrading the land so that it was rendered unfit for tenancy, and increasing the rent of a recognised sub-tenant.

It is interesting to note that there were certain provisions in the Regulation that took note of environmental considerations, knowingly or unknowingly. For example, the flow of a natural water courses could not be stopped or diverted without the permission of the Deputy Commissioner as it might cause silting of rivers or inundation downstream. Sub-tenants were barred from degrading the land to the extent that it caused the lands to be unfit for purposes of tenancy. *Jhumming* on or near river banks was also liable to be prohibited if, in the opinion of the Deputy Commissioner, it was found to be responsible for siltation of rivers or inundation downstream.

Restrictions on increasing the number of non-hill people or non-residents of the district in respect of any holding or inheritance might have had salutary effect on the environmental quality of CHTs. This measure helped to limit the size of the hill population and thus allowed environmental quality to be maintained; for example, wildlife sanctuaries were kept intact and the expansion of agriculture was limited.

4.3 1971 Amendment

Amendments to Rule 34 of Regulation 1900 were made in September 1971. The Bangladesh government representatives often suggested that the 1900 Regulation was no longer in force. However, in 1989,

when the government enacted legislation to establish new Hill District Councils, there was also legislation to repeal the 1900 Regulation. In December 1990, the CHT Commission was told that this legislation had not yet come into force because the government felt that the 1900 Regulation remained the source of legal authority. However, for quite some time the government of Bangladesh insisted on the constitutional right of citizens to move or settle in any part of the country. This provision of the Constitution, which is the supreme law of Bangladesh, it was argued, made the restrictions on settlement in the CHT regulations of 1900 legally not obtainable. Some of the salient 1971 amendments made are as given in the passages below.

4.3.1 Settlement of Khas (cultivable or cultivated) Land

The regulation reads, 'the quantity of cultivable flatland to be settled for plough cultivation by a single family of hillmen or non-hillmen residents shall be such as added to the quantity of such land already in its possession does not exceed five acres. In addition to the flatland for plough cultivation, land for grove plantation not exceeding five acres may be settled by such family.' Amended to, 'but in cases where the performance of a lessee is found by the Deputy Commissioner to be highly satisfactory, a further quantity of land for grove plantation may be settled with him which added to the quantity of grove land already in his possession does not exceed 10 acres.'

4.3.2 Settlement of Hill Land

'Normally five acres of hillside land for full or modified terracing may be settled with a single family of hillmen or non-hillmen residents. But if, on personal inspection by the Deputy Commissioner, the performance of the lessee is found to be satisfactory, a further area of up to five acres may be settled with the lessee. In a deserving

case, the Divisional Commissioner may settle hillside land for full terracing with a family of hillmen or non-hillmen residents of up to 100 acres. No settlement above 100 acres shall be made with a single family without the prior sanction of the Board of Revenue.'

4.3.3 Rubber Plantation

'For rubber plantation on a cottage industry basis, the Deputy Commissioner may settle land of up to five acres with a single family of hillmen or non-hillmen residents. In deserving cases, the Deputy Commissioner may settle up to 10 acres with each such family. Settlement of land for rubber plantation exceeding 10 acres with a single family shall not be made without prior sanction of the Board of Revenue. Land for rubber plantation may be settled by the Deputy Commissioner with an outsider with prior sanction of the Board of Revenue.'

4.3.4 Settlement of Land for Other Purposes

While the amendment says that 'no settlement in the district (CHTs used to be a single district in 1971 when this amendment was made) shall be made with outsiders without the prior approval of the Board of Revenue', it proves that 'land for establishment of industrial plants outside urban areas may be settled by the Deputy Commissioner with deserving industrialists with prior approval of the Board of Revenue; and for residential purposes by the Deputy Commissioner in urban areas with deserving hillmen and non-hillmen residents; and for commercial and industrial purposes, the Deputy Commissioner may settle land in urban areas with hillmen and non-hillmen residents.'

4.3.5 Lease and Tenancy

'All settlement of land shall be concluded in the form of a lease deed prescribed by

the Board of Revenue and shall be registered.' 'A tenant directly under Government shall have permanent and heritable rights on the land for which he pays rent unless there is a definite contract that his rights are not permanent or heritable.' 'No lessee or sublessee shall be allowed to transfer by sale, gift, or mortgage the whole or part of his holding without the previous sanction of the Deputy Commissioner.' One appreciable clause of the 1971 amendment was that 'no outsider shall be allowed settlement of any land for plough cultivation or grove plantation without prior sanction of the Board of Revenue.'

Amendments to Rule 34 of Regulation 1900 in 1971 and 1979 further defined the power of the Deputy Commissioner to 'regulate or restrict the transfer of land' and 'to regulate the acquisition by the government of land required for public purposes'

4.4 Recent Changes in Land Management

Under pressure of an insurgency, the government started making a relaxed interpretation of Article 36 of the Constitution and began controlling the arrival and settlement of people from the plains. Laws enacted in 1989 gave the new Hill District Councils a veto power on transfer of land to settlers. A parliamentary committee was formed in 1992 with responsibility for making recommendations to solve the problems of the CHTs. The committee carried out negotiations with insurgents and succeeded in bringing in a series of temporary cease fires. A significant output of the dialogue between the parliamentary committee and representatives of the insurgents was the introduction of a cadastral survey of land in 1993. It may be noted that the political instability observable in CHTs has, by and large, arisen from the land problem, which is highly sensitive.

In December 1997 a 'peace agreement', known as the CHT Treaty, was signed be-

tween the government of Bangladesh and the *Parbatya Chattagram Jana Sanghati Samity*. The treaty contains the following provisions regarding the land question.

Under Section 34, land-related subjects, such as land management, environmental protection, and development, local tourism, issue of licence to local industries and businesses, Kaptai water resources use, irrigation of other rivers and canals, and *jhum* cultivation, have been included in the functions and responsibilities of the Hill District *Parishad*(s) (councils). Holding tax on land will be one of the sources of earnings of the *Parishad*. Moreover, *Parishad*(s) will receive partial royalty of contracts by government for search and exploration of minerals and a tax on catching fish. Internal refugees of the three hill districts will be rehabilitated through their proper identification by a task force. The land record and right of possession of the tribal people will be ascertained after finalising ownership of the land of tribal people. The government will ensure the leasing of two acres of land, in respect of localities' subject to availability of land, to landless tribals or tribals having less than two acres of land per family.

A land commission will be constituted under a retired judge for the disposal of all disputes relating to land. Besides settlement of land disputes, this commission will have full powers to annul all rights of ownership on land that has been given in illegal settlement or encroachment. No appeal can be made against the verdict of this commission, which will be treated as final. This will be also be applied in cases of fringe land. However, the most significant provision of the treaty provides that, whatever exists in the currently prevailing laws, no lands in the district, including leasable *khas* lands, can be leased out, sold, purchased, or transferred without the prior permission of the *Parishad*. This will not be applicable in the cases of reserved forest, Kaptai Hydroelectricity Project area, Betbunia Satel-

lite Station area, state-owned industrial enterprises, and lands recorded in the name of the government. Whatever exists in the currently prevailing other laws, the government cannot acquire or transfer any lands, hills, and forests under the jurisdiction of the Hill District *Parishad* without prior discussion and approval of the *Parishad*.

4.5 Impact

Through a change in laws in land administration in 1971, grants of leases to non-residents, especially for establishing industries and raising commercial plantations, were allowed with the prior consent of the Board of Revenue. An amendment in 1979 removed the necessity of obtaining the consent of the Board of Revenue. The amount of land grants to residents was reduced; restrictions on land grants to non-

residents were removed to facilitate the setting up of commercial plantations and industries. A large number of leases was provided to non-resident individuals and corporate bodies in all the three hill districts. However, when one looks at the way these lands are being used, it is clear that only a small percentage of these lands is being used for the purposes for which grants were given. Results are disappointing, even from an economic perspective alone. It is reported that, in some cases, land remains totally unused. Many of these lands were—and in some cases still are—occupied by indigenous people who have been living on and cultivating them for generations. These people's land rights have been violated, but, since most of them are unlettered and marginalised farmers, they can do little to obtain their land rights (Roy 1998).

5.1 Early History of Policy-making

In the period prior to 1868, the forests of what is now the state were primarily protected by the system of the *chauthi* or *chauthi* reserves and used as a source of revenue through the sale of timber and other forest products. The Mughal period saw the first attempts to create for a specific purpose, the

Two classes of forests were to be formed: 'reserves' and 'district forests'. The reserves would be under the management of the Forest Department and the district forests under that of the Deputy Commissioners.

...the preservation of any kind of forest... reserved to the reserves, and no... shall be cut or removed

Chapter 5

Forest Policy

5.1 Early History of Policy-making

In the period prior to 1865, the forests of what is now Bangladesh were variously protected by the rulers of the day as hunting reserves and used as a source of revenue through the sale of timber and other products. During the Mughal period (1526-1700), forest land was cleared for agriculture. From then until the middle of the nineteenth century, forests were subject to exploitation on a gigantic scale for ship-building and railway sleeper production without any effort at forest preservation and development.

In 1865, the first Indian Forest Act was passed by the British rulers. In 1875, the Conservator of Forests visited CHTs. This visit was important since it gave a clear picture of the exploitation of forests, *jhumming* practices, and the administrative set-up. Policy proposals for a change in management had important impacts on land use and land management of CHTs. The Conservator offered the following main suggestions which were approved by the government.

- Two classes of forests were to be formed: 'reserves' and 'district' forests. The reserves would be under the management of the Forest Department and the district forests under that of the Deputy Commissioner.
- No *jhumming* or cultivation of any kind would be allowed in the reserves; and no forest produce would be cut or removed from the reserves without permission of the Forest Department. The area would be managed for forest purposes only.
- The people of the district could supply themselves with forest material for their domestic requirements from district forests, with such restrictions as the Deputy Commissioner may impose from time to time.
- With a view to discouraging preparation of dug-outs and excessive consumption of *jarul*³, the rates for dug-outs and from *jarul* timber now levied would be enhanced 50 per cent and export of dug-outs and *jarul* prohibited altogether.

Consequently, forest land was divided into reserved forests, entirely under the control

³ *Jarul* is a sub-species of *Albizzia*

of the Forest Department, and district forests, where tribal people were allowed to practice shifting cultivation and to cut wood and bamboo for domestic use, under the control of the Deputy Commissioner (Choudhury 1972). The first Forest Reserve was created in 1875. At the same time, it was decided to close the reserves for timber extraction as supplies were sufficiently plentiful in areas outside. Later, between 1880 and 1883, forest reserves were extended (Choudhury 1972). The Indian Forest Act 1878 succeeded the Forest Act of 1865.

5.1.1 Evolution of Forest Policy

In British India, after many primary steps, a policy statement was issued in 1894 and modified in 1904. After partition of British India in 1947, the Government of Pakistan (including Bangladesh, which was East Pakistan until 1971) declared its forest policy in 1955 and 1962. The Government of Bangladesh declared its first forest policy in 1979 and the second and current forest policy in 1994.

British India's first forest policy was enunciated in 1894 and laid down public benefit as the sole objective of management of public forests. The important policy directives were as follow.

- State forests to be administered for public benefit.
- Forests on hill slopes may be protected.
- From second-class state forests, people may be allowed to satisfy their requirements.
- Wherever an effective demand for cultivable land exists and can only be supplied from the forest area, the land should be relinquished without hesitation.
- Royalty for the government must be collected for various facilities enjoyed by the people.

The main aim was to collect revenue from forests and to satisfy local people by grant-

ing them rights and concessions. There was no intention to improve forest management in general.

Forest policy framed for nineteenth-century British India was felt inappropriate for the needs of Pakistan. So, in 1955, a new forest policy was declared. Its salient features were as follow.

- Forestry should be given a high priority in the national development plan.
- Sound management should be extended to private forests.
- Necessary powers should be obtained to control land use under a co-ordinated programme of soil conservation and land utilisation in areas subject to or threatened with soil erosion.
- Public support should be enlisted for the execution of forest policy.
- Forests should be classified on the basis of their utility and objectives.
- The beneficial aspects of forestry should be given precedence over the commercial.
- Forest areas should be increased by such measures as reserving 10 per cent of canal irrigated land and 10 per cent of water for raising irrigated plantations; growing of trees along canal banks, roadsides, railway tracks, wastelands, etc.; and encouraging farm forestry on a cooperative basis by village communities.
- Timber-harvesting techniques should be improved.
- All forests should be managed under working plans.
- A properly constituted forest service of fully trained staff should be made responsible for the implementation of forest policy.
- Forest research and education should be organized.
- Wildlife should be protected and conserved, and their habitats protected and improved.

5.1.2 Forest Policy 1962

In 1962, Pakistan enunciated a new policy to deal with five aspects: forestry, watershed management, farm forestry, range management, and soil conservation. The following are the features salient to Bangladesh.

- Management of forests should be intensified to make it a commercial concern.
- Utilisation of forest products should be improved to reduce rotations and regeneration should be accelerated to keep pace with increased harvesting.
- Government-owned wastelands should be transferred to the Forest Department for raising plantations.
- Timber harvesting in CHTs and the Sundarbans should be further accelerated.
- Rights in forests should be progressively acquired.
- Soil conservation should be given priority in forests and on private lands.
- Farm forestry should be the concern of the Department of Agriculture in non-project areas and of the Agricultural Development Corporation in project areas.
- Research should be directed to form shelter belts and wind-breaks and to select fast-growing commercial species for each ecological zone.
- Forests shall be carefully preserved and scientifically managed.
- Government forests shall not be used for non-forestry purposes.
- Large-scale plantations shall increase tree wealth.
- Use of modern technology will effect optimum extraction and utilisation of forest produce.
- Measures to set up new forest-based industries and to meet raw material requirements shall be adopted.
- Forestry research, education, and training shall be organized to meet scientific, technological, and administrative needs.
- Members of properly constituted cadre services shall staff the forestry sector.
- Forest laws shall be kept updated to make them effective tools.
- The forestry sector shall be organized to constitute a separate administrative unit of the government and relevant laws updated for implementing forest policy.
- Effective measures shall be taken for conservation of the natural environment and wildlife, and for utilising the recreational potential of forests.
- Mass-motivation programmes shall be initiated and technical assistance extended to those interested in forestry.

The Forest Policy of 1979 was the first after the independence of Bangladesh in 1971. It received inputs from discussions at the first Bangladesh National Forestry Conference held in Dhaka in 1977. The conference stressed that all government forests should be designated and managed by a well-designed forest policy, and that the forests should be managed in perpetuity with the objective of producing goods and services for the benefit of the people. Its salient features are as follows.

This policy viewed forestry economically as a government department, despite the fact that some 70 per cent of all forest products originated from land outside the control of the Forest Department. Several crucial aspects received little or inadequate attention. Such aspects include the functional classification and use of forest land, role of forests as the biological foundation of sustained natural productivity, community participation, role of the private sector, processing and utilisation of forest products, organization of forest-based growth centres, enterprise development, rural energy needs, involvement of voluntary organizations, importance of

non-wood forest products, and forestry extension. A critical study indicates that hopes for expansion and qualitative improvements were not realised because of a failure in implementation. The vast unclassified state forest (USF) areas, which had become almost barren and degraded, were not utilised effectively for raising plantations. Implementation of policy in CHTs was hindered due to political unrest.

5.2 Current Forest Policy

The current National Forestry Policy 1994 was officially announced in 1995. The policy was an amendment of the Forest Policy 1979. It was formulated to implement a 20-year forestry master plan. The Government of Bangladesh, assisted by the Asian Development Bank and UNDP, prepared the plan to preserve and develop the nation's forest resources. The plan provides a framework to optimise the forestry sector's contribution to stabilising environmental conditions and to assist economic and social development.

The National Forestry Policy is a policy of economic growth and is consistent with the objectives of the National Environmental Policy. It covers acceleration of economic growth, alleviation of poverty, generation of employment opportunities, and increased self-reliance. As such, three imperatives have been identified: sustainability, efficiency, and people's participation (FMP 1993). These imperatives are in tune with the Agenda 21 forest principles adopted at the 1992 UN Conference on Environment and Development held in Brazil.

Sustainability

Sustainable development aims at achieving and perpetuating a reasonable and equitably distributed level of economic well-being for the people. It depends on economic efficiency, equitable distribution of development benefits and sharing of

scarce resources, non-economic social values, and an appropriate balance among them. Sustainability ensures inter-generational equity. Ecologically, sustainability has two attributes in addition to equal harvests and regeneration: continued adaptability and capacity for renewal of plants, animals, soils and water, and maintenance of biological diversity. It also recognises the importance of irreplaceable and unknown values of wild plants and animals and of the utility of watershed forests and wetlands. Sustained yield forest management aims at approximating a balance between net growth and harvest, and considers sustained yield of goods and services.

Efficiency

An important function of forests is the renewable production of goods and services to meet human needs. Efficiency implies improving production of goods and services by increasing output per unit input and reducing waste, indirect costs, and negative side effects. This results in a higher economic rate of return in comparison to other alternatives. Areas set apart for production of timber and other products must be able to compete with other potential land uses—in economic, if not financial, terms. This criterion is equally applicable to investments in other commercial forestry activities, as well as in processing of forest products.

People's Participation

People's participation is both an objective and a means of development. It is crucial for present-day forest resource development activities. If it is directed correctly, it can ensure sustained development of resources. It is assumed that participation is not only a precondition for, and a tool of, a successful development strategy, but is also an end in itself. This unity of participation is implicit in sustainable develop-

ment policies. Forestry can facilitate, and benefit from, people's participation in all facets and aspects.

The Forestry Policy 1994 embodies preconditions for the development of the forestry sector, objectives of the National Forestry Policy, and statements of the National Forestry Policy.

5.2.1 Preconditions for the Development of the Forestry Sector

- The forestry sector provides several commodities and services that are essential for the fulfillment of the basic needs of the people.
- The benefits of forestry sector development will be equitably distributed among the people, especially to those whose livelihoods depend on trees and forests.
- Scope for people's participation in afforestation programmes required for development of the forestry sector will be created; and, in the planning and decision-making process, the opinions and suggestions of planters, users, and those whose livelihoods depend on forestry resources and forest lands will be incorporated.
- Long-term political commitment will be continued.
- Attempts will be made to ensure the effective use and conservation of biology and biodiversity by installing sound management of forest resources and conserving the production capacity of these resources so as to ensure their contribution in rural and national development.

5.2.2 Objectives of the National Forestry Policy

- To meet the basic needs of present and future generations and also to ensure the greater contribution of the forestry sector to economic development,

about 20 per cent of the total area of the country will be afforested.

- By creating employment opportunities to strengthen the rural and national economy and broaden the scope for poverty alleviation, forest-based rural development sectors will be extended and consolidated.
- Conservation of the remaining natural habitat of birds and animals will enrich the biodiversity of existing forests.
- Extending assistance to sectors related to forest development, especially by conserving land and water resources, will strengthen the agricultural sector.
- Implementation of various efforts will fulfill national responsibilities and commitments and government-ratified agreements related to global warming, desertification, and control of trade and commerce in wild birds and animals.
- Through the participation of local people, illegal occupation of forest land and illegal tree-felling and hunting of wild animals will be prevented.
- Effective use of forest goods at various stages of processing will be encouraged.
- Implementation of afforestation programmes on both public and private lands will be provided with encouragement and assistance.

5.2.3 Statements of the National Forestry Policy 1994

The policy statements that are most relevant to land use in CHT are as follow.

- Afforestation programmes in the denuded hilly areas of the USF of the CHTs will be undertaken under the auspices of government and private initiatives. Participation and rehabilitation of *jhum* cultivators will be ensured.
- Private initiatives to implement tree plantation programmes on private land will be encouraged.
- Afforestation programmes through participatory arrangements between

local people and NGOs will be encouraged. Also rubber plantation programmes will be encouraged.

- All state-owned forests of natural origin and planted forests in the hills will be used for producing forest resources, keeping aside areas earmarked for conserving soil and water resources and maintaining biodiversity. Keeping in mind the ecology, management of forest land will be used for profit-oriented business.
- Priority protection areas are habitats that encompass representative samples of flora and fauna in core areas of national parks, wildlife sanctuaries, and game reserves. Attempts will be made to increase this protected area by 10 per cent by 2015.
- Forest resource-based, labour-intensive, small- and cottage-scale industries will be encouraged in rural areas.
- Rules and procedures regarding transportation of forest produce will be simplified and updated.
- Export of logs remains banned given the scarcity of wood in the country. However, processed forest products can be exported. The import policy for wood and wood-based products will be liberalised, but import tariffs, for wood products that are abundant in the country, will be levied appropriately.
- State-owned reserved forests will not be used for non-forest purposes without the permission of the Head of Government.
- Large numbers of tribal people live around a few forest zones. Since the ownership of land at their disposal is not determined, they take forest land at will. They will be given ownership of certain amounts of land through the forest settlement process. The rest of the forest land will be brought under permanent protection.
- Women will be encouraged to participate in homestead and farm forestry

and participatory afforestation programmes.

- Eco-tourism, related to forests and wildlife, is recognised as a forestry-related activity and will be promoted, taking into consideration the carrying capacity of nature.

5.3 Implementation of the Current National Forestry Policy

Reforestation CHTs is fundamental to expanding forest areas, providing soil and watershed protection, and increasing forest resource productivity in Bangladesh. Lands located in USF represent the largest, most concentrated block of unproductive land in the nation—over 700,000 ha—and have remained undeveloped for decades. Presently they support extensive grazing and shifting cultivation. Much of this land is only suited to forest species. Although horticultural potential is great, poor marketing is a serious hurdle to successful development.

Many instances exist to show that social benefits from the developmental activities of the government never reach target groups unless the target group is involved and effective mechanisms exist to distribute the benefits. This is especially true with forestry activities in CHTs where there is a high level of dependency on forests by tribal people. Many poor and landless people live inside the forest and on its fringes; for them, forest resources are their means of livelihood. Without their meaningful participation, and lacking a reasonable solution to their problems, forestry development becomes impractical to implement successfully. Participatory forestry is assumed to be the most appropriate approach in CHTs.

An early attempt to incorporate people's participation resettled *jhumias* and landless farmers. The project developed horticultural crops and rubber plantations and pro-

vided social and community infrastructure within the local government framework. One component was an afforestation scheme that also encouraged bamboo plantation and agroforestry practices. The project arranged equitable distribution of income from harvesting timber from afforested areas between the government and the settlers, as well as supporting cottage and rural industries. Results were not encouraging because of problems related to law and order and marketing of products.

The first rehabilitation scheme in CHTs started in 1957 in anticipation of the flooding of the Kaptai reservoir. Since then, four rehabilitation/resettlement schemes have been undertaken. While the earlier schemes focussed on agriculture, the later ones emphasised horticulture and afforestation. Now, with the stability of the political situation, it is hoped that application of major policy directives will be easier than in the past.

5.3.1 Impact

Most programmes have not achieved the desired level of success and have suffered from inadequate participation of the target group, mainly because of political unrest and failure in the marketing of products. Lack of motivation, education, extension of infrastructure, marketing facilities, and, above all, the lack of material/financial incentives were also constraints (FMP 1993). Impacts of the new projects are yet to be observed. However, several policy and institutional issues arise based on past experience in Bangladesh's participatory forestry programmes. These include land tenure, benefit-sharing, and technical management.

Land Tenure

At present, agreements on encroached forest land are renewable annually and subject to cancellation with three months' notice by the Forest Department. In NGO pro-

grammes on other government land, the lease period can run to five years and, in some cases, longer. Secure tenure can guarantee active involvement and is the single-most contentious issue faced in participatory programmes. A practical solution is yet to be found. It is not necessary to grant full rights to land use, only surface rights to grow trees and enjoy full crop benefits are needed. Tree-growing leases and renewable terms on forest land should be equal to a minimum of one rotation for the dominant product. This could be 20 years for medium rotational timber tree species. A perpetual, inheritable lease (subject to reasonable performance) would stimulate highest productivity and greatest investment by the lessee.

Benefit-sharing

Presently, benefit-sharing formulae exist for the Forest Department's agroforestry and woodlot schemes. In some cases, confusion exists; benefits are poorly defined or not at all. As a result, participation levels remain limited. Benefit-sharing formulae should be well-defined and agreement deeds properly signed.

Technical Management

This issue is mainly applied to the Forest Department's schemes (FMP 1993) that stipulate certain technical forest management prescriptions for tending and felling. These prescriptions are not always defined, followed, or even prepared. As a result, tending or felling approval is deferred, and promised benefits are not available to participants in time. Participants' trust in the programme deteriorates.

5.4 Forest Management in the Chittagong Hill Tracts

Forest management in Bangladesh has over a century of history. Initially, management concentrated mainly on natural forests. In the reserved forests of the CHTs, growing stock

decreased from 23.8 million cubic metres in 1964 to below 19.8 million cubic metres in 1985. About half the land controlled by the Forest Department lacks tree cover; hill forests, including USF, account for 54 per cent (FMP 1993). The estimated total area of forest plantations in Bangladesh is about 332,000 ha, which represents 17 per cent of the total forest area. Hill forests amount to 197,700 ha. Annual planting rates increased from less than 100 ha in 1947 to about 17,500 ha in 1990.

In the hill forests, clear felling followed by artificial regeneration has been the main system of management. Initial attempts at raising forest plantation started in 1871 with teak. Other species were introduced later. Since then plantation forestry has become a part of the overall clear-felling silvicultural system. These early plantations were mostly raised by shifting cultivators. However, with the development of mechanised logging, shifting cultivators could not cope with the extensive areas cleared. As a result, a system combining artificial and natural regeneration became common. In 1974 the Forest Department began establishing plantations of fast-growing species. Presently, industrial and fuelwood plantation modules comprise a mixture of species and growing periods.

The forests of CHTs are rich in bamboo. Commercial bamboo disposition is by auctioning bamboo-cutting areas, while a permit system exists to meet local people's needs. This system does not encourage investment in infrastructure such as roads and cableways. As a result, part of the bamboo area remains inaccessible and prescribed cutting rules are not consistently followed, resulting in high wastage and unnecessary damage.

5.4.1 Recent Policy Decisions

Two other recent developments in the forestry sector are perceived to be extremely harmful to the interest of the people of

CHTs. One is the government's policy on the management of remaining natural forests; and the other concerns a plan to enhance the area of reserved forests to facilitate the raising of new plantations. Recent expansion of the road network into hitherto inaccessible parts of CHTs has accelerated the rate of government-sponsored logging in natural forests. Given the exceedingly high rate of deforestation in the country, estimated at around 3.3 per cent between 1981 to 1990, it is alarming that the government allows any logging at all in these forests (Roy 1998).

The other recent development concerns a government process that seeks to increase the area of reserved forests in CHT by including lands outside the reserved and protected forests. This process was initiated in 1992. The area covers about 218,000 acres (88,300 ha) and includes private homesteads and orchards, common *jhum* lands and forests, and even lands where the present residents were rehabilitated under government projects. This process, although it is for a seemingly laudable aim, namely to enhance the forest cover of the region, has severe implications with regard to the basic rights and freedoms of the people of these areas. A delegation of leaders from Rangamati and Bandarban districts met the MOEF Minister and Secretary in August 1998 and called for revocation of the order. Since then, a committee has been formed to resist the reservation process peacefully. So far the government has not given any official response to the demands (Roy 1998).

5.5 Socio-Environmental Impacts of Policy

Considering existing socioeconomic problems, current National Forestry Policy emphasises rehabilitation of *jhumias* and participatory afforestation. The main objective of the programme has been to improve socioeconomic conditions and the bio-

physical environment. Under the Forestry Master Plan, the Forest Department has intensified its activities. With few exceptions, rehabilitation or settlement programmes initiated earlier are successful. The programmes have created a basis for improving the livelihood of tribal people by providing them with financial and technical facilities. Specifically, direct impacts of forestry policy are evident from the issues discussed in the following passages.

5.5.1 Shift from Taungya to Participatory Forestry

Involvement of local residents in forest plantation activity in CHTs is an old system in which residents work as plantation labourers and receive wages from the Forest Department. Workers are allowed to grow subsistence crops in the space between planted tree seedlings until the trees shade this space. They enjoy the entire returns from the subsistence crops but do not have any share of the tree crops.

This *taungya* system of involvement of local residents is different from the participatory afforestation programme. In the *taungya* system, choice of tree species is entirely with the Forest Department. In participatory afforestation programmes, farmers' preferences are given priority. The participatory afforestation programme is a benefit-sharing arrangement. According to the agreement, income from the final harvest of tree crops will be distributed among the Forest Department, participants, tribal king, headman, and local government. The programme is still young. However, it is expected that the economic status of participants will improve, and the productive and protective role of planted forests will be enhanced.

5.5.2 Shift from Jhumming to Intensive Cultivation

The *Jhumia* Rehabilitation Programme rehabilitates *jhumia* in USF and aims at reha-

bilitating tribal families. Under the programme, each household is given the title of five acres of land for building a house and raising plantations of fruit and timber-yielding trees. Title to land is conducive to economic independence. It gives people freedom in decision-making, and this is lacking from traditional tribal society. Secure tenure ensures intensive land use and management.

The programme of rehabilitation provides a more productive land-use system in place of the traditional low-productivity *jhumming* that causes irreversible damage to the upland ecosystem and biodiversity. There has been a significant shift in species' composition on the titled-land farms from the non-titled *jhum* land. Settled farmers have planted more trees on their farms than annuals. Growing annuals on hill slopes exposes soil to erosion and leads to degradation. Growing trees, in contrast, does not necessitate frequent earth-work on hill slopes and thus protects soil against erosion. The agroforestry and plantation practices on titled farms have enabled farmers to produce more diversified products from fruit and other tree crops as well as to generate more income than with *jhumming*.

5.6 Impacts of Policy on Women's Work and Income

The current National Forestry Policy statements recognise the importance of women's participation in land-based production systems, particularly in homestead and farm forestry and participatory afforestation programmes. Agriculture in Bangladesh is traditionally family-based and a broad division of labour exists among men and women. While men specialise in field-based agriculture, women centre their activities around homesteads. In CHTs, both men and women are directly involved in agriculture.

It is increasingly realised that gender-differentiated rights to land are the single-most

important factor affecting gender equality in Bangladesh, since in most cases the wealth base is composed of land only. Therefore, a gender fair land policy could be one of the most important instruments in overcoming the gender differential. Equal rights to land for both men and women should have a strong positive impact on the socioeconomic status of women. This is conducive to raising the productivity of women since most production is based on land, and land is the most important collateral for obtaining the majority of input materials. Considering the above facts, the Report of the Task Forces on Bangladesh Development Strategies for the 1990s (RTF 1991) suggests that land policy should be formulated along the following lines.

- There should be redistribution of rights to land for the benefit of small and landless farmers – including female farmers and female agricultural labourers who, as either paid, unpaid, or disguised labour, comprise about half of agricultural labourers.
- *Khas* land should be distributed among female farmers who are largely engaged in vegetable growing.
- The afforestation programme of the government should aim at including more women than men, since women are more efficient in plantation and nursing young plants.
- The definition of the household head should be changed so that these poli-

cies can be implemented effectively. Traditionally, the most elderly male member of the household, whether an income-earner or not, whether earning less or more than a female member, has been defined as the household head. Therefore, only the male members of the household benefitted from land policies. Definition of the head of the household should be based on labour hours supplied by members of the household.

The current rehabilitation or settlement and afforestation and reforestation programmes involve women as participants. However, land rights are normally given to male rather than female members of a household. The current National Forestry Policy, although it recognises the importance of participation of women in forestry and agroforestry programmes, does not specify land rights for women. Institutional support for women's effective participation in settlement or forestation programmes in the form of group organization or cooperatives and credit and extension services is extremely inadequate at present and significant efforts are needed in this direction. It is, however, increasingly realised that male-oriented input provisions and management training are not enough to make a breakthrough in the land-based production system in Bangladesh, in general, and in CHTs, in particular, unless women-specific needs are addressed adequately.

Chapter 6

Wildlife and National Parks

With the objectives of conserving wildlife, in general, and endangered species, in particular, the Forest Department has constituted four National Parks, nine Wildlife Sanctuaries, and one Game Reserve. These protected areas cover an area of 1,175 sq. km. This forms about five per cent of the total forested areas and 0.8 per cent of the total area of Bangladesh. In CHTs, there are two wildlife sanctuaries.

6.1 Wildlife Conservation Policy and Legal Enactments

Historically, wildlife has always been the responsibility of the forest management authority. For example, the Wild Birds and Animal Protection Act (1912) vested responsibility in the forest service, and in 1959 two sets of rules to regulate hunting, shooting, and fishing were declared under the provision of the Indian Forest Act (1927) and the East Pakistan Private Forest Ordinance (1959), respectively. The Government of Bangladesh announced the Bangladesh Wildlife (Preservation) Order in 1973. The Order was amended for the first time within a year as the Bangladesh Wildlife (Preser-

vation) (Amendment) Act 1973 and for the second time as the Bangladesh Wildlife (Preservation) (Amendment) Act 1974. This act, along with the Forest Act 1927 and the Private Forest Ordinance 1959, provides the legal basis for management of national parks, wildlife sanctuaries, and game reserves in Bangladesh.

The government may declare any area to be a game reserve, national park, or wildlife sanctuary by notification in the official gazette and may frame rules to be observed in these areas. According to these rules, cultivation, damage, or destruction of vegetation; hunting; killing or capturing of wildlife; and water pollution are forbidden. The government may for various reasons (scientific, aesthetic, or others) relax all or any of the prohibitions. Rules prescribing the management of these areas may also be made.

6.2 Wildlife Protection and Management Authorities

For the management of wildlife in Bangladesh, a Wildlife Advisory Board was con-

stituted at the national level for the first time in 1977. The function of the Board was to advise the government in any matter relating to preservation, conservation, protection, and management of wildlife. A Wildlife Circle within the Forest Department, with specific responsibility for wildlife management, was established in 1973. This circle was to provide the requisite infrastructure to carry out the Forest Department's wildlife development and management programmes. The Wildlife Circle worked independently for 10 years from 1973 to 1983. Shortcomings of wildlife conservation in Bangladesh received attention from the government. The Wildlife Advisory Board decided in 1985 to revive and strengthen the abolished Wildlife Circle and advised the government to constitute a Wildlife Task Force to study and recommend appropriate action. The Task Force was constituted in 1985 and it submitted its report in 1986. Among other things, it recommended immediate revival and strengthening of the Wildlife Circle. It stipulated job responsibilities of the Wildlife Circle. The matter is still under consideration by the government.

6.3 Wildlife and Biodiversity Projects

During the lifetime of the Wildlife Circle, the Forest Department undertook projects for the development of wildlife and national parks (Sarker 1989). The Wildlife Circle executed the Development of Wildlife Management Project, while the territorial conservators executed a National Parks' Development Project through their respective divisional forest officers. The wildlife development scheme included projects on tigers, elephants, waterfowl, deers, apiculture, development of wildlife in the forest areas, survey of wild animals, and development of public relations. The scheme was well implemented until 1982 when it was dropped. After the abolition of the Wildlife Circle in 1983, a Wildlife Section

under the Conservator of Forests centrally controlled the activities of wildlife development projects. The Forest Department is now in the second phase of wildlife conservation and management projects and has initiated biodiversity projects.

6.4 Policy of Wildlife and Biodiversity Projects

The current National Forestry Policy has emphasised the promotion of wildlife and ecotourism in protected areas and is committed to increasing the amount of existing protected areas to 10 per cent of reserved forest by 2015. In general, the policy for current wildlife and biodiversity projects includes boundary demarcation of protected areas; infrastructural development for support staff and ecotourism; maintenance of biodiversity in protected areas; enforcement of a legal system to protect fauna and flora from illicit hunting and felling; surveying and monitoring of wildlife population; promotion of research and development on biodiversity and wildlife; improvement and management of wildlife habitat; promotion of regeneration of diverse plants within protected areas; introduction of wild animals from one area to another; and promotion of educational and publicity programmes.

6.5 Wildlife in the Chittagong Hill Tracts

The CHTs were rich in wildlife but indiscriminate shooting and poaching, large-scale trapping and, above all, invasion and destruction of natural habitats by humans in the recent past have either destroyed or driven away most wildlife in the area. However, from local information and from existing records, it is observed that elephants, which were once the most common and valued wildlife in this region, still inhabit the area. Sambar, barking deer, wild pigs, deer, wild dogs, jackals, goats, antelopes, monkeys of different species, hares, squir-

rels, mongooses, wild cats, porcupines, civet cats, leopards, tigers, and so on can be found along with a large variety of snakes, lizards, and other reptiles. Wild birds are also present; for example, pigeons, doves, jungle fowl, partridges, chat robins, swallows, bee-eaters, hoopoes, teals, quails, and wild ducks. By the early 1960s, it became desirable to set aside certain areas for the purpose of wildlife conservation. This realisation resulted in formation of wildlife sanctuaries in CHTs (Choudhury 1972).

Pablakhali Wildlife Sanctuary covers 42,087 ha in the southeastern part of Kassalong Reserve. It was established in 1962 and declared a wildlife sanctuary in 1983 under the Bangladesh Wildlife (Preservation) (Amendment) Act 1974 (Sarker 1989). It is situated 112 km from Rangamati town.

Rampahar-Sitapahar Wildlife Sanctuary is situated 48 km northeast of Chittagong Port city about five km short of Kaptai town. It covers an area of 3026 ha. The Forest Department has formally proposed to declare the area a wildlife sanctuary. The government has not yet officially done so. However, the area has been maintained as a wildlife sanctuary by the Forest Department from 1973 and is incorporated in the current Forest Management Plan (Working

Plan) of Chittagong Hill Tracts (South) Forest Division (Sarker 1989).

6.6 Social Impacts of Wildlife Conservation and Bioreserves

Although hunting is defined in the Bangladesh Wildlife (Preservation) (Amendment) Act 1974 as 'killing, capturing, poisoning, snaring, and trapping of any wild animal...' and is strictly prohibited by law, local residents of CHTs selectively hunt wild animals, birds, crabs, and snails for consumption as food to supplement their protein requirements. This means that, at least in the case of some wild animals, the existing law is unacceptable to the local society.

The current National Forestry Policy looks for expansion of existing protected areas to 10 per cent of reserved forests by 2015. If the policy is implemented in CHTs, conflicts may emerge in certain areas currently used for rehabilitation of *jhumias*. Bioreserves may enhance the growth of some wildlife populations such as elephants, monkeys, wild boars and seed-eating birds. Overgrowth of such wildlife populations may be socially unacceptable if there is substantial damage of crops by wildlife. It appears that such anticipated social impacts of wildlife conservation and expansion of bioreserves should be critically examined before implementation of policy directives.

Chapter 7 Agricultural Policy

Although the area of land available for agriculture is scarce, uncultivated hillside land can be used extensively for fruit-gardening and afforestation. The East Pakistan Government started the Chittagong Hill Tracts' Horticultural Development Project in the late 1960s to encourage fruit farming. Thousands of hill people (especially the Chakma) took up horticulture⁴. From the growers point-of-view, gardens were successful initially but could not make much headway because of a lack of communication, storage, finance, and marketing facilities. Horticulture in itself was not a failure; however, for the project to be successful, massive state investment was required to overcome market failure. This shows that land scarcity in CHTs is not the real problem. The real problem is to devise and synchronise appropriate policy interventions.

7.1 Food-population Balance

Food-population balance is critically important in determining the quality of the

environment. When population outgrows the capacity of existing land under cultivation, there is an incentive to augment food production either through more intensive methods of cultivation or through extension of the land frontier. Both strategies have serious implications for environmental quality. Intensive methods of cultivation would require application of greater doses of fertilizer (in most cases chemical fertilizer), adoption of irrigation in the dry season and deeper ploughing, all of which damage the environment. If land frontiers are extended, then more land of inferior quality is brought under cultivation. In this case too, the casualty is the environment. One way out of this impasse is to import food from abroad. However, at present this is too costly for the society.

At the moment the CHTs provide shelter and livelihood to 0.94 per cent of the population of Bangladesh. Table 11 of Annex 1 shows the contribution of the CHTs towards the output of rice, pulses,

⁴ Horticulture is used in this context to mean fruit farming and other types of market gardening.

and fruit. In terms of Aus rice production, CHTs have a definite advantage, whereas, in terms of other varieties, the CHTs lag far behind. Similarly, with respect to the Arhar variety of pulses the CHTs have an advantage. However, so far as fruit production is concerned the CHTs have a clear advantage. If per acre output is considered, the CHTs fare better than the national output per acre with respect to many fruit crops. CHTs have a definite potential for being the country's fruit land. It is difficult to tell from per acre output figures whether more inferior quality land is put to cultivation of other crops. Given the shallowness of the soil in CHTs, caution is required. Therefore, it is not possible at present to judge degradation of the environment from the point of view of the food-population balance. Improvement of the marketing network, storage facilities, fruit preservation, and canning facilities would add more value to fruit crops. With increased revenue from fruit products, shortage of cereal and pulses could be compensated. That population pressure itself is responsible for much of the environmental woes of CHTs cannot be definitively concluded from the food-population balance.

7.2 *Jhum* and Plough Cultivation

The tribal people of CHTs have been practising *jhum* cultivation for centuries. Although it is on the decline, the majority of tribals still practise *jhumming*.

In 1875, the government fixed 28 per cent of the CHTs as reserved forest; the rest was USF open for *jhumming*. Between 1860 and the beginning of the twentieth century, output from *jhumming* was constant. Every family at that time was allocated two acres of *jhum* land. According to specialists, in a society where the *jhum* cycle extends up to 25 years, one square mile of *jhum* land

can provide for 25–50 persons. In 1901, the density in *jhum* areas was 35 persons per square mile. By the early 1960s, the *jhum* cycle had been shortened to between three to five years. In recent times, it has been further shortened to only two years. Output from *jhumming* per hectare has declined. The main reasons for this are loss of plough land to the Kaptai hydroelectric dam, population rise, and reversion to *jhumming* by plough cultivators.

During the last quarter of the nineteenth century, plough cultivation was introduced into the food system of the CHTs. Bengali cultivators came as sharecroppers to plough and grow paddy on the valley lands. The Chakma took up plough cultivation; later on the Marma, Tripura, and Tanchangya joined them. The technology of plough cultivation was almost completely transferred – including seasonal features. Thus, a system of dual agriculture was created in the CHTs—plough and *jhum*. The transformation to plough agriculture has brought about tremendous socioeconomic change. With plough agriculture came chemical fertilizers, pesticides, and modern seeds that are not environmentally friendly, and the energy intensiveness of the food system has increased.

Jhumming did not require elaborate market systems, because it was practised at the subsistence level. It entailed simple borrowing and bartering. With the introduction of plough agriculture, marketable surpluses began to emerge. The government response was to establish *haat*⁵ and other bazaars to facilitate marketing. Unequal market exchanges precipitated differentiation in the natural economy of the hill people. This, along with a crowding in of population from the plains, has meant that survival of the hill people has become evermore dependent on

⁵ *Haat* refs to a local hill market occurring at regular intervals.

ecological reserves. Under such a situation, if the labour market remains undeveloped, the deleterious effect on the environment could be further aggravated because people lacking purchasing power and poor in exchange entitlements are likely to fall back upon ecological reserves more intensively.

Rubber plantation began in CHTs on an experimental basis in 1959. Land previously used for *jhum* cultivation was acquired. By 1998, there were 25,000 acres (10,100 ha) under rubber plantation. Rubber plantation is under direct government supervision; land is leased to hill people and settlers. Rubber plantation has been reported a 'colossal failure' (Gain 1995). Corruption is said to be one of the main reasons. In fact, rubber production in CHTs has been much lower than expected.

Fruit cultivation was once encouraged in CHTs. In some places people were somewhat coerced into carrying out pineapple cultivation. However, it did not prove profitable because little attention was given to building processing plants.

The Bawm, Lushai, and Pankhua were perhaps the first peoples in CHTs to start market-oriented horticulture on a commercial scale in the 1950s. Then in the 1960s, bereft of their paddy lands, a large number of Chakma rehabilitees from the Kaptai dam project started taking up horticulture as their main occupation. By the late 1960s, as part of the Kaptai dam rehabilitation package, the government-owned East Pakistan Agricultural Development Corporation (EPADC)—now re-named the Bangladesh Agricultural Development Corporation (BADC)—started the Chittagong Hill Tracts' Development Project. As part of the project, up to five acres of land were allotted to each family in a number of locations. Soft-term loans were provided through the government-owned Agricultural Bank,

along with technical advice and other extension services. Although allottees did not receive title deeds to their lands, the project was, on the whole, successful as far as the growth of fruit trees was concerned. Pineapple, citrus, cashew nut, and banana yields were at least moderately successful. In 1973, the newly established Horticultural Development Board took over the management of this project. However, the board was dissolved soon afterwards and the project was discontinued.

7.3 Impact

Fruit-growers faced serious problems as a result of the lack of preservation and storage facilities. Local farmers were forced to sell perishable fruit, such as pineapples, at below production costs to unscrupulous middlemen and cartels, who manipulated the situation outside CHTs. Since pineapple was—and still is—one of the most widely produced fruit crops, the marketing problem severely affected the horticulture-based economy of many rural communities. Although the BADC and the Department of Agricultural Extension (DAE) provided routine extension services, most farmers were not able to obtain credit, seeds, and other facilities to the extent required. The problems in this sector of the CHT economy certainly deserve serious attention from the authorities, but this is not forthcoming. Consequently, although fruit farming is still a major occupation in CHTs, many potentially suitable lands lie unutilised, and rural poverty has increased over the last two decades.

7.4 Sloping Agricultural Land Technology (SALT)

It has at times been suggested that terracing of hill slopes might be the best method to control or stop soil erosion in CHTs. Experience has shown, however, that terracing is too expensive a soil-erosion control measure to be affordable by most

farmers. This is primarily because the hills in CHTs, unlike those in the northern Punjab or Nepal, are too sandy and are devoid of rocks suitable to be used in terrace walls. A better alternative would seem to be the introduction of contoured hedgerows of suitable plants; these hedgerows would act both as a measure against soil erosion and as a marketable crop in line with Sloping Agricultural Land Technology or SALT. It has been argued that the SALT system, which emphasises a local resource-based, low external input-oriented, integrated technological option, is suitable for introduction in CHTs. SALT has been implemented successfully in the highlands of The Philippines. In CHTs, the Chittagong Hill Tracts' Development Board has started two experimental SALT-style farms: one at Alutilla in Matiranga Thana, Khagrachhari district, and the other at Linejhiri in Lama Thana in Banderban district. These should be monitored closely so that, if successful, they can be replicated on a large scale (Roy 1996).

The project at Khagrachari suffers from a number of technical problems that have hindered acceptance of the prototype for application on an operational scale. One problem is the selection of species for hedgerows; most species are exotic. Death of plants in the hedgerows creates large gaps and filling these gaps is troublesome. An indigenous broom-grass, *Thysanolaena maxima*, has reportedly performed better than several exotics (Khisa, pers. comm.). The grass has multiple-use value and is easy to grow in a short time. Other indigenous species should be tested. Another problem is that the attempt to minimise soil erosion by hedgerows has not been promising. One reason seems to be the selection and time of cultivation of annuals in the top alleys. This needs critical examination. Introduction of permanent crops in the farming system should reduce the risk of soil erosion in the fragile terrain of CHTs. Choices for testing may start with coffee, tea, cashew nuts, bamboo, and cane.

Chapter 8

Development Projects, Displacement and Settlement of Hill and Plains' People

The Kaptai dam and hydroelectric plant built between 1957 and 1963 with USAID funding is perhaps the principal cause of recent dispossession of tribal land in the CHTs. The artificial Kaptai Lake, created from the construction of the dam, submerged 250 square miles (65,000 ha) of prime farming land, accounting for 40 per cent (approximately 22,000 ha) of total cultivable land. It was possessed mainly by hill people. This severely disrupted the population-resources balance and required the resettlement and 'rehabilitation' of those displaced. The Karnaphuli reservoir uprooted 100,000 people, which accounted for more than a quarter of the total CHT population (Roy 1995).

Estimates of the size of the displaced population differ. Before the dam was constructed the would-be displaced persons were estimated at 80,000. Of them 45,500 were listed as primarily plough cultivators. The rest were mainly *jhum* cultivators. However, a large number of hill people was indirectly connected with plough cultivation. The actual number of affected plough cultivators was, therefore, much larger than

the figure shown. A total of 18,000 families was uprooted. Of these, 8,000 families, mainly *jhumia*, did not have recognised land rights. Although they had farmed the hillsides before the flooding, only a fraction of those who had legitimate land rights could fulfill the documentary and other requirements laid down by the Board of Revenue.

The government could not provide the same amount of land as that lost to the reservoir. The Forest Department did not like the dereservation of reserve forest. Ultimately, it limited dereservation to 23,000 acres (9,300 ha) of which 10,000 acres (4,000 ha) was 'flat land suitable for cultivation'. Another 500–1,000 acres (200–400 ha) of flat forest land were dereserved when the dam was completed. Each family had held on average six acres (2.4 ha) of prime agricultural land before the flooding. The maximum amount of land offered to those rehabilitated was only three acres (1.2 ha).

Under the rehabilitation plan the displaced were offered the choice to (1) move to higher

ground within their own *mduja* or one nearby, or (2) move from the vicinity of the reservoir to (a) Kassalong Rehabilitation Area, (b) unreclaimed flat land in the upper Chengri and Myani Valleys, or (c) some other part of the district. According to Sopher (1963) there was manipulation by Bengali officers to induce choices in certain directions. Also, those hill people displaced who were not Chakma had to submit to choices made by the Chakma. Displaced Bengali cultivators were said to have been given special consideration. The largest contingent of plains' people (570 families) were settled on the best land—'2,000 acres of level, previously cleared land that was about ready for ploughing, near the bazaar and administrative headquarters of Marishya' (Sopher 1963). Of the total displaced, 52 per cent stayed in the vicinity of the reservoir, 29 per cent moved to Kassalong, 14 per cent to Chengri-Myani Valley, and five per cent moved elsewhere.

The results of population dislocation were that hill people lost their lands; ecology, geography, economy, and agriculture were changed; habitat was severely disturbed; and a new era of political instability took root. Many hill people who had previously been plough cultivators resumed *jhum* cultivation with no other option open to them but subsistence.

8.1 Settlement Projects

There have been several attempts to settle *jhumias* and landless farmers in villages in CHTs (TPR 1987). A brief description of early projects follows.

8.1.1 Karnaphuli Rehabilitation Scheme (1957-1966)

The first settlement programme was started in 1957 with the aim of resettling people affected by the Karnaphuli Reservoir Project. This rehabilitation scheme settled around 15,074 families between 1957 and

1966. The original plan was to allot one acre (0.4 ha) per person up to a maximum of 10 acres (4 ha) per family for lowland agriculture. However, the land allotment plan was rarely achieved. As there was a shortage of suitable agricultural land, part of the Kassalong Reserve Forest was dereserved. To enable newly relocated farmers to become established, grants in both cash and kind (planting materials and fertilizers) were provided.

8.1.2 Supplementary Rehabilitation Scheme (1966-1975)

The second settlement aimed at settling 6,239 *jhumia* families that had not been accommodated in the earlier scheme. By 1973, a total of 799 families had been settled in agriculture, while 3,000 families were given assistance to become fishermen around the reservoir. The fishermen were provided with boats and nylon nets.

8.2 Chittagong Hill Tracts' Development Project (1968-1979)

This project was based on a master plan drawn up by the former East Pakistan Agricultural Development Corporation, renamed the Bangladesh Agricultural Development Corporation (BADC) after 1971. Settlers received loans in cash and kind. Plots of six acres (2.4 ha) were developed on a standard pattern consisting of bananas, pineapples, cashew nuts, and mixed fruit trees. The project commenced operation in 1968-69. In 1974, control was transferred from BADC to the newly formed Horticultural Development Board (HDB). Between 1968-73, 1,702 families were settled with only 41 subsequently abandoning their holdings. The loan repayment rate during this period was 95 per cent. After a lapse of four years between 1972 and 1976, HDB restarted its settlement programme and, by late-1978, had established 1,494 new settlers.

8.2.1 Joutha Khamar Settlement Scheme (1976-1983)

This was a programme of the Chittagong Hill Tracts' Development Board (CHTDB). The scheme aimed at settling landless *jhumia* based on activities in horticulture, fisheries, and livestock. One thousand five hundred and forty families were settled during the period from 1976-1983: 1,070 in horticulture, 450 in fisheries, and 20 in livestock production. Agricultural farm settlers were allotted five acres (2 ha) of land per family.

8.2.2 Upland Settlement Project

The Upland Settlement Project under the CHTDB was a major component of the Chittagong Hill Tracts' Multisectoral Development Project, comprised of 11 components, in 1979. The Asian Development Bank financed the project. The project settled 2,000 landless tribal families in 39 villages between 1985 and 1991 (Khisa 1995). Each family settled was allotted permanent and heritable rights of 2.5 ha of upland (0.1 ha for homestead, 0.8 ha for agroforestry practice, and 1.6 ha for rubber cultivation). The families were provided with social facilities and technical and financial assistance. Economic opportunities were created by establishing 3,200 ha of rubber plantations and four rubber-processing plants. With the success of the project, the CHTDB has started the second phase.

8.2.3 Integrated *Jhumia* Rehabilitation and Afforestation Programme

The programme was one of the components of the Chittagong Hill Tracts' Multisectoral Development Project executed by the Forest Department. It encouraged planting of bamboo and agroforestry. It arranged equitable distribution of income between the government and the settlers

from the harvesting of timber from afforested areas as well as supporting cottage and rural industries. The overall strategy was to:

- settle *jhumia* in villages with land allotments of from 1.6–2.4 ha,
- establish forest plantations where *jhumia* were allowed to use *taungya* or agroforestry to produce food crops,
- develop infrastructure to facilitate transportation, and
- establish market channels for agricultural products.

The project rehabilitated 3,245 *jhumia* families in seven forest divisions in the form of villages (at least 50 families in each village) in hilly arable lands between 1984 and 1989 (Chakma 1994). Each family was given title to five acres (2 ha) of land: 0.5 acres (0.2 ha) for homestead and agriculture, 0.5 acres (0.2 ha) for bamboo and cane cultivation, 2.7 acres (1.1 ha) for horticulture, and 1.3 acres (0.5 ha) for cultivation of miscellaneous plants. Social and community facilities, such as school, prayer centre, approach road, and internal road/pathways, within the villages were developed by the project.

8.4 Plains' People Settlement Programmes

In 1979, the government made a change in the land law of CHTs. An amendment maintained most of the provisions of the 1971 legislation, but with one important omission, namely, the restriction with regard to settlement of CHT land to outsiders. The government sought to provide five acres (2 ha) of hilly land, four acres (1.6 ha) of 'mixed' (plain and gently sloping) land, and 2.5 acres (1 ha) of paddy land to each settling family from the plains in the early 1980s. In the first phase, 25,000 families were brought to CHTs. A few square miles of reserve forest were released for settlement. As for the hill people, many

thousands were uprooted and many thousands lost their land for the second time (Roy 1992).

8.5 Impact

The programme of afforestation could not achieve the level of success desired, and it suffered from inadequate participation of the target group, mainly due to political unrest. Lack of motivation, education, extension, infrastructure, marketing facilities, and, above all, the lack of material/financial incentives were also constraints (FMP, 1993). Except in a few cases, rehabilitated families had been leading a better life previously (Chakma 1994).

8.6 Case Study in Khagrachari District

The research team carried out a quick and small sample survey among four major ethnic groups in Khagrachari hill district. Its aim was to look at the socioeconomic realities of ethnic inhabitants in a hill district. The sample included 20 Chakma households, 15 Marma households, 15 Tripura households, and 20 Bengali households.

8.6.1 Homestead Land

Distribution of homestead land appears to be highly skewed, and, in a large majority of cases, they are tiny parcels of land not suitable for horticulture and agroforestry activities (Annex 1, Table 1). Those households that possess a sizable parcel of homestead land plant both fruit trees and wood trees around their houses. These households also earn income by selling the products of their homestead garden. Five Chakma households and one Bengali household in the sample possess no homestead land. These households are temporarily squatting on *khas* land. However, both poor and well-off households fall into this category. Poor households are mostly day labourers, while well-off

households are white-collar employees such as school teachers and traders. Better-off households have rented houses in Khagrachari town.

Five categories of tenurial rights over homestead land were observed: non-owner, owner, leasehold, squatting, and occupancy. The distinctions among these categories, especially between non-owners and squatters, are blurred. Some squatters, who are *de jure* non-owners, have claimed the homestead land on which they reside as their own. This is because they have been squatting over a long period without facing any questions about their stay on the land. Leaseholders received land from the district authorities under the Regulation of 1900. However, they cannot claim to have full ownership as they need to get permission for selling the land from relevant authorities. The most interesting tenurial rights over homestead land have been found among the Tripura (Annex 1, Table 2). Except three non-responses, all claimed to have occupancy rights over land; this means that they enjoy customary rights over their homestead land that are not challenged by anybody.

This picture reveals that there are constraints of custom and law over the development of full-blown private property rights over homestead land. It can be claimed that the market in homestead land in CHTs is underformed. The most interesting question that remains unanswered is why, despite underdevelopment of the homestead land market, is the distribution so skewed?

8.6.2 Agricultural Land

Distribution of agricultural land is highly skewed among the four ethnic groups (Annex 1, Table 3). All groups have households that possess no agricultural land. However, the worst group is Bengalis, followed by Tripura, Chakma, and Marma in sequence. There are wealthy landown-

ers among all three tribal groups. Most households in the upper land bracket have reported leasing out land for sharecropping. No input-sharing or cash-renting practices were observed. In most cases, land-owning households reported two major rice crops: Aus and Aman. One interesting feature of the sharecropping practice of tribal households is that owners retain 40 per cent of the output, while 60 per cent is given to the sharecropper. This is a departure from the standard practice of 50-50 sharing of output and is difficult to explain in the absence of input-sharing by the landowner. However, it can be hypothesised tentatively that poor land fertility and unfavourable terrain may explain this unusual practice. Almost all households prepare seedbeds for plantation of rice saplings. Most also report using chemical fertilizers. Shortage of cattle among hill residents explains this phenomenon. Existence of a large number of households among the Bengalis not owning any agricultural land can be explained by the fact that most of these households are recent settlers. They have simply been settled there by the government without allotting them any agricultural land. They subsist on government grain rations. The tenure system (Annex 1, Table 4) simply shows the dichotomy between owners and non-owners. Intermediate groups, such as leaseholders and squatters, are not found. The absence of leaseholders could be a sampling peculiarity, while squatting is not seen because of an anathema towards this practice in respect to cultivation.

8.6.3 Fruit Trees

Sampled households of all ethnic groups have planted a large variety of fruit trees on their homestead land (Annex 1, Table 5). In addition to providing fruit for household consumption and for exploiting market opportunities, fruit trees help soil conservation. The dry branches, twigs, and leaves are used as fuel for cooking pur-

poses. The practice of planting fruit trees is thus environmentally friendly.

8.6.4 Sources of Fuelwood

Three sources of fuelwood were reported: forest, market, and own-source (Annex 1, Table 6). Tribals use all three, while Bengalis are essentially market-dependent. Own-source is insignificant. The peri-urban (nearer to Khagrachari town) households show a preponderance to the market source, while distant (distant from Khagrachari) Tripura households report only forest and own-source. It seems the market in fuelwood is quite developed in urban and peri-urban areas.

8.6.5 Domestic Animals

The number of domestic animals owned by the households indicates the vitality of subsistence agriculture, not to mention commercial agriculture. Sampled households are poor in domestic animal resources (Annex 1, Table 7). Among Tripura households, domestic animals are more frequently owned. As the Tripura settlement is far from the urban fringe, it has the advantage of access to grazing. Annex 1, Table 8 shows the ownership pattern of poultry and presents a rather encouraging picture. Since keeping poultry is not dependent upon land-ownership or having access to common grazing land, the homestead fringe is adequate for supporting poultry.

8.6.6 Common Property Resources

The tribal ethnic groups exploit common property products from the forest (Annex 1, Table 9) for domestic consumption. Some households exploit these resources to market for profit. The Bengalis do not report use of these resources. Although the amount of such products for consumption may not be significant, their importance cannot be denied as a source of nutrition.

The products include a variety of vegetables, mushrooms, jungle potatoes, and frogs.

8.6.7 Income Formation

As Annex 1, Table 10 shows, sampled households derive income from diverse sources. Income has been estimated on a gross basis and is consequently a little high. The category of 'other income' represents income from sources such as trading and white-collar jobs. As expected, Chakma and Bengalis have a high level of income from 'other' sources which can be explained by a high level of literacy among them. Marma and Tripura are more agriculture-dependent. Zero income has been reported from horticulture, although most groups possess homestead fruit gardens from which they do derive some income. Non-availability of reliable price figures for imputing income

from horticulture has dissuaded us from including this source, and income from poultry has also been excluded because of the problem of reliability. Bengalis do not derive income from sources such as wild products, brewing wine, craft activities, and handloom. In US-dollar terms, the mean gross income of a Chakma household is \$ 2,469.70, of a Marma household \$ 709, of a Tripura household \$ 949.5, and of a Bengali household \$ 3,778.72 (\$1= 48.00 BDT). This is for one year. In per capita terms, the income of a Chakma is \$ 474.94, of a Marma \$ 136.35, of a Tripura \$ 182.66, and of a Bengali \$ 726.67. In net terms, this gross estimate would come down by approximately one third. It must be noted that this is a quick survey and these are only rough estimates. The Bangladesh Economic Survey for 1997-1998 showed a national per capita income of \$ 268 for Bangladesh as a whole.

Chapter 9

The Issue of Land Degradation

Jhumming in CHTs is often blamed as the primary cause of land degradation and loss of tree cover and wildlife habitat (Choudhury 1972). In a situation of little or no population or market pressure, *jhumming* is environmentally acceptable. This is particularly true when the rotation is extended to a period equal to a forest-crop rotation, which is usually 12 to 20 years for short- to medium-rotation crops. However, with a developing market economy and the inevitable population pressure on land, the system of *jhumming* has collapsed into degradation and retrogression, influenced by factors both internal and external to the system.

Jhumming used to be practised only in small patches and was continued only for one or two years. The land was then left fallow before being cleared for cultivation again. During the fallow period, the *jhum* plots become covered by natural vegetation and recovery of soil potential replenished lost fertility. This natural system of recovery breaks down as the fallow period is reduced. Increasing population pressure in the region and non-availability of suit-

able land for *jhumming* has meant that the fallow period has been reduced from 15 years to three to five years. Such a fallow period does not allow full recovery of soil potential and ultimately results in degradation. When such a practice is extensive, there is a loss of topsoil, tree vegetation, and biodiversity over a vast area.

9.1 Indications of Land Degradation

At first *jhum* used to produce as much as three tonnes of rice but this has come down to only 0.4–0.6 MT (Khisa 1997). This indicates the general decline in productivity of land under *jhumming*. At present, it is commonly observed that on heavily degraded lands, farmers fail to obtain the expected yield even when applying commercial fertilizers. With income from *jhumming*, farmers cannot make a living even below the subsistence level.

Gradual destruction of forests and resurgence of *jhum* cultivation with shorter cycles have taken their toll on the agriculture of the region. Soil erosion from the hills

has resulted in the silting up of various tributaries of the Karnaphuli. It is becoming increasingly difficult to cultivate fringe land around the lake because of both excessive rainfall and drought. The water level of Kaptai Lake now does not rise or fall as was once projected (Chakma *et al.* 1995).

9.2 Perceptions of Scientists and Professionals

Land degradation in CHTs is the result of large-scale forest clearing followed by *jhumming* with a short fallow period (Nuruzzaman 1977). Islam (1982) reports that 92-184 tonnes of soil per hectare per year are removed as a result of *jhumming*. Large-scale burning and clearing ultimately leads to soil erosion during heavy downpours in the rainy season. Removal of fertile topsoil that exposes subsoil results in substantial loss of soil fertility. In a recent paper, Khisa identifies the following as major causes of land degradation in the hills (Khisa 1998).

- Natural factors: steep slopes, unstable geology, short periods of heavy rainfall, flood, and drought
- Demand factors: rapid increase in human and livestock population, increase in people's aspirations for a better livelihood
- Policy-related factors: land-ownership issues, unplanned urbanisation, inappropriate land-use policies, lack of environmentally sound guidelines for resources use, and inappropriate economic policies
- Unsound management practices: uncontrolled and excessive grazing, poor soil management practices, improper forest harvesting
- Other harmful practices: setting of forest fires

Declines in crop yields can take place for a number of reasons besides declining soil

fertility related to land degradation; for example, reduced inputs of fertilizer or labour. There are also difficulties in dissociating short-term from long-term trends in yields, especially in environments with wide fluctuations in annual rainfall.

The belief that ecological degradation, including erosion and landslides, is caused by the prevalence of *jhum* cultivation led in 1988 to a prohibition on *jhumming*. Deveasish Roy, the Chakma Chief, strongly contests this view (Roy 1994). According to him, most forms of hillside cultivation without terracing expose the soil to heavy monsoon downpours and hence result in erosion. The level of erosion, however, depends on both the gradient of the slopes and on the density of the forest cover. Where the gradient is high and cover plants are scanty, the level of erosion will be high, and vice versa. In the case of *jhumming*, most large trees are not felled and this provides a reasonable amount of forest cover. Moreover, many *jhumia* farmers nowadays plant middle- to long-term plants along with traditional short-term crops. For example, banana, turmeric, citrus fruit, palm, coconut, bamboo, teak, gamar, koroi, etc. are now common sights. In such cases, erosion is minimal. In fact, in some cases, *jhumming* is not the causation of erosion but its prevention. What is most important, as far as erosion is concerned, is to maintain sufficient cover plants. Another major objection is to *jhumming* in virgin forest. Roy contests this position also. He maintains that reserve forests and protected forests are beyond the reach of *jhumia*. The prohibition order on *jhumming* was partially revoked in 1991. It is important to mention that the prohibition order did not prevent poor farmers from *jhumming* in the CHTs during the ban period.

It is undeniable that there has been serious deforestation in CHTs in recent years, but *jhumming* was only marginally responsible for wanton wastage (Roy 1994). In

fact, Roy proposes that various 'development' and 'security' measures of the government were far more responsible for deforestation and bad *jhumming* practices. There have been cases in which destitute and landless peasants, both old residents and new settlers, have been responsible for appropriating trees from the public forest. The usual response has been to prosecute offenders. However, it is invariably only minor or first-time offenders who are punished whilst large-scale organized criminals, including corrupt Forest Department personnel, remain undetected and unpunished.

In defence of *jhum*, Chakma put forward the following argument (Chakma 1995).

- *Jhum* is an agricultural method that produces an abundance without the use of chemicals. Ash produced from the initial burning acts as both a natural fertilizer and pesticide. Food produced from *jhum* is disease-free and free from pesticide residues.
- *Jhum* utilises the natural watershed of the mountain to feed paddy and plants. It does not require dams or environmentally degrading irrigation systems.
- After the crops are harvested, *jhum* is left fallow for five to six years to regain its fertility before the next cultivation. Abandoned *jhum* becomes a feeding ground and sanctuary for wild animals, birds, and insects.
- The cropping and diversity of indigenous *jhum* agriculture secures the land from the ecological destruction caused by narrow genetic bases and monocultures.

They also think *jhum* cultivation is not a miracle cultivation promising limitless growth but is growth within the limits of nature. Over-*jhumming* may cause as much damage to the environment as other unsustainable agricultural systems.

9.3 Perceptions of Local People

Anwar Hossain, a Bengali inhabitant of Shalbangram, claims that he is not aware of the government's forest policy. However, he thinks the indiscriminate felling of trees that is being carried out now will have a deleterious effect on the environment. Hossain is also not aware of the land policy of the present government. He knows that previous governments created cluster villages where large numbers of people reside. Most of these people do not possess homestead land and have built their huts on *khas* land.

Bibhuti Bhushan Tripura of Surendra Master Para told us that the government has evicted many families in this village in the name of afforestation and has deprived them of their livelihood from *jhumming*. The hills from where people have been evicted are being brought under rubber plantation. Now many hill people work in the rubber plantation as labourers. Most people in this locality are landless, and the government should settle these people in the hills. Bibhuti feels the condition of the environment is satisfactory in his locality, but he too is worried about the indiscriminate felling of trees. He thinks that the felling of trees should be stopped for the next 10–20 years. He is of the opinion that landless people should be settled on *khas* land, because everybody has a right to land. He is in favour of afforestation, but not by evicting people.

Aksaymani Chakma of Pablakhali village of Khagrachari district opined that destruction of forest indicates lack of proper conservation policies. He thinks forest officials should be more careful and give up corrupt practices. People should be made conscious about conserving forests and maintaining the quality of the environment. Since the population is increasing the problem will continue to persist. The land commission should conduct a survey to strike

an appropriate balance between people's livelihood requirements and the needs of environmental protection.

Mongtu Choudhury of Mandirpara village of Khagrachari district told us that the government has established a number of nurseries to make afforestation programmes successful. However, in the name of afforestation, the government is acquiring the land of the hill people at a greater pace compared to other groups. Land-owners are not being adequately compensated. He thinks more attention should be given to the conservation of reserve forests rather than fresh afforestation programmes.

9.4 Perceptions of *Jhumia*

Jhumia claim that traditional *jhum* was not harmful. They used to select a small patch of land in a suitable place, preferably bamboo forest, and practice a long fallow period. They did not cultivate excess land beyond their needs to produce rice and other crops for family consumption. When they had to select a piece of land in virgin forest, they would cut branches from the tree to increase light on the ground and clear small bushes. In traditional *jhumming*, they used to cultivate crops on the middle slopes leaving the hill tops and the lower

slopes under vegetation. They used to leave standing trees with light crowns in the plots; if they needed to cut standing trees for their use, they would cut at around one metre above ground and allow the stump to develop again. They never used a site close to rivers or streams; they used to keep those areas under forest cover. They used to avoid steep slopes since there was a high risk of crop loss during heavy downpours. Soil work was minimum as they used a knife to make a small hole for sowing seed. The crop soon covered the ground and protected the soil from rain. These are no longer common practices.

In the course of time, with the introduction of root crops such as turmeric, ginger, arum, etc, they have started to use spades for soil work, particularly at harvesting time. This had led to a loosening of soil and the loss of fertile topsoil during rain. *Jhumia* admit that using a spade is harmful to the soil. However, they argue that decline in soil fertility in traditional *jhum* plots is caused by repeated crop production rather than removal of topsoil. With increased population and increased competition for land, they are compelled to use extensive areas and reduce the fallow period, and this has led to destruction of vegetation and land degradation.

Chapter 10 Conclusion

Since the sixteenth century, the CHT region has gradually become more populated. Most residents have migrated from outside. This has contributed to environmental change. Food production techniques have changed from hunting and food-gathering to *jhumming* to plough agriculture. Thus people's livelihood pattern has also changed. Traditional subsistence-oriented economy is being replaced by a market-oriented economy. Socioeconomic differentiation has also gained momentum. All these processes have affected the quality of the environment, yet the situation does not seem to be out of control. The people of the area are in favour of a policy that strikes a balance between livelihood concerns and environmental concerns.

The CHTs are politically in a transitional phase. Since the late 1950s, the effects of the Karnaphuli hydroelectric power plant have influenced demography and land use. Kaptai dam not only displaced a huge number of hill people from the best quality plough lands, it also affected the land-use pattern of a large area of CHTs because of resettlement. From the early 1970s, the

grievances of the hill people surfaced vigorously and the outcome was a prolonged armed conflict with the Bangladesh State machinery. During the period of armed conflict, state policies were driven by principles of state security, resulting in all kinds of distortions in other policy areas. Frequent displacement and resettlement of the hill and plains' people, strategic terrain preparation, and development requirements were the most important policy processes unleashed in CHTs. These had direct impacts on land use and land management and allegedly resulted in land degradation. As a result, it is a daunting task to directly relate land degradation to various policies.

Increased population pressure and shortage of appropriate land for *jhumming* have meant that indigenous technology and knowledge of *jhum* culture, which does little harm to the hill ecology, have gradually been lost. About 90 per cent of the population depend upon subsistence agriculture and the majority of them are still involved in *jhumming* (Khisa 1995). Control or regulation of *jhumming* has not been effective.

However, when land-ownership patterns began to change, people started to manage the fallow period of *jhum* by practising agroforestry. There are cases of stable, integrated land use with good agroforestry, particularly in rehabilitated villages (Chakma 1994). The change to a settled life has started to bring about an intensive land-use and management system in place of an environmentally unacceptable *jhum*-cultivation system.

The current National Forestry Policy directives are consistent with what are needed in practice: participatory afforestation and rehabilitation of *jhumia*. Intensive land use and management in land-based production systems, instead of *jhumming*, seem to be the most appropriate systems conducive to maintaining a sound bio-physical environment in the region. *Jhumia* rehabilitation programmes will replace *jhumming* with stable and integrated land use and management, while participatory afforestation will expand forest areas, provide soil and watershed protection, and increase forest resource productivity. An appropriate balance between land for forestry and land for survival and livelihood has to be struck. People in CHTs are not strict conservationists, but they would like to see maintenance of environmental quality at an optimal level.

The CHT region has suffered political turmoil during the last two and half decades, partly caused by the conflict between the particular interests of the hill people and the general interest of the nation-state dominated by plains' people. A few issues are still unresolved despite the treaty signed by both the government and the *Parbatya Chattagram Jana Sanghati Samity*. Indeed, implementation of the treaty introduced fresh tension in the peace process. Following the peace treaty,

a quasi-separate status for the CHTs has been accorded leading to the suspension of armed conflict. Optimists among the hill people feel that they will be able to have more control of environmentally friendly, policy-making processes, but cynics are not so sure. The bureaucratic culture that pervades the governance style results in high-sounding and apparently pro-people and pro-environment policy. However, populist pressure distorts policy during implementation.

The absence of people in the policy-making and implementation processes allows policy prescription and policy adoption to go unchallenged by any process of scrutiny. The lack of transparency and accountability of the implementing agencies of the government further aggravate this situation. This scenario is valid for the whole nation. What makes it worse in CHTs is the insensitivity of policy-makers towards its special conditions: both demographic and physical. The competitive claims on the resources of CHTs by the national elite over the ethnic minorities have expressed themselves in policy measures that were taken without consultation.

One would be inclined to agree with Roy, the Chakma Chief, that unless there is a serious commitment from the side of the national leadership towards transparency and accountability in their governance style, the risk that the wrongful policies of the past will continue to influence the policies of CHTs will remain. Unless the people of CHTs consider themselves the subjects of their own development, the paternalistic policies of leaders will continue to shape their lives whether they like it or not. All efforts should be made to integrate hill people into the process of development at the planning and implementation stages to avoid past mistakes.

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Annex 1 Table for the Case Study in Khagrachari District

Table 1: Homestead Area

	Area (acre)	Number of Households	Percentage
Chakma	0.00	5	25
	0.02	1	5
	0.04	2	10
	0.05	2	10
	0.10	2	10
	1.00	4	20
	1.50	1	5
	2.00	3	15
Marma	0.01	4	26.67
	0.06	1	6.67
	0.10	1	6.67
	0.16	1	6.67
	0.20	3	20.00
	0.25	1	6.67
	0.40	1	6.67
	1.00	2	13.33
Tripura	2.00	1	6.67
	0.01	7	46.67
	0.02	1	6.67
	0.20	2	13.33
	0.40	1	6.67
	1.00	3	20.00
	2.00	1	6.67
	Bengali	0.00	1
0.40		1	
0.05		7	
0.06		1	
0.10		1	
0.20		2	
0.40		3	
1.00		3	
2.00	1		

Table 2: Tenure System (Homestead Area)

	Chakma		Marma		Bengali	
	Frequency	%	Frequency	%	Frequency	%
Non owner	8	40			1	5
Ownership	6	30	11	73.33	10	50
Leasehold	3	15				
Squatting	3	15	4	26.67	9	45
	Tripura					
Occupancy	12					
Non Response	3					

Table 3: Agricultural Land (Acre)

Area	Chakma		Marma		Bengali		Tripura	
	Nos. of HH	%	Area	Nos. of HH	%	Area	Nos. of HH	%
0.00	8	40	0.00	5	33.33	0.00	14	70
1.00	1	5	1.50	1	6.67	0.20	1	5
2.00	7	35	1.60	1	6.67	2.00	2	10
3.00	1	5	2.00	2	13.33	3.00	1	5
5.00	1	5	2.40	1	6.67	5.00	2	10
8.00	1	5	3.20	1	13.33			
10.00	1	5	3.27	1	13.33			
			4.00	1	13.33			
			8.00	1	13.33			
			25.00	1	13.33			
Total	N=20			N=15			N=20	
							N=15	

Table 4: Tenure System (Agricultural Land)

	Chakma		Marma		Bengali		Tripura	
	Nos. of HH	%	Nos. of HH	%	Nos. of HH	%	Nos. of HH	%
Ownership	9	45	5	33.33	6	30	8	53.3
Leasehold								
Squatting								
Not Owning	10	50	5	33.33	14	70	7	46.6
Not available	1	5	5	33.33				

Table 5: Number of Households Owning Various Types of Fruit Trees among Ethnic Groups

Type of Fruit Tree	Chakma	Marma	Tripura	Bengali
Mango	5	10	6	11
Jackfruit	6	10	9	15
Olive			2	
Papaya	4	3	4	3
Banana	8	2	2	1
Coconut	5	8	4	8
Jambura	1		3	
Guava		6	7	8
Tamarind			2	
Betelnut	2	7	3	6
Blackberry	1		1	1
C. Apple		1		1
Palm	1		3	
Litchi		3	2	
Others		3	3	1

Table 6: Number of Households Reporting Various Sources of Fuelwood

Fuelwood Source	Chakma	Marma	Bengali	Tripura
Forest	3	3	1	12
Own	1	1		3
Market	8	8	15	
Non Response	8	3	4	

Table 7: Domestic Animals Reported by Households of Different Ethnic Groups

Type of Animals	Chakma	Marma	Tripura	Bengali
Draught animals (ox)	2	6	4	1
Cows	4	1	1	
Goats	2	4	8	
Pigs	1	1	5	
Milch Cows	3	7	3	11
Calves	1	7	3	11
Buffaloes	-	-	3	

Table 8: Number of Households Reporting Poultry by Types

Type	Chakma		Marma		Bengali		Tripura	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Chickens	11	55	11	73.3	15	75	11	75.33
Ducks			4	26.6	3	75	4	26.67

Table 9: Number of Households Reporting Wild Produce Gathering

Type	Chakma		Marma		Tripura	
	Frequency	%	Frequency	%	Frequency	%
Dheki Shak	7	4.8	1	0.8	10	8.2
Bamboo Shoots	7	4.8	4	3.3	10	8.2
Frogs	7	4.8	1	0.8	8	6.6
Jungle Potatoes	7	4.8	3	2.5	10	8.2
Mushrooms	-	-	2	1.7	9	7.4
Cheli Shak	-	-	4	3.3	-	-
Tara Shak	-	-	1	0.8	-	-
Kachu Shak	-	-	1	0.8	-	-
Others	-	-	2	1.7	1	0.8
Crab	-	-	-	-	1	0.8

Table 10: Income Profile of the Ethnic Groups

Source of Income	Chakma			Marma			Bangalee			Tripura			
	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	SD
Horticulture													
Wild Inc.	180.71	-	576.00	175.33	-	949.00	-	-	-	736.42	-	2,155.00	873.00
Wine Inc.	328.57	-	800.00	750.00	-	4,000.00	1,422.23	-	-	1,033.33	-	2,400.00	812.78
Craft Inc.	342.86	-	4,800.00	1,282.85	-	-	-	-	-	1,843.00	-	7,200.00	2,600.17
Other Inc.	94,214.29	-	400,000.00	8,083.33	-	30,000.00	10,612.67	-	1,000,000.00	2,500.00	-	30,000.00	8,660.25
Handloom	857.14	-	2,400.00	166.00	-	2,000.00	577.35	-	-	4,000.00	-	6,000.00	2,954.20
Agriculture	22,600.00	-	80,000.00	24,808.33	-	92,000.00	25,191.21	-	-	34,389.17	-	119,500.00	46,605.07
Gross Inc.	118,546.64	-	480,000.00	34,045.67	-	92,071.00	24,143.81	-	-	45,593.00	9,466.00	127,940.00	45,443.28

Table 11: Comparison of Agricultural Productivity of CHTs with Bangladesh (1994-95)

Crop	Total area CHT (acre)	Total Production CHT (MT)	Per Acre Output (CHT)	Per Acre Output (BD)	Percentage contribution CHT to Bangladesh Output
1 Rice					
Aus	44,070	22,590	0.51	0.44	1.26
Aman	64,440	59,610	0.93	0.62	0.70
Boro	23,350	20,110	0.86	0.99	0.31
2 Fruit					
Banana	14,145	143,930	10.18	6.46	22.85
Mango	3,870	3,390	0.88	14.17	1.79
Pineapple	9,215	33,445	3.63	4.36	22.42
Jackfruit	6,060	20,170	3.33	4.04	7.88
Papaya	1,055	3,560	3.37	2.94	9.94
Melon & Water melon	745	2,215	2.97	3.38	2.20
Litchi	635	425	0.67	1.07	3.58
Guava	1,350	1,650	1.22	1.98	5.32
Ber	565	635	1.12	1.37	5.54
Orange	685	685	1.00	0.99	87.82
Pomele	675	1,040	1.54	1.25	9.47
Lime & Lemon	1,040	1,230	1.18	1.1	11.98
Other	880	870	0.99	1.43	4.05
3 Pulses					
Gram				0.3	
Arhar	565	170	0.30	0.2	1.17
Masur	415	120	0.29	0.33	0.07
Motor	290	95	0.33	0.31	0.67
Mung	80	25	0.31	0.24	0.02
Maskhalai	210	60	0.29	0.31	0.01
Kheshari	80	16	0.20	0.31	0.002

Source: Yearbook of Agricultural Statistics of Bangladesh 1995, Bangladesh Bureau of Statistics.

Dr. Ahmed Kamal is a Professor at the Department of History, the University of Dhaka, and is a specialist in Social and Economic History, Dr. M. Kamaluddin is a professor at the Institute of Forestry, Chittagong University and a former Director of the Institute, Dr. M. Ullah is a Professor of Economics at Chittagong University.

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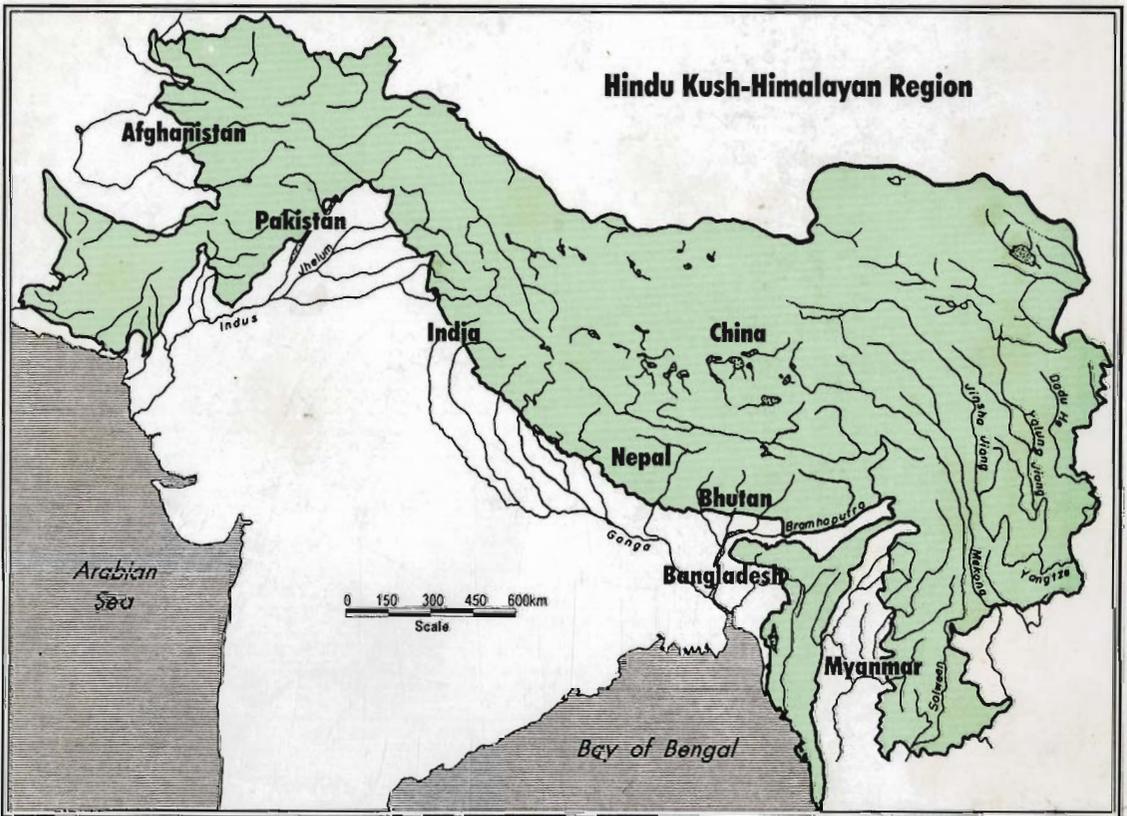
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International Centre for Integrated Mountain Development

4/80 Jawalakhel, G.P.O. Box 3226, Kathmandu, Nepal

Telephone : (977-1) 525313

e-mail : distri@icimod.org.np

Web site : <http://www.icimod.org.sg>

Facsimile : (977-1) 524509

: (977-1) 536747

Cable : ICIMOD NEPAL