

The background of the cover is a photograph of a dense forest. A large, dark tree trunk is prominent in the center-left. In the bottom-left corner, a person wearing a blue jacket and a hat is seen from behind, looking into the forest. The overall scene is vibrant with green foliage.

Participatory Forest  
Management:  
Implications for  
Policy and Human  
Resources'  
Development in the  
Hindu Kush-  
Himalayas

**Volume III**  
**EASTERN HIMALAYAS**

Editor  
Anupam Bhatia



International Centre for Integrated Mountain Development  
Kathmandu, Nepal

**Participatory Forest Management: Implications  
for Policy and Human Resources' Development  
in the Hindu Kush-Himalayas**

**Vol III  
Eastern Himalayas**

2000

International Centre for Integrated Mountain Development  
GPO Box 3226, Kathmandu, Nepal

Copyright © 2000  
International Centre for Integrated Mountain Development  
All rights reserved

**ISBN:** 92 9115 970 0  
92 9115 006 1

**Cover Plate**

ICIMOD File Photo

**Published by**

International Centre for Integrated Mountain Development  
GPO Box 3226  
Kathmandu, Nepal

**Editorial Team**

Greta Mary Rana (Senior Editor)  
A. Beatrice Murray (Consultant Editor)  
Sushil Man Joshi (Technical Support and Layout)  
Asha K. Thaku (Cartography and Design)

**Typesetting at**

ICIMOD Publications' Unit

The views and interpretations in this paper are those of the author(s). They are not attributable to the International Centre for Integrated Mountain Development (ICIMOD) and do not imply the expression of any opinion concerning the legal status of any country, territory, city or area of its authorities, or concerning the delimitation of its frontiers or boundaries.



# Foreword

The last decade of this millennium is testimony to changing times for the people and forests of the Hindu Kush-Himalayas, and it has seen the emergence of people-centred forest policies in almost all the countries in the region. These policies aim to support and strengthen participatory forest management, and through this process ensure that the needs of mountain women and men are accorded due priority.

The evidence of the will of policy-makers in the countries of the Hindu Kush-Himalayas can be traced back to the beginning of this decade. In 1990, the Government of India approved an order to encourage *joint* forest management between government and forest dependent communities in degraded forest areas. Currently twenty-two states spread over the country have approved enabling government orders. These include all three states of the Western Himalayas—Jammu and Kashmir in 1993, Himachal Pradesh in 1993, and Uttar Pradesh in 1997—and three states in the North Eastern Himalayas—Tripura in 1991 and Arunachal Pradesh and Nagaland in 1997. Nepal approved a new Forest Act in 1993 that provides legal support to community forestry and remains one of the most progressive pieces of legislation in this field. Bangladesh approved a new forest policy incorporating the concept of participatory forest management in 1994. Myanmar gazetted a new Forest Act in 1992 and issued its first community forestry instructions notification in 1995. Bhutan enacted a new Forest and Nature Conservation Act in 1995 and approved its revised 'Social Forestry Rules' in 1996. Pakistan's national draft 'Forestry Sector Policy' was under discussion at the time that this workshop was held, people's participation was a strong element in the proposed policy. The North West Frontier Province of Pakistan developed a draft forest policy for the first time in 1997. The draft is people-centred, it is still under discussion and awaits approval. In 1993, Yunnan Province in the People's Republic of China put into place provisions for the auction of tenure of barren mountain areas, and this has stimulated people's involvement in forest management. Forest policies were revised in 1994 in the Tibetan Autonomous Region to encourage and support the involvement of the local population.

The emergence of people-oriented policies in all these countries over a decade points to a dramatic paradigm shift in forest management. This is the result of the increasing understanding of the fact that forests play a pivotal role in mountain areas and can no longer be managed without the active cooperation of the mountain communities.

An increasing area is being brought under community management through different benefit-sharing systems and tenure arrangements. These arrangements often build on or add to traditional forest management practices in mountain areas and this augurs well for the sustainable development of these areas.

The role of forestry professionals is changing from custodial to participatory. Reorientation of all levels of staff in forest departments is currently underway, and the curricula of educational institutions are being revised to ensure that the new generation of people-centred forestry professionals has the appropriate skills to support community-based forest management.

ICIMOD recognised this emerging trend and in 1993 established the Participatory Natural Resources Management Programme with a clearly defined focus on participatory forest management. ICIMOD has been able to document successes and provide regional and national forums for the exchange of views and experiences through workshops and field visits. We take some pride in having been a part of this exciting decade of change and in having made a modest contribution to changing policies and perspectives in the Hindu Kush-Himalayas.

The regional workshop 'Participatory Forest Management: Implications for Policy and Human Resources' Development' held in May 1998, whose proceedings are described in this publication, is one of the many activities arranged by the Participatory Natural Resources' Management Programme since 1993. This workshop brought together senior policy-makers from seven of the eight countries of the Hindu Kush-Himalayas.

Apart from providing a unique opportunity for professional foresters in the region to share their experiences in relation to the evolution of new policies, the meeting was also a milestone in the establishment of HIFCOM — the Hindu Kush-Himalayan Forum for Forest Conservation and Management — on a broad footing. The idea for HIFCOM was conceived at an earlier ICIMOD workshop held in India in 1995. Over the last three years, the institutional development process has been nurtured in close collaboration with forestry professionals in the region. The workshop in China brought together seven of the eight HKH countries for the first time, and the idea of HIFCOM as a regional forum for promoting participatory forest management among forestry and related professionals in the HKH was endorsed by the representatives of all these countries. This endorsement and the willingness of foresters to take responsibility for the further evolution of HIFCOM are indicative of the need for this forum. The stakeholders themselves have now taken over leadership of the forum and have drawn up plans for the future.

As we move into the next century, I am glad that we are able to bring this sense of optimism and hope to individuals and institutions in the Hindu Kush-Himalayas. The evolution of these policies for mountain forests would not have been possible without the sustained effort of the women and men of the mountains who have been managing these resources. It is they who have demonstrated that, given appropriate policies and an enabling framework, they can manage the natural resources of the mountains to meet their own needs whilst ensuring that the needs of future generations are safeguarded.

I am confident that we are now moving from a decade of policies and experiments to a future of practise and implementation that will test these policies on the ground and lead to further reflection, learning, and change. This can only happen successfully if policies are backed by appropriate, timely, and clear laws and rules that enshrine the spirit of the policies. A high level of commitment is required to ensure that policies do not remain merely statements of intent. For this, we will need to address the issue of human resources development with a greater sense of urgency than we have in the past. Apart from development of skills, the workshop participants identified issues of reorientation and changes of attitude as major future challenges.

I would like to take this opportunity to thank the South West Forestry College, Kunming, Yunnan Province, of the People's Republic of China for being such an effective host for the workshop and all the resource persons and authors of the papers for their commitment.

My gratitude also extends to the numerous mountain women and men who have shown that participatory forest management can work. They have been, and remain, our continuing source of inspiration and encouragement.

Egbert Pelinck  
Director General

# Acknowledgements

It is always difficult to acknowledge all the individuals and institutions who have contributed to the planning, designing, and implementation of a regional forum. We would, however, like to offer our special thanks to the following people, groups, and institutions.

We thank Professor Yang Fucheng and the senior officials, faculty, and staff of the South West Forestry College, Kunming, Yunnan who worked with us over a two-year period to make this workshop a reality. Their commitment and efficient arrangements contributed to the organization of an excellent event. We would also like to make a special mention of the contribution made by Lai Quingkui and Dequn Zhou to this forum.

A wide range of institutions from China contributed in several ways to this workshop. We would like to express our appreciation to the the Chinese Academy of Sciences; the Chinese Academy of Forestry; the International Network for Bamboo and Rattan; the National Forestry Bureau of China; the International Cooperation Division of the National Forestry Bureau; the Provincial Government of Yunnan; the Municipality of Kunming; the Forest Bureau of Yunnan; the Foreign Affairs' Office of Yunnan; the Forest Bureau of Kunming; and the Kunming Institute of Botany. We acknowledge their support to the workshop and recognise that without their assistance we would not have been able to host this forum in China.

We would also like to thank ICIMOD's partner organizations in our regional member countries for their support to this important forum and for facilitating the participation of senior forestry professionals. In particular, we would like to thank the Ministry of Forests, Bangladesh; the Ministry of Agriculture, the Royal Government of Bhutan; the Ministry of Environment and Forests, the Government of India; the Ministry of Forests, the Government of the Union of Myanmar; the Ministry of Forest and Soil Conservation, His Majesty's Government of Nepal; and the Ministry of Environment and Forests, Government of Pakistan.

We would also like to thank the regional and national executive committee members of HIFCOM—the Hindu Kush-Himalayan Forum for Forest Conservation and Management—for working closely with us to plan and organize this workshop.

The intellectual contributions from the many authors who worked hard on the case studies have been significant and we would like to express our appreciation for their efforts.

This workshop would not have been possible without financial support from several donor organizations. We would like to thank the Swiss Development Cooperation, Berne, Switzerland for providing major support to the workshop and to the International Development Research Centre for their contribution to the forum. We would also like to thank the Ford Foundation, Beijing, China for their grant to the South West Forestry College. The grant enabled the participation of Chinese institutions.

We would like to thank the Ford Foundation, New Delhi, India, for its continuing and generous support to ICIMOD's Participatory Natural Resources' Management Programme under whose aegis this workshop was organized.

Lastly we would like to place on record the contributions made by many ICIMOD staff to this workshop.



## **Abstract**

The Workshop on Participatory Forest Management: Implications for Policy and Human Resources' Development in the Hindu Kush-Himalayas brought together forest management personnel from various parts of the Hindu Kush-Himalayas. The basis of their discussions was the people-centred forest policies that have emerged in many countries of the region and their objectives of supporting and strengthening participatory forest management to ensure that the needs of mountain people receive the priority they deserve. The policies along with their constraints and opportunities were discussed in depth, guided by papers provided by the participants themselves. Volume 1 is the Workshop Document, Volume 2 deals with China, Volume 3 – Eastern Himalayas, Volume 4 – India, Volume 5 – Nepal; and Volume 6 – Pakistan.

# Abbreviations and Acronyms

AFD	Administration and Finance Division
ACF	Assistant Conservator of Forest
BAU	Bangladesh Agricultural University
BFC	Bangladesh Forest College
CCDB	Christian Commission for Development in Bangladesh
CF	Community Forestry
CFI	Community Forestry Instructions
CHTDB	Chittagong Hill Tracts' Development Board
CLSD	Crop and Livestock Services Division
DCF	Deputy Conservator of Forest
DFWT	Department of Forestry and Wood Technology
EIA	Environmental Impact Analysis
FAO	United Nations Food and Agricultural Organization
FDTC	Forestry Development and Training Centre
FSD	Forestry Services Division
GDP	Gross Domestic Product
GNP	Gross National Product
GOB	Government of Bangladesh
HDI	Human Development Initiative (Bangladesh)
HDI	Human Resource Development Index (Myanmar)
IFCU	Institute of Forestry of Chittagong University
IFES	Institute of Forestry and Environmental Science
LSF	Local Supply Forests
LSWC	Local Supply Working Circles
masl	metres above sea level
MFD	Myanmar Forest Department
MSS	Myanmar Selection System

NATI	National Agricultural Training Institute
NGO	Non-government Organization
NRTI	Natural Resources Training Institute
PPD	Policy and Planning Division
REID	Research, Extension and Irrigation Division
RGOB	Royal Government of Bhutan
SAARC	South Asian Association for Regional Co-operation
SALT	sloping agricultural land technology
SIDA	Swedish International Development Agency
UNDP	United Nations Development Programme
USF	Unclassed State Forest
WC	Working Circles

# Glossary

<i>Juhamia</i>	Shifting Cultivators
<i>Jhum</i>	Shifting Cultivation
<i>Taka</i>	1 US \$ = 49.65 taka (October 1999)
Taungya	Shifting cultivation

## **Introduction**

The workshop proceedings and the studies and papers presented at the 'Regional Workshop on Participatory Forest Management: Implications for Policy and Human Resources' Development in the Hindu Kush-Himalayas, have been published in six volumes as per the details provided here:

### **Volume I**

- Proceedings of the 'Regional Workshop on Participatory Forest Management: Implications for Policy and Human Resources' Development in the Hindu Kush Himalayas, 7-12 May 1998, Kunming, China.

### **Volume II China**

- Participatory Forest Management: Implications for Policy and Human Resources' Development in China  
*Wen Haizhong, Director, Division of Forestry Law and Regulation Implementation and Monitoring, National Forestry Bureau, China*
- Participatory Forest Management: Implications for Policy and Human Resources' Development in Yunnan Province  
*Zhou Yuan, Deputy Dean, Department of Economic Management, South West Forestry College, Kunming, Yunnan, China*  
*Zhou Dequn, Associate Professor, South West Forestry College, Kunming, Yunnan, China*  
*Zhang Lichang, Director, Division of Forest Law and Regulations, Department of Forestry, Kunming, Yunnan, China*  
*Zhang Jiaxiang, Deputy Director, Division of Forest Law and Regulations, Department of Forestry, Kunming, Yunnan, China*
- Participatory Forest Management: Implications for Policy and Human Resources' Development in the Tibetan Autonomous Region  
*Gou Wenhua, Director of the Teaching Division, Tibet's Institute of Agriculture and Animal Husbandry, Lhasa, Tibet*  
*Zhao Bing, Director, Research Institute of Plateau Ecology, Tibet's Institute of Agriculture and Animal Husbandry Management, Lhasa, Tibet*

## **VOLUME III EASTERN HIMALAYAS**

Bangladesh

### **Participatory Forest Management: Implications for Policy and Human Resources' Development: A Case Study of the Chittagong Hill Tracts**

*S. M. Jalil, Chief Conservator of Forests, Department of Forests, Bangladesh*

*Junaid K. Choudhury, Conservator of Forests, Department of Forests, Bangladesh*



Bhutan

**Participatory Forest Management: Implications for Policy and Human Resources' Development in Bhutan**

*Planning and Policy Division of the Ministry of Agriculture, Bhutan*

Myanmar

**Participatory Forest Management: Implications for Policy and Human Resources' Development in Myanmar**

*U Myint Sein, Deputy Director, Ministry of Forestry, Government of the Union of Myanmar*

**Volume IV**

**India**

- Challenges to the Management of Forests in the Mountain Regions of India  
*C. P. Oberai, Inspector General of Forests, Ministry of Environment and Forests, and Special Secretary to the Government of India, New Delhi, India*
- Training Issues in Joint Forest Management in the Hindu Kush-Himalayan States of India  
*P.B. Gangopadhyay, Director, Indira Gandhi National Forest Academy, Dehradun, Uttar Pradesh, India*
- Status of Participatory Forest Management: Implications for Policy and Human Resources' Development in Himachal Pradesh, India  
*A.K. Gulati, Director (Marketing), H.P. State Forest Corporation, Shimla, Himachal Pradesh, India*
- Participatory Forest Management: Implications for Policy and Human Resources' Development in Jammu and Kashmir, India  
*P. Patnaik, Principal Chief Conservator of Forests, Jammu and Kashmir Forest Department, Jammu and Kashmir, India*  
*S. Singh, Chief Conservator of Forests (Retired), Jammu and Kashmir, India*
- Participatory Forest Management: Implications for Policy and Human Resources' Development in the Uttarakhand Himalayas, Uttar Pradesh, India  
*Mahesh C. Ghildiyal, Principal Chief Conservator of Forests, Nainital, Uttar Pradesh, India*  
*Arup Banerjee, Deputy Director, Forest and Environment, Uttar Pradesh Academy of Administration, Nainital, Uttar Pradesh, India*

**Volume V**

**Nepal**

- Participatory Forest Management: Implications for Policy and Human Resources' Development in Nepal  
*Prakash Mathema, Research Officer, Department of Soil Conservation and Watershed Management, Kathmandu, Nepal*  
*Krishna Bahadur Shrestha, Deputy Director General, Department of Forests, Kathmandu, Nepal*  
*Keshav Man Sthapit, Department of Soil Conservation and Watershed Management, Kathmandu, Nepal*

**Volume VI**  
**Pakistan**

- Participatory Forest Management: Implications for Policy and Human Resources' Development in Pakistan  
*Rafiq Ahmad, Inspector General of Forests, Ministry of Environment, Local Government and Rural Development, Government of Pakistan, Islamabad, Pakistan*
- Institutional Change Process in the North West Frontier Province, Forest Department, Pakistan  
*Mohammad Iqbal, Conservator of Forests, Department of Forestry, Fisheries and Wildlife, Government of North West Frontier Province, Peshawar, Pakistan.*

Copies of These Volumes are Available From

International Centre for Integrated Mountain Development  
P.O. Box 3226, Kathmandu, Nepal

Tel: 525313  
Fax: 977-1-524509  
Email: [icimod@icimod.org.np](mailto:icimod@icimod.org.np)  
Website: [www.icimod.org.sg](http://www.icimod.org.sg)

# Contents

Foreword	
Acknowledgements	
Abstract	
Abbreviation and Acronyms	
Glossary	
<b>Part 1: Participatory Forest Management: Implications for Policy and Human Resources' Development in Bangladesh and the Chittagong Hill Tracts</b>	<b>1</b>
1. Introduction	3
2. Background to the Chittagong Hill Tracts	5
2.1 Location and Topography	5
2.2 Demographic Features	5
2.3 Climate	5
2.4 Land Use	5
2.5 History of Forest Management in the Hill Areas	6
2.6 Traditional and Indigenous Forest Management	7
2.7 Role of Forests in the Lifestyle of the Mountain People	8
2.8 Status of Community Institutions	9
3. Government Policy and Legislation on Forestry	13
3.1 The Process of Formulation of Government Policy	13
3.2 Acts, Policy, and Rules Related to Forestry	14
3.3 Participatory Approach	16
4. Other National Policies	21
4.1 The National Environment Policy of 1992	21
4.2 The National Agricultural Extension Policy of 1997	21
4.3 The National Water Policy	22
4.4 National Industrial Policy	22
4.5 Conflicts and Compatibility between the Various National Policies	22
5. Human Resource Development	25
5.1 Forestry Education and Training	26
5.2 Extra Institutional Human Resource Development	29
Bibliography	31
Annex	33

<b>Part 2: Participatory Forest Management: Implications for Policy and Human Resources' Development in Bhutan</b>	<b>45</b>
1. Introduction	47
2. Background	49
2.1 Extent of Forest Resources	49
2.2 The Role of Forests in the Country's Economy and the Livelihood of the Mountain People	50
3. History of Forest Management in Bhutan	53
3.1 Traditional Forest Management	53
3.2 Government Management of Forest Resources	54
4. Social Forestry in Bhutan	57
5. Human Resources' Development for Forestry Development in Bhutan	59
5.1 The Bhutan Forestry Institute	59
5.2 The Logging Training Centre	59
5.3 The Natural Resources' Training Institute	59
Bibliography	61
<b>Part 3: Participatory Forest Management: Implications for Policy and Human Resources' Development in Myanmar</b>	<b>63</b>
1. Introduction	65
1.1 Background to Myanmar	65
1.2 Forest Resources	65
2. Participatory Forest Management in Myanmar	67
2.1 Emergence of Participatory Forest Management in Myanmar	67
2.2 Community Forestry Policy and Programmes	68
3. Human Resource Development Initiatives	71
4. Conclusion	73
4.1 Issues and Problems	73
4.2 Suggestions and Recommendations	73

# Part 1

## **Participatory Forest Management: Implications for Policy and Human Resources' Development in Bangladesh and the Chittagong Hill Tracts**

S. M. Jalil  
J. K. Choudhury



# 1 Introduction

Bangladesh is situated in the north-eastern part of south Asia at the foot of the southern Himalayan slopes. It lies between 20°34' and 26°36' north and 88°1' and 92°41' east. The uplands (hills and mountains) of Bangladesh are situated in the eastern, south-eastern, and north-eastern parts. They are composed of tertiary hills and mountains and are extensions of the Hindu Kush-Himalayas. The hill areas include the districts of Rangamati, Bandarban, and Khagrachari in the east; Chittagong and Coxes Bazaar in the south-east; and Sylhet and some parts of Mymensing in the north. The most contiguous and largest area of hills is the Chittagong Hill Tracts, which comprise the districts of Khagrachari, Rangamati, and Bandarban, ninety per cent of which are hilly or mountainous (Khisra 1991).

Bangladesh is a small country of only 144,110 sq.km. with a population of over 120 million (a population density of people per sq.km.). The extremely high population pressure has resulted in 'land hunger' and triggered encroachment on government forest land. Under the traditional type of forest management practised by the Forest Department, the forest cover in many areas has

gradually been depleted. Forest land is being encroached on in many locations, while the Forest Department is raising new plantations, mostly on denuded tracts of land under their control.

Forest management in Bangladesh, like other developing countries, is facing problems of sustainability and equity. The Forest Department, through its custodial approach, has failed miserably during the past decades to protect the country's forest resources. There has been rampant pilferage of forest products from government forest land, especially in the northern and central part of the country, and increased encroachment. New technological innovations for multiple production from forest resources have not been applied effectively because of conflicts with people residing in and around the forests. This has made policy-makers realise the need to introduce alternative approaches to forest management. In the 1980s, the Forest Department started to adopt participatory forestry practices and initiated benefit-sharing arrangements in forestry activities with local people. This practice of social or participatory forestry is showing encouraging results.

# 2 Background to the Chittagong Hill Tracts

## 2.1 Location and Topography

The three hill districts of the Chittagong Hill Tracts lie between 21°25' and 23°45' north and 91°45' and 92°50' east, and cover an area of about 13100 sq.km. Reserved Forests cover about 3220 sq.km. and the water surface of the Kaptai Lake about 780 sq.km. The remainder consists of Unclassed State Forest (USF), settlements, and other uses. The topography is hilly and undulating and, in some areas, very steep. There are nine valleys with elevations ranging from 300 to 1100 masl. The region constitutes about 10 per cent of the total area of Bangladesh (Khisa 1991). A comprehensive land survey showed that approximately five per cent of the total land area is suitable for agriculture and over 80 per cent is physically and economically suitable for the establishment of forest plantations (Forestral 1966).

## 2.2 Demographic Features

Eleven tribal communities inhabit the Chittagong Hill Tracts: the Chakma, Murma, Tripura, Tanchangya, Khyang, Chak, Murong, Pankhu, Bom, Khumi, and Uchai tribes. Each tribe has its own distinct culture and traditional lifestyle. Although some live in the valleys, most seem to prefer the hilltops (Khisa 1995a; FMP 1993). There are also many people in the area who have migrated from the plains (non-tribals).

In 1951, the population of this region was only 288,000. By 1961 it had grown to 383,000

and by 1981 to 731,000. At the time of the 1991 census, the population was 968,000. The present population (1998) is estimated to be 1.28 million. In other words the population has doubled in the past 20 years.

## 2.3 Climate

The average annual rainfall in the Chittagong Hill Tracts is 2,032 to 3,810 millimetres per year, 80 per cent of which occurs during the months of May to September. Occasional rainfall, cyclones, and storms often occur in April and October. November to March are dry months. Torrential downpours sometimes cause massive landslides. The northern part of the area receives less rainfall than the southern part (Khisa 1995a).

The mean monthly maximum temperature ranges between 25°C and 34°C, and the mean minimum between 12°C and 25°C. The mean monthly relative humidity is about 65 per cent in the dry season and about 90 per cent in the rainy season (Khisa 1995a).

## 2.4 Land Use

*Jhum* cultivation (shifting cultivation) is the prevalent form of land use practised on the steep to very steep slopes. With the increase in population, the *jhum* cycle has been reduced from a 10-15 year rotation to a 2-3 year rotation. Intensive monocrops of tubers and turmeric without proper soil conservation measures have seriously degraded the soil. Illiteracy, superstitious beliefs and practices, and

poor health and sanitation coupled with poor nutrition have seriously exacerbated the poor living conditions of the local people (Ghafur et al. 1987). The farming practices in this region are leading to a decline in productivity and causing serious environmental degradation, thereby jeopardising the sustainability of the area (Khisra 1995a)

## 2.5 History of Forest Management in the Hill Areas

Until 1870, the land area and natural resources of the Chittagong Hill Tracts were enough to meet the domestic requirements of the tribal population. By 1875, an alarming decrease had been noted in the forests. At this stage some of these forests were declared reserved forests by the government, leaving the rest as USF. The Forest Department adopted a policy of clear felling followed by artificial regeneration to convert the less valuable tree cover of the reserved forest areas to more valuable forests by raising valuable species such as *Tectona grandis*, *Dipterocarpus* spp, *Gmelina arborea*, and *Swietenia macrophylla*. Forestry plantation activities were first started in this region in 1871, when teak (*Tectona grandis*) was introduced from Burma (now Myanmar). Since then, *Tectona grandis* has become the major plantation species. Along with *Tectona grandis* and *Swietenia macrophylla*, some indigenous species like *Gmelina arborea*, *Dipterocarpus*, *Artocarpus chaplasha*, and *Legerstroemia flosreginae* have been planted in various mixes. Initially various planting methods, such as planting in lines or strips, planting in blocks at six by six spacing, and *taungya* (a sort of shifting cultivation incorporating planting of tree seedlings), were used to establish forestry plantations. The *taungya* system could not cope with the enhanced felling under mechanised logging, nor could it regenerate the area. In recent years a combination of natural regeneration and artificial planting has been prescribed (FMP 1993).

The reserved forests under the management of the Forest Department were subjected to clear felling followed by artificial regeneration. These were protected through legal instruments

such as the Forest Act and other prevailing laws of the country. The tree resource increased in such areas, but the USF degenerated very badly as a result of unscientific land use such as shifting cultivation (*jhum* cultivation) on steep slopes, and became mostly grassland and/or scrubby forest. By the mid-1960s, barely seven per cent of the USF land could be classified as forest (Forestal 1960). Prolonged and intensive *jhum* cultivation by the tribal communities seriously degraded the sites and induced heavy soil erosion. The unabated soil erosion caused siltation of riverbeds affecting the navigability of rivers such as the Karnafully, Kachalong, Maini, Chengi, Sangu, and Matamuhuri (FMP 1993).

The reserved forests in the Chittagong Hill Tracts were quite rich in forest resources with a high potential for forest management for multiple use. Over the last two decades, however, the poor peace and order situation in the area (insurgency) has caused serious depletion of the reserve forests. Illegal logging and *jhum* cultivation within the forest areas were the main causes of damage. Only recently has the long-standing ethnic problem received the necessary political attention from the government, and a peace agreement has now been reached to end insurgency in the area. It is expected that the situation will now improve and that this will encourage the professionals concerned to introduce proper land use and forest management. It is now realised that traditional forest management without the participation of the local communities cannot be fruitful. Thus participatory forestry is gaining momentum in these hill areas.

There is a tremendous potential for forestry and watershed development using the participatory approach. The Forest Department has, in principle, accepted the idea of participatory forestry under an integrated ecotype management of natural resources. The creation of the '*Jhum* Control Division' in the early 1960s and its approach of controlling this practice by settling the *jhum* cultivators in permanent locations were the first positive steps. In the 1980s, a series of projects were implemented through people's participation in various fields

including forestry, agriculture, horticulture, poultry, and pig raising. Initially peoples' participation was poor, mostly because of the poor law and order situation. The situation is expected to improve after signing of the recent peace accord. Implementation of the *jhum* programme, establishment of forest plantations, and management of the watersheds are now, for the first time, being considered as an integrated programme (Satter 1991).

The Forest Department of the Government of Bangladesh (GOB) has accepted the principle of peoples' participation in forest management. Most of the present GOB projects on forestry are being formulated in line with the policies and strategies enunciated in the 20-year Forestry Master Plan (FMP 1993). The two major objectives of the Master Plan are to increase tree cover and to ameliorate environmental problems. The Master Plan has also proposed carrying out plantation programmes on USF land to produce timber and other industrial wood. The Forest Policy 1994 has also emphasised peoples' participation in forestry activity.

## **2.6 Traditional and Indigenous Forest Management**

Bangladesh has only a few efficient indigenous management practices for hilly terrain.

### **2.6.1 Terrace Cropping**

Terrace cropping is being practised in some places with considerable success as a technique for soil conservation. Bench terraces of widths varying from two to three feet are cut across the slope and pineapple and other fruit trees are grown. Banana and *Gmelina arborea* are grown side by side. This has the double advantage of reducing soil erosion and yielding cash benefit to the growers. The harvesting sequence is also good for retaining vegetation cover throughout the year. The Chakma and *Marma* tribes often employ this technique. The other tribal communities in the hills use another type of terrace in which the benches are wider with a gentle outward slope. These are mostly used for fodder cultivation and the terrace

edges are planted with legumes such as *Tephrosia candida* and *Cassia siamea*. This practice, as well as checking soil erosion, produces fodder for cattle and biomass for mulching. Terrace cultivation is common in the Banderban district.

### **2.6.2 Banana Plantations for Soil Conservation**

Patches of banana plantations are, sometimes found in the Chittagong Hill Tracts. Tribal communities adopt this practice in the belief that the trees are very stable and can withstand all sorts of natural hazards including earthquakes. They even take shelter in the banana plantations during earthquakes. The implications for watershed management, as well as financial gain, are very important. The big leaves of the banana dissipate large monsoon raindrops and reduce soil erosion.

### **2.6.3 Gully Control by Bamboo**

Use of bamboo culms is probably the oldest indigenous method widely practised in the hills of the Chittagong area for plugging gullies, as well as for erosion control in narrow valleys with arable lands along stream banks. Tribal communities protect naturally occurring bamboo on these sites and also plant bamboo in vulnerable spots. *Bambusa tulda* and *Bambusa vulgaris* are the two major bamboo species used for such purposes. The bamboo culms have a vigorous regeneration potential and can be established easily. The fibrous root system of the bamboo is an excellent soil binder. Both tribal and non-tribal people use this technique to control soil erosion.

### **2.6.4 Gully Control by Planting**

Parts of hill areas are characterised by narrow valleys with sloping sides lying between the steep ridges of two hills. These narrow valleys are highly vulnerable to erosion from water runoff. Tribal groups usually plant such narrow valleys with *Tectona grandis*, *Dipterocarpus*, *Artocarpus chaplasha*, *Bamboo spp*, *Gmelina arborea*, and *Albizia procera*. They build their homes on the hilltops. The vegetative cover



reduces erosion in two ways: the bamboo cover at the bottom of the ridges prevents rill erosion and the multi-storied plantations on the slopes reduce the velocity of the runoff. The slopes are also less disturbed under such practices. These practices are more prevalent among the Tipra tribe in the Khagrachari and Bandarban districts. These gully control practices are found widely throughout the hills of Bangladesh and they not only control the gullies but also demonstrate proper utilisation of the hill slopes.

### **2.6.5 Silvi-Horticultural Practices**

The gentle undulating lands in Khagrachari district provide a good opportunity for a particular type of homestead forestry or silvi-horticultural practice. These areas are mostly occupied by non-tribals, build their dwellings on the high land, and plant fruit and multi-purpose trees on the slopes and in vacant spaces around their dwellings as densely as possible. Guava, banana, mulberry, mango, and jackfruit are planted on the gentle slopes. Pineapple is grown as an understory crop. The high flat areas are planted with *Tectona grandis*, *Dipterocarpus*, *Gmelina*, and bamboo. The lower flat valleys are used for some paddy and vegetable cultivation as far as the constraints of water scarcity and very low soil moisture permit. In this area, the vegetative cover on slopes maintained through annual or perennial crops is noteworthy. This practice provides the farmers with cash income throughout the year and helps in soil and water conservation.

### **2.6.6 Bamboo Forest Management System**

The people from the hills used to meet all their basic needs for food, shelter, clothing, and medicines from the forests or through their traditional agricultural production. Bamboo occupies an important role in their livelihoods, culture, and religion. It is used widely in the construction of huts, for household and agricultural implements, as food, for worship, for watershed management, and for a host of other activities. It is amazing that a single species can effectively meet such a wide variety of needs. The tribal communities put every effort

into conserving and managing bamboo resources.

Usually bamboo culms grow naturally as pure stands or as an understory of tropical evergreen species. *Melocana baccifera*, *Bambusa balcooa*, *Bambusa polymorpha*, *Bambusa tulda*, and *Bambusa nutan* grow in abundance. Bamboo growth is related to high soil moisture, and bamboo is used for gully plugging and soil erosion control. In fact, the silvicultural practices adopted by the Forest Department for the management of bamboo forest have much in common with the indigenous system.

### **2.6.7 Community Forest Management Practices**

Tribal communities in the Chittagong Hill Tracts try to maintain a self-sustained livelihood based on the natural resources around them. A typical tribal village or community raises a variety of useful trees and plants around their homesteads. Generally the land around a village is maintained as a community forest with fruit and other multipurpose trees. This parcel of land is never subjected to the traditional *jhum* cultivation. The tribal village communities usually extract only the mature trees with the consent of their village head. This system of extraction is quite close to the scientific forestry practice of selection felling. This practice causes the least possible deterioration to the site and the soil.

## **2.7 Role of Forests in the Lifestyle of the Mountain People**

Ethnobotany is the knowledge of interaction and the use of plant resources by ethnic communities. Ethnic groups in the Chittagong Hill Tracts have subsisted on shifting cultivation (*jhum*), fishing, hunting, and harvesting of forest products for centuries. Even now, they are dependent on forest resources for their basic needs. Forests are their primary source of food, shelter, medicine, and other products and services in their daily life (Ahmed and Stoll 1996). Forests are also places where they worship. The lifestyle of the ethnic people and their socioeconomic activities are centred



around the hills and the natural resources. This way of life has existed in harmony with the environment for centuries (SRDI 1986), but it is now threatened by the massive over-exploitation of resources resulting from the increased population and the effects of competitive land use.

The natural climax vegetation of the Chittagong Hill Tracts is a mixed tropical evergreen and deciduous forest with bamboo. Over 100 tree species and numerous species of bushes, shrubs, canes, lianas, and ferns have been identified in the area. At present, however, this climax vegetation only exists in the reserved forests and as scattered remnants in a few locations in the USF.

*Jhum* cultivation is a very old practice and is the indigenous technique of forest farming. All the ethnic communities practice *jhum* cultivation, which is treated as the nerve centre of the life and culture. The songs, dances, and almost all festivals are centred around the harvest of *jhum* crops such as rice, sesame, and cotton, which are the main sources of food and cash income. Some authors have suggested that the system is essentially based on scientific principles (Nye et al. 1960; Ramakrishnan 1984).

The ethnic communities of the Chittagong Hill Tracts depend largely on wild plants from the surrounding forests for food, construction materials, fuelwood, medicine, and many other products. Since they are well acquainted with the surrounding environment, it is fairly easy for them to procure their daily necessities. For generations, the communities have recognised the uses of plant resources for the treatment of various diseases. For example the bark of *Oroxylon indica* (Khona) is used to treat jaundice.

More than fifty tree species with edible fruit are found in the area, including wild mango (*Mangifera sylvatica*) and 'Kamkui' (*Kbridelia relusa*), and the leaves of many of these trees also provide excellent fodder. Other fruiting plants include 'Bortagula', an indigenous wild litchi, and 'Rogosko', a creeper that bears very

sweet fruit about the size of a lime with a blood red pulp. There are several varieties of wild banana, with lots of seeds inside, which are very sweet when ripe. The inflorescence of wild banana and the white soft core within the leaf sheaths are used as vegetables. Banana core cooked with rice is used in days of food scarcity, and when chopped with bran it makes an excellent fodder for pigs and cattle.

Over a dozen varieties of wild yam are collected around the year and used as vegetables. Numerous varieties of leafy vegetables grow in moist sites, and leaves, stalks, fronds of ferns, and creeper tendrils are all collected as food. The young leaves of different tree species, particularly *Albizia procera* and wild mango, are also used as vegetables as are the young shoots of different bamboo species ('bansshori') and cane ('golak aga'). Nowadays with lower yields from *jhum* cultivation, tribal communities live on yams during winter and on bamboo shoots during the monsoon.

Several varieties of edible fungus like *Lentinus*, *Shizophyllum*, and Jew's Ear grow on decaying wood. Mushrooms like *Lepiota* and *Volvariella* growing on soil or straw are also used as food.

With this sort of lifestyle using the bounty of nature, famine, in its strict sense, is unknown to these communities. The ethnic minorities have lived for centuries in this hilly region without any serious adverse impact to the forests, the environment, or the watersheds. They have made an easy living through sustainable harvesting of forest products, fishing, hunting, and *jhum* cultivation (shifting cultivation). Unfortunately, as a result of the pressure of other, competitive, uses of land, and the increased number of both people and livestock, the availability of wild plant resources is declining sharply (Khisa 1997).

## **2.8 Status of Community Institutions**

### **2.8.1 Administration and Land Tenure System**

The Chittagong Hill Tracts has three administrative districts: Khagrachari, Rangamati, and

Bandarban. A Deputy Commissioner heads each district. The districts are divided into 28 *Thana(s)*, each headed by a *Thana Nirbahi Officer*. The *Thana(s)* are further divided into 110 Union Councils, each headed by an elected chairperson.

The land tenure system differs significantly from that in other parts of Bangladesh. The government owns most of the land, and the Deputy Commissioners control its disposition. Under the Chittagong Hill Tracts' Regulations of 1900 (amended in 1971), the Deputy Commissioners are empowered to regulate land acquisition by any government agency in the interest of the public. The Deputy Commissioners are authorised to allocate up to 100 acres of hill land to an individual or a family. They can also control and regulate any shifting (*jhum*) cultivation within their jurisdiction (ADB 1997).

### **2.8.2 The Tribal Administrative System**

Each of the three districts comprises a single tribal circle, the Chakma, Mong, and Bomang circles, each headed by a tribal circle chief. The population in all of these circles comprises members from almost all the ethnic groups found in the area. The circle chiefs have specific duties and can even exercise judicial powers in settling disputes according to customary laws, except in crimes against the state and collection of revenue.

Each of the circles is sub-divided into *Mouza(s)*. A *Mouza* is under the control of a Headman and consists of a village headed by a headman or *Karbari*. The headman acts as an arbitrator in local disputes, allocates land for shifting cultivation, and collects revenue. The size of the plot allocated depends on the family size (ADB 1979). The Headman is entitled to a part of the revenue that he collects. After deducting his share, the remainder is handed to the circle chief, who in turn retains his share and passes the rest on to the State.

### **2.8.3 The Local Government Council**

A new administrative set up was introduced under the Local Government Council Act of 1989. One Chairman is appointed in each district, with the status and authority of a Deputy Minister. The Chairman heads a five-member council. The council coordinates the development activities of different government and non-government agencies in the hill districts. Until recently these local government councils were ineffective. After the signing of a peace treaty with the *Parbayta Jana Sanghati Samity*, the government is planning to strengthen the local government councils by bringing them under the banner of a Regional Council for the whole of the Chittagong Hill Tracts. The proposed power and authority of the Council, as stated in the peace treaty, will be more authoritative and will also seek the participation of all tribal communities in the region.

### **2.8.4 The Chittagong Hill Tracts' Development Board**

The Chittagong Hill Tracts' Development Board (CHTDB) was established in January 1976 with the aim of accelerating socioeconomic development in the Chittagong Hill Tracts' area. The Board, assisted by a consultative committee with members who include tribal and non-tribal leaders, is responsible for policy formulation, planning, and coordination of multi-sectoral development programmes. From January 1976 to May 1996, the Board implemented 1,007 schemes worth 494.58 million *taka*<sup>1</sup>. The programmes have included various activities for social welfare, education, road construction, agriculture, sports and culture, building construction, and cottage industries.

Under the special five-year plan from 1984-85 to 1990-91, the Chittagong Hill Tracts' Development Board spent a further 2,803.7 million *taka* as a coordinating agency in the

---

<sup>1</sup> There are 49.65 *taka* to one US dollar.

implementation of programmes with different collaborating departments. These included construction of roads, telecommunications, development of power, health and family planning, education and vocational training, sports and culture, cottage industries, tourism, agriculture, horticulture, forestry, fisheries, and livestock development. During this period, 1,970 tribal families were settled and 7,600 ha of steep slopes were afforested.

The biggest project so far undertaken by the CHTDB was the Asian Development Bank financed Chittagong Hill Tracts' Development Project, a multi-sectoral project with 11 components. The aim of this project was to create the necessary conditions for the long-term socioeconomic development of the area. Two thousand landless and marginal tribal families belonging to the Chakma, Marma, and Tripura communities were settled and provided with essential facilities.

### **2.8.5 Parbatya Boudha Mission**

The *Parbatya Boudha* Mission is a non-profit, socio-religious, cultural, and child welfare organization. Its headquarters were established at Khagrachari in 1983. Since its inception, this non-government organization has been trying to improve the socioeconomic and religious aspects of the hill people, so that

future generations can stand up for themselves as worthy citizens of the country. To achieve its goals, the NGO has set up an orphanage, religious and educational institutions, and social organizations in various places. Its present activities include construction of orphanages, a residential school, a temple, a Pali college, an examination centre, and agricultural training camps. Proposed projects include youth development, a programme for women's development, a printing press, a residential college, a monastery, and a meditation centre.

### **2.8.6 Religious Leader ('Ban Vantee')**

Most of the population in the Chittagong Hill Tracts belongs to the Buddhist *Chakma*, *Marma*, and *Tanchayanga* tribes. Mr. Sreenath Sadhananad Mahasthabir is a highly regarded local religious leader of the Buddhist community. His whole life has been concentrated on following the path of Gautam Buddha. He is known locally as *Ban Vantee* for his deep devotion to Buddhism. His way of life and religious sermons are highly regarded by all Buddhists and even by other tribal communities with different religious beliefs. The messages from Mr. Sreenath Sadhananad Mahasthabir are highly influential in regulating social and cultural life. His present headquarters are at Rajbanabihar, Rangamati.

# 3 Government Policy and Legislation on Forestry

## 3.1 The Process of Formulation of Government Policy

Government priorities change over time with changes in socioeconomic, environmental, political, and economic development needs. Such changes require formulation or revision of government policies. The Ministry concerned leads the formulation of new policy. Ministers are responsible for policy formulation at the national level, with assistance from various professionals within the Ministry in a type of participatory approach. New priorities are set out by the professional staff in the ministry on the advice of the ministers and political heads, within a given framework and in accordance with the commitments made to the people. After careful review, top bureaucrats advise the political leaders of the government on the revised priorities, and these are treated as the basis for revision or formulation of policy.

The main stakeholders in initiating changes in forest policy in Bangladesh are international donors, forestry professionals, politicians in power, and non-government agencies (NGOs). Discussions are often held with various stakeholders: experts, professionals, NGOs, and the private sector. The prevailing socioeconomic, environmental, and political factors greatly influence such policy decisions. Internal influences and/or pressure from various interest groups, such as non-government organizations, persons especially concerned with conservation, professional organizations, industrial organizations, and groups with common interests, can affect decisions on

policy. The detailed steps and benchmarks in policy formulation in Bangladesh are summarised below.

- Formation of a working or expert group, with representation from the agency or department concerned, to prepare a policy draft. Sometimes experts are hired to assist such a group
- Review of existing policy and legislation by the group
- Collection and study of relevant data by the group
- Preparation of a discussion paper on 'future policy direction'
- Arrangement of workshops, inter-ministerial meetings, and similar on future policy direction, which are attended by various interest groups
- Formulation of the first draft using feedback from workshops and meetings
- Circulation of the first draft to different ministers, agencies, groups, institutions, and organizations for review and comments
- Arrangement of consultation or workshop with wider stakeholder representation after incorporating comments and observations on the first draft
- Finalisation of the draft policy proposal through an inter-ministerial forum after discussing the comments and observations received
- Submission of the proposal to the officer concerned in the ministry responsible. The officer will write a cabinet paper and submit the proposal to the cabinet for approval.

- The cabinet of ministers will accord formal approval to the proposal after discussion.
- Publishing of the document as a gazette notification for public appraisal
- Initiation of institutional and administrative reforms to facilitate implementation of the policy
- Implementation of strategies and programmes

The entire process up to approval by the cabinet of ministers takes about one and a half to two years. Throughout the process, newspapers and other media, workshops, and discussions with various stakeholders are used to keep the process transparent and to obtain feedback.

Forest policy is evolved centrally. Bangladesh is a small country and has no regional entities like provinces. The Government of Bangladesh implements the policy throughout the country and there are no regional variations.

### **3.2 Acts, Policy, and Rules Related to Forestry**

#### **3.2.1 The Forest Act**

The first Forest Act in this part of the world was enacted in 1865 through a bill based on the rules proposed by the Chief Commissioner of Burma (now Myanmar). The Indian Forest Act of 1878 is based on a model that was similar to that used in other commonwealth countries. The Act was revised extensively in 1927.

The Private Forest Act was introduced in 1945. This was followed by the promulgation of the Private Forest Ordinance 1959, which was an attempt to introduce some sort of management of privately-owned forests, as at that time they were considered to have been improperly managed. The only practice in private forests was to harvest wood and/or clear the forest for agriculture. Under the provisions of the Private Forest Act and Private Forest Ordinance, management of privately-owned forests was taken over by the government.

In 1959, the State Acquisition Tenancy Act was promulgated. The major aim of this act was to

eliminate the control of landlords over their tenants. Under the provisions of this Act, many private properties were declared non-retainable, including 'forest land'. Thus private forests were acquired by the government and were brought under the management of the Forest Department as reserved forest. This was done under an order passed by the Board of Revenue, which is a powerful government body.

#### **3.2.2 Forest Policy**

In 1855, the Government of British India promulgated the 'Charter of Indian Forest', and this was the first attempt to conserve forest resources, including those in the area that is now Bangladesh. The National Forest Policy of 1894 provided the guidelines for the formulation of Acts and Rules for the management of forests in Bangladesh. The Forest Policy was revised in 1955, 1979, and, most recently, in 1994. The salient features of the existing Forest Policy 1994 are as follow.

- The government will endeavour to bring 20 per cent of land under forest by the year 2015 to maintain the ecological balance and attain self-sufficiency in forest products. To achieve this objective, the government will work jointly with non-government organizations and ensure peoples' participation in its activities.
- 'Since the forest area under government management is limited, afforestation activities will be extended to village areas, newly accreted mud flats, and the denuded unclassed state forest (USF) areas of the Chittagong Hill Tracts.
- People will be encouraged to plant trees on their own fallow and marginal lands, on the banks of water tanks, and around their homesteads. Technical advice and assistance will be provided to them if they introduce such agroforestry practices on their marginal and sub-marginal lands. While introducing agroforestry in state-owned and private lands, appropriate attention will be given to producing fodder and maintaining herbs and shrubs.
- The government will encourage people to plant the premises of public institutions like



union council offices, schools, *idgah*(s), mosques; *maktab*(s), temples; orphanages, and *madrasha*(s), schools and their surrounding areas. The government will provide technical and other assistance.

- Afforestation activities will be undertaken by the government with people's participation and with assistance from NGOs on state-owned marginal lands like the sides of roads, railway tracks, and embankments.
- The government will take up special afforestation activities in all municipal areas of the country to ensure pollution control in the cities. To achieve this goal, the municipalities, town development authorities, and other related autonomous bodies will help the government in the implementation of the programmes by zoning and allotting land for tree plantation. Town planning authorities must make provision for tree planting in their development plans by setting aside specific sites for the purpose.
- In the hill districts of Banderban, Rangamati, and Khagrachari, massive afforestation programmes will be undertaken in the USF by public and private agencies. The local governments will execute the programme, keeping the land rights retained by the Land Ministry.
- In order to preserve soil, water, and biodiversity, natural forests in hilly areas and river catchments within the country will be declared Protected Areas, Game Sanctuaries, or National Parks. The government will endeavour to class 10 per cent of the national forests as 'Protected Areas' by the year 2015.
- An integrated management plan, incorporating the management of forest, water, and wildlife, will be prepared for the Sunderbans.
- State-owned hill and sal (*Shorea robusta*) forests, except those declared 'Protected Areas', will be managed as production forests. Production forests will be managed on a commercial basis with due consideration given to the environment.
- Critical areas like steep hill slopes, vulnerable watersheds, and wetlands will

be designated as 'forests' and will be managed as Protected Areas.

- Denuded and encroached government forest lands will be identified and will be reforested with people's participation with a benefit-sharing arrangement, preferably under agroforestry, in which NGOs may be associated.
- Modern and appropriate technologies will be introduced to minimise loss at all steps of collection and processing of forest products.
- Emphasis will be placed on the modernisation of forest-based industries to maximise the utilisation of raw forest materials.
- Steps will be taken to bring in competitive and profit-oriented management of state-owned forest-based industries.
- Labour intensive small and cottage industries based on forest products will be encouraged in rural areas.
- Forest transit rules will be made simpler to meet present-day needs.
- Since there is a wood deficit, the ban on the export of logs will continue. Processed wood products will, however, be allowed to be exported. Import of wood and wood products will be liberalised, but reasonable import duties will be levied on forest products that are abundant in the country.
- Due to the shortage of forest area in the country, no forest land will be allowed to be used for any purpose, other than for afforestation, without the permission of the head of government.
- In the absence of clearly defined land ownership, the tribal people living on forest lands in some parts of the country cultivate anywhere in the forest. Clearly delineated forest land will be set aside for them through forest settlement activities, and the rest will be brought under permanent forest management.
- Additional training, technical assistance, and financial support will be provided from the funds received as international grants from donors for afforestation of private land and tree-based rural development programmes.
- More women will be encouraged to take part in programmes such as homestead

afforestation, rural tree farming, and participatory forestry.

- Eco-tourism will be encouraged, keeping in mind the carrying capacity of the forest and nature.
- To create mass awareness about afforestation and the protection and utilisation of forests and forest products, a mass media campaign will be started through government and non-government channels.
- Under forestry programmes, planting of fruit trees shall be encouraged in addition to planting of timber, fodder, and fuelwood trees and other non-wood product species.
- Steps will be taken to modernise the methodology of extraction of forest products to minimise loss by increasing efficiency.
- The Forest Department will be strengthened to achieve the objectives and goals of the policy and a Social Forestry Department will be established.
- Research institutions and education and training institutions related to forest will be strengthened to achieve the policy targets. Their roles will be further enhanced and integrated.
- In light of the aims, objectives, and targets of the Policy Statement, the Acts and Rules related to forestry will be amended and, if necessary, new Acts and Rules will be promulgated.

The Forest Policy of 1994 is very comprehensive and for the first time clearly incorporates the concept of participatory forestry. This has opened up the avenue for cooperation between NGOs and government agencies in the promotion of social forestry.

### **3.2.3 Rules**

No new rules have yet been framed under the revised Forest Act 1989. The rules still in force are those that were framed under the Forest Act 1927. The major rules under the Forest Act that deal with people are the 'Forest Transit Rules' for various districts. In addition to the transit rules, there is a 'Drift Rule' for the greater district of Sylhet. These rules regulate the movement of

forest products, including timber and non-timber forest products, harvested from both private and government lands. For products from private lands, the transit rules specify that a 'tree certificate' specifying its private ownership has to be obtained from the Forestry Department. Sometimes the collection and sale of forest produce from privately-owned areas are also prohibited. The executive orders required to be passed from time to time by the Ministry of Environment and Forests on this issue impose stricter regulations in an attempt to reduce stealing of government forest products, but they have not had the desired effect. At the same time, these orders have caused many people, and especially law-abiding private forest owners, to become annoyed with the government. The existing rules have no arrangements for appreciating or accommodating participatory forestry activities.

### **3.3 Participatory Approach**

In 1985, for the first time in the history of Bangladesh forestry, 15 acres of land under Dinajpur Forest Division were included in an agroforestry trial with participation by local people. Agreements were made between the participants and the Forest Department. This had no legal basis, thus executive orders were passed from time to time to support the activity. The trees were felled in 1992 and the yield was shared between the participants and the Forest Department. The area was replanted under an order passed by the Ministry of Environment and Forest *vide* number PoBoMo (Sha-3)/10/12/228 dated 05/05/92.

The Chittagong Hill Tracts' Development Board was created in 1976. The Chittagong Hill Tracts' Multi-sectoral Development Project was started in 1979, under the supervision of the board. It had 11 components including two on 'Upland Settlement' and 'Afforestation and Settlement in the Unclassed State Forest of Chittagong Hill Tracts', implemented by the Chittagong Hill Tracts' Development Board and the Forest Department, respectively.

The Forest Department project was ultimately removed from the Chittagong Hill Tracts'

Development Board and was launched in the hill districts of Rangamati, Khagrachari, and Banderban from 1979 to 1990. The second phase of the project lasted from July 1990 till June 1995. The third phase of the project, which has adopted a participatory approach, started in July 1995 and it will end in June 2000. This third phase of the project has two main components, namely, *juhamia* (shifting cultivators) rehabilitation and afforestation of USF/ RF lands.

The objective of the *juhamia* rehabilitation is to motivate shifting cultivators to become permanent residents at a given site where housing, remuneration, and areas for plantation of fruit and forest trees are provided. This project aims to settle 350 *jhumia* families. Each family will receive five acres of land. They will enjoy 100 per cent of the yields from fruit trees and agricultural crops, 100 per cent of the yield of the first thinning, 50 per cent of the yield of the second and third thinnings, and 15 per cent of the final yield of tree crops. Five per cent of the final yield will go to the tribal king, the local government, and the headman. Thus a total of 30 per cent of the final yield of the forestry crop goes to the local stakeholders. The remaining 70 per cent goes to the government. The first two phases of the project were very successful in reforestation activities, but participation of people and sustainability were not achieved to the extent desired. This was mostly because of the nomadic nature of the tribal participants. The on-going third phase seems to be more successful, although some of the *jhumia*(s) have abandoned their farms after two or three years. None of the plantations have yet been finally felled to share the benefits.

Upland settlement was the major component of the multi-sectoral project implemented by the Chittagong Hill Tracts' Development Board. The objective of this component was to settle 2,000 landless tribal families by providing 6.25 acres of hilly land per family for planting orchards and rubber trees. The families were provided with other social facilities and technical and financial assistance for raising 4,000 acres of orchards and 8,000 acres of rubber trees. The project has been completed

and many rubber plantations have come into production. In most cases, the lifestyle of the settlers has improved. Because of the success of the activities, the second phase of the Upland Settlement Project was launched in 1996. The second phase of this project will cost 400 million taka and last for 12 years. It incorporates a mixed plantation model with rubber and tea, instead of a strict monoculture of rubber, and has introduced Sloping Agricultural Land Technology (SALT) on a 1.25 acre plot.

The Forest Department implemented the first social (participatory) forestry project in 1987-88. It was called the *Thana Bonayan* and Nursery Development Project and was sponsored by the Asian Development Bank. The project was launched all over the country, except in the hill districts of Rangamati, Khagrachari, and Banderban. These districts were excluded because of the peace and order situation in the area.

As there were no existing rules and regulations to support the social forestry project, the government issued administrative orders and notifications to overcome the legal barriers in order to accommodate people's participation in forestry activities. This was a major breakthrough in the forestry sector, as it gave a footing to participatory forestry. Most of the notifications were issued in 1989. They declared committees at various national administrative levels such as union, *thana*, district, and national levels. The committees have specific terms of reference designed to solve the problems associated with implementation of the participatory forestry programme at different levels. Since the participants are mostly uneducated and have no forestry knowledge, and only a little knowledge of agriculture, they are often helped by field-level forestry officials to reach decisions about their agroforestry activities.

Agreements were signed between the Forest Department and the participants in the social forestry activities on the sharing of benefits between the people and the government. The government land involved in the participatory forestry activity varied from encroached

reserved forest land to roadsides, sides of railway tracks, and embankments. In most cases, the participants were to be given 40 per cent of the final yield of the forest crop and 100 per cent of intermediate yields such as agricultural crops, thinning outputs, and pruned out branches.

A new project called the Forestry Sector Project, which is basically a social forestry project, was launched in 1997. This project will be implemented all over the country including the hill districts of Rangamati, Khagrachari, and Bandarban. This project gives greater emphasis to involving NGOs in work with the local communities.

Although the existing policy, the Forest Policy of 1994, has enunciated and accommodated participatory forestry programmes, and the participatory approach to forestry activity has already started to function, acts and rules have yet to be formulated. The Forestry Department of Bangladesh is an old institution and firmly follows the acts, rules, and executive orders. The existing rules do not permit benefit sharing from forestry, but specific notifications or orders have been passed to run participatory forestry activities. The process of revising the acts and rules has already started. It needs a lot of thought, including the weighing up and balancing between control of pilferage and the relief that needs to be given to the participants in participatory forestry programmes. It is a difficult task, especially for a poor country like Bangladesh. A high power task force is working on the revision or reformulation of the Forest Act.

People's participation in decision-making has been incorporated in the policy. The National Forest Policy of 1994 states that the opinion of those who are dependent on the forests should receive due consideration in the implementation of forestry projects. However, the detailed process for this has yet to be worked out. It is expected that detailed rules will be formulated following the revision of the Forest Act. For the hilly regions of the country, the Forest Policy clearly states that large-scale afforestation shall be undertaken using a participatory forestry mechanism, especially in

the USF areas of the Chittagong Hill Tracts. The policy also indicates that the hill areas of the country will be used for production forestry. The new Forest Policy of 1994 includes the participatory approach to forestry. This is a milestone in the transition from traditional forest management to a participatory approach. The real impact of the change will be difficult to assess, however, until the Forest Act is revised and the new rules are published. Overall, the forestry officials of the Forest Department are not opposed to the change. Many are looking forward to rules that will ensure that participation is accountable and the forestry resources protected.

There is, as yet, no uniform benefit-sharing mechanism for the whole country. Benefit-sharing mechanisms differ at different sites and also vary with the project design. The benefit-sharing mechanism used in the *Thana Bonayan* and Nursery Development Project is described below as an example.

The final yield from strip plantations along railway tracks, highways, embankments, feeder roads, and from wood-lot plantations are shared as follow.

• Participant (plus all intermediate yields of products)	40 %
• Railway Authority	10 %
• Local Union Council	2.5%
• Local Council	2.5%
• Thana Council	25 %
• Government Revenue	20 %
.	

The final yield from agroforestry plantations is shared equally between the Forest Department (as government revenue) and the participant.

A second example is provided by the project on Afforestation and Rehabilitation of *Jhumia* Families in the USF and Reserved Forest Lands of the Chittagong Hill Tracts (3<sup>rd</sup> phase).

- Participants, 15% of final yield, all agricultural and horticultural yields, 100% of 1<sup>st</sup> thinning, and 50% of other thinnings.

- Headman 5%
  - Tribal King 5%
  - Local Council 5%
  - Forest Department 70%
- The benefit-sharing approach is clear and unambiguous. Agreements are signed between all parties in clear terms describing the duties and responsibilities of each party. So far, there has been no conflict and in a few cases participants have already received their share after final felling.



# 4 Other National Policies

There are some national policies, other than those on forestry, that may have a direct or indirect impact on the forestry sector. They include the:

- Environment Policy,
- Agricultural Extension Policy,
- Water Policy, and
- Industrial Policy.

## 4.1 The National Environment Policy of 1992

The National Environment Policy of 1992 has the following major objectives.

- To maintain a balance in nature by preserving and improving the environment
- To save communities from natural disasters
- To identify and control all kinds of pollution and any activities degrading the environment
- To ensure environmentally friendly development of all sectors
- To ensure environmentally acceptable use of all national resources on a sustainable basis
- To be a partner in all international environmental endeavours

To achieve these objectives, the National Environment Policy has set up guidelines for 15 different sectors of the Government of Bangladesh such as agriculture, industry, health, energy, flood control, land, and forest. It has made it mandatory to conduct an Environmental Impact Analysis (EIA) for any new project, especially for industries.

The Environment Policy of 1992 has yet to be fully implemented. Implementation of this policy will eventually impose restrictions on many activities in different sectors. This policy, while providing more scope for tree planting, conservation of wildlife and biodiversity, and promotion of erosion control activities, may eventually interfere with production forestry activities such as clear felling and raising of short rotation monoculture plantations.

## 4.2 The National Agricultural Extension Policy of 1997

The National Agricultural Extension Policy of 1997 has the major objective of encouraging all service agencies in the field of agriculture to provide efficient, effective, and coordinated services. This policy has 11 salient features.

- To help all categories of farmers
- To provide efficient extension services
- To decentralize agricultural extension services
- To provide a demand-oriented extension service
- To use farmer groups when providing extension services
- To strengthen the cooperation between agricultural research and agricultural extension
- To train extension workers
- To use appropriate extension procedures
- To deliver an integrated approach
- To have a coordinated extension approach
- To have an environmentally compatible approach

This new agricultural extension policy does not conflict with forestry sector activities. In the absence of any land-use policy, however, field implementation of this policy may at times lead to conflicts in fixing the priority between forestry and agriculture for fallow lands.

### 4.3. The National Water Policy

The salient features of the National Water Policy are as follow.

- Before undertaking any planning with respect to a water resource, a comprehensive assessment of the resource should be undertaken.
- Unplanned and haphazard construction of roads, railways, or other infrastructures can alter the drainage pattern of a basin. The development of infrastructure should be consistent with the overall development plan for the area so that the natural drainage pattern is not affected.
- Emphasis is given to the conservation of ground water.
- Erosion controls through cost-effective methods have been highlighted.
- In the planning, implementation, and operation of water resource projects, the preservation of the quality of the environment and the natural balance should be maintained.

This National Water Policy does not conflict with forestry activities; rather it is favourable towards afforestation activities.

### 4.4. National Industrial Policy

The most recent National Industrial Policy was declared on July 29<sup>th</sup> 1991. Export-oriented industries contribute five per cent to GNP growth, and privatisation of government-owned industries is the major goal of this policy. The objectives of the policy are as follow.

- National production, income, resources, and job opportunities are to be enhanced through improvement of the industrial sector.
- National and international investments are to be encouraged in establishing industries.

- Export-oriented, export-linked, and import substitute-oriented industries need to be developed.
- Small and cottage industries are to be encouraged.
- Improvements in labour-intensive industries are to be expedited through procurement and or development of appropriate technologies.
- Industries based on domestic raw material and/or domestic technologies are to be encouraged.
- Investments in intermediate and basic industries are to be encouraged.
- Balanced distribution of industries throughout the country is to be encouraged.
- Possible opportunities need to be created for the rehabilitation of 'sick' industries.
- Quality control of industrial products needs to be more effective.
- Environmental balance needs to be maintained through pollution control in industries.

The national industrial policy does not conflict with forestry activities. But industries may overuse forestry resources and, in the absence of any land-use policy, they may compete with forestry for land.

### 4.5 Conflicts and Compatibility between the Various National Policies

Forestry is primarily land oriented. As yet, there is no land-use policy in Bangladesh. Thus land laws and land reforms, which are formulated mostly in relation to agriculture and industry, sometimes contradict forest policy. For example, there is no bar to establishing industries in or adjoining a forest, to converting forest land to agricultural land, or to establishing fisheries in mangrove forests.

There is also a lack of coordination between the Land Administrating Agency and the Forest Department, especially at the field level. The Deputy Commissioners deal with issues related to land on behalf of the Land Ministry. Under the existing set-up in Bangladesh, the Deputy

Commissioners are very powerful and often ignore forestry or environmental aspects of land use. They are more interested in leasing land to private persons without any consideration for its capacity. Much forest land has already been converted to non-forestry use, which is against the forest policy. For example, mangroves are leased out for fisheries, and sloping hill tracts are leased out for horticulture, farming, or rubber plantations. Such acts often lead to conflicts with the Forest Department, but since the Deputy Commissioners are powerful bureaucrats, they are hardly ever questioned by authorities higher up in the government.

Since the Industrial Policy of 1991 emphasised the establishment of export-oriented joint ventures, steps have been taken to use various forest products as raw materials for such industries and to enhance cooperation between industry and forestry.

The Agricultural Extension Policy and the Environment Policy are compatible with the Forestry Policy. The National Water Policy, by laying emphasis on erosion control and afforestation, has actually enhanced work proposed under the Forest Policy.

# 5 Human Resource Development

The low level of human resource development is a serious constraint to the development of Bangladesh. According to the UNDP's Human Resource Development Index (HDI), Bangladesh ranked 143 out of 174 countries in 1996, with a value of 0.365. The HDI for Bangladesh is higher than that for Nepal and Bhutan, but lower than that for Sri Lanka, Pakistan, India, or Myanmar. The Bangladesh Government has recognised the fact that human resource development through education, training, and other means of improving knowledge and skills can contribute to poverty alleviation, economic growth, and sustainable development and has given it a high national priority.

Human resource development planning is being included in the planning activities of all government sectors. Such planning includes setting up goals to achieve sectoral objectives. Though most of the national sectors have succeeded in following a well-recognised scientific approach for human resource development, such an approach has yet to be established in the Bangladesh Forest Department. The department still does not establish working norms or practise needs' assessment for skilled and qualified personnel in specialised fields of the forestry sector. Shortage of staff in terms of numbers, skill, and capability is a common feature in all the government forestry institutions. The non-government organizations engaged in forestry activities are in an even worse situation in this respect.

The introduction of social or participatory forestry in Bangladesh by the Forest Department has also had a marked effect on human resource needs. Social forestry has been introduced in response to the recognition of the failure of the custodial approach to successfully protect the forest resources of the country. But implementation requires that foresters who previously only had knowledge of the techniques associated with the custodial approach must now learn more about participatory approaches.

Educational and training institutions have become aware of the problems faced by forestry and are also attempting to integrate issues related to participatory forest management into their curricula. At the beginning, resource persons were borrowed or hired from disciplines other than forestry to teach and train students and trainees. Now the universities and colleges have specialised teachers to teach participatory forestry. The curricula have been modified to accommodate subjects such as rural sociology, agroforestry, participatory forestry, and forest extension.

The curriculum revision in universities and colleges is done by a committee of the department or discipline and approved by the academic council of the university. In most cases, the departments revise their curriculum by themselves without involving personnel from related fields or organizations.

The different courses offered are described in the following section.

## 5.1 Forestry Education and Training

Bangladesh has eight institutions offering education and training services in forestry. Of these institutions, three impart university level, one sub-professional, two technical level, and two vocational level education and training.

### 5.1.1 Professional Forestry Education

#### Institute of Forestry, Chittagong University

The first professional forestry education institution in Bangladesh, the Institute of Forestry at Chittagong University under the Faculty of Science (IFCU), was established in 1976 with direct funding from the Bangladesh Forestry Department. IFCU has a separate governing body in which the Forestry Department and forest industries are represented in significant numbers. The name of the Institute has now been changed to the Institute of Forestry and Environmental Science (IFES). The four-year course leading to a B.Sc. (Honours) degree in forestry consists of eight semesters. The current annual intake for the B.Sc. (Honours) course is 47, of which five places are reserved for students from abroad with preference given to students from the SAARC countries. Currently 184 students, including 18 women, are enrolled in the B.Sc. (Honours) course.

The syllabus covers the range of subjects normally required for a professional forester. It includes a comprehensive course in social or participatory forestry. The curriculum covers theory, practicals, field trips, and *via voce(s)*. But in practice, the courses tend to be more theoretical with an inadequate number of field trips or discussion of practical application of forestry knowledge. Field visits to demonstrate different forestry activities at different times of the year are scarce. Literature and journals on forestry in general, and especially those on contemporary indigenous forestry practices, are not easily available in Bangladesh. Because there are few experienced practical foresters on the faculty, the courses do not incorporate sufficient examples or practical demonstrations from Bangladesh forestry. The graduates are

also inadequately trained in the use of most of the forestry equipment required for application of their knowledge of forestry.

The Institute has recently started to offer a one-year Master's Degree course in forestry, involving both course work and research. The approved syllabus contains three modular options for specialisation in forest management, silviculture, or wood science.

#### Forestry and Wood Technology Discipline, Khulna University

Khulna University is a publicly funded university opened in 1987. In 1992, a new Department of Forestry and Wood Technology (DFWT) was opened under the School of Life Sciences. This department offers a four-year B.Sc. (Honours) degree course in forestry and wood technology. The course is divided into eight semesters. The annual student enrollment is 25 students. This institution has increased the availability of professional forestry personnel for employment by the Forest Department as well as by other forestry and environment-related public and private sectors, including NGOs. The University also has plans to offer M.Sc. and Ph.D. degrees in forestry and wood science in the near future.

The University also offers courses in social and participatory forestry separately from the degree programmes.

Both the Chittagong and the Khulna universities have direct contact with the Forestry Department for syllabus formulation and for the approval of their degree courses in forestry, although the Forestry Department does not oversee the standard of the academic courses.

#### Bangladesh Agricultural University

The Bangladesh Agricultural University (BAU) at Mymensingh has started a degree course in agroforestry. However, neither the Forestry Department nor other universities offering forestry courses have any input into the Bangladesh Agricultural University agroforestry course. This course emphasises farming system agroforestry rather than forest land agroforestry,

and in strict terms cannot be considered a professional forestry course.

### **5.1.2 Sub-Professional Forestry Education**

#### Bangladesh Forest College

The Bangladesh Forest College (BFC) in Chittagong was established in 1964 to train sub-professional forestry staff (forest rangers) from the Forestry Department in forestry-related subjects. This is an in-service training school and it is used to offer a two-year B.Sc. course to forest rangers recruited by the Forestry Department. In 1985, it was proposed that the Forestry Department stop direct recruitment for the position of forest rangers and that the positions only be filled through promotion of existing staff. Since then, the BFC has stopped offering the B.Sc. course in forestry but has continued to offer short in-service courses (of 15 days to two months' duration) to professionals and sub-professionals. The college has offered the following in-service courses in recent years.

- Refresher Course for Promoted Forest Rangers (2 months)
- Plantation Forestry for Assistant Conservators of Forest (ACFs) (10 days)
- Management of Hill Forests and Afforestation for ACFs (7 days)
- Conservation and Protection of Forest Heritage for ACFs (10 days)
- Coastal Land Stability in Bangladesh for ACFs (10 days)
- Resource Information Management System for ACFs (10 days)
- Forest Extension and Development for Deputy Conservators of Forest (DCFs) (7 days)
- Survey and Settlement for Forest Rangers (15 days)
- Forest Protection and Forest Laws for ACFs (10 days)
- Forest Policy, Planning, Implementation, Monitoring and Evaluation (10 days)
- Case Conducting for Forest Case Conducting Officers (10 days)

### **5.1.3 Forestry Technical Education**

#### The Forest School at Sylhet

The Forest School at Sylhet was established in 1947 to train forestry personnel. The School used to offer a one-year course for persons with at least a secondary level school education leading to a certificate in 'Forestry Technical Training'. In 1985, a two-year Diploma in Forestry programme was introduced in affiliation with the Bangladesh Technical Education Board. The entry requirement for the trainees is a higher secondary school certificate. A three-month forest guard training course for 30 students has also been initiated. The foresters' training course gives very good coverage of participatory or social forestry. Subjects like sociology, agroforestry, and social forestry are included in the curriculum as compulsory subjects.

#### The Forest School at Rajshahi

The Forest School at Rajshahi was established under the first Community Forestry Project of Bangladesh in 1985 to impart training on social and community forestry to forest extension workers. At that time the Forest School at Sylhet had neither an appropriate curriculum nor the motivation needed for promotion of social and community forestry. It also had insufficient manpower to cope with the training needs of the foresters who were to implement participatory programmes. The Forest School in Rajshahi was designed to take 25 students a year for a two-year Diploma in Forestry course. The school also holds short courses for forestry extension workers.

#### Chittagong Forest School

The Chittagong Forest School offers a three-year diploma course in forestry. The diploma course is run under the Technical Education Board of Bangladesh, which is entrusted with the responsibility to formulate and overview curricula and conduct examinations for different technical disciplines in the country.

The Forest Department used to offer a two-year diploma in forestry course to persons with a



higher secondary school certificate (A-level). Now, students with a secondary school certificate (O-level) are admitted to a three-year diploma course in forestry (six semesters, each of six months). Recently, a fundamental change was introduced in the three-year course. Previously it was an in-service training programme of the Forest Department which was the only employer of trained foresters. However, the demand from other organizations for foresters has increased, especially from NGOs and private companies, and the course was made into an open programme to accommodate this. Prior to this three-year open diploma course in forestry, there were no forestry technicians available for employment outside the Forest Department. Now, any organization or agency can recruit trained persons through open advertisement. The present policy of the Government of Bangladesh is to broad-base professional and technical forestry education in the country so that sufficient qualified manpower is available to meet the growing needs not only of the Forest Department, but also of the various agencies involved in the forestry and environmental sectors. This has become particularly important with the introduction of social/participatory forestry programmes.

#### **5.1.4 Vocational Training**

##### The Forestry Development and Training Centre

The Forestry Development and Training Centre (FDTC) was established in 1976 under a Government of Bangladesh/Swedish International Development Agency (GOB/SIDA) project. It was supported by SIDA, and later the United Nations Development Programme and the Food and Agriculture Organization (UNDP/FAO), until 1986. In 1986, the Forest Department took over the management and control of this institution, primarily to provide vocational training to forestry workers in various fields of forestry such as forest extension, basic logging, and saw doctoring and saw mills. At present, the centre trains about 300 people annually.

Forest Extension. This is a course on community development and rural reform. It

offers vocational-level training on subjects such as forest extension, agroforestry, community and social forestry, sloping agricultural land technology, plant seedling nursery techniques, and plantation establishment and maintenance.

Basic Logging. This is a course on the techniques of logging, timber harvesting, and construction of forest roads. It offers vocational-level training on felling of trees, wastage reduction during logging, timber extraction methods and procedures, transportation of forest produce, sawing, maintenance of transport and logging equipment, and maintenance of road building machines and equipment.

Saw Doctoring and Sawmill Maintenance. This course focusses on the reduction of wastage during sawing and maintenance of saws and sawmills to enhance their life span and improve the quality of sawing. The majority of the trainees for this course are sawmill operators, sawmill owners, sawmill managers, or timber merchants and their workers.

The FDTC also offers training to university-level students of forestry disciplines and botany on the above-mentioned subjects as supplementary courses.

Table 1 gives some details of the number of trainees attending different courses offered by FDTC over the last five years (1992-93 to 1996-97).

##### The Forest School at Sylhet

Forest Guards are the lowest level of staff in the Forestry Department with law-enforcing powers. Foresters and forest guards are the grass roots' workers of the Department. They are key in the field implementation of technical and legal prescriptions for forest management and need to be skilled in field forestry activities. Forest guards are given vocational training at the Forest School at Sylhet. Vocational training at this staff level is considered to be of paramount importance for the overall successful implementation of various field programmes, including social or participatory forestry programmes.

**Table 1: Number of Trainees Attending Various Courses at the Forestry Development and Training Centre, 1992-93 to 1996-97**

Year	Basic Logging	Forest Extension	Saw Doctoring	Supplement Courses	Total Number Trained
1992-93	162	133	576	44	915
1993-94	135	140	225	47	547
1994-95	-	-	275	30	305
1995-96	94	107	211	18	430
1996-97	107	103	389	32	631
Total	498	483	1676	171	2828

Initially the Forest School at Sylhet trained both foresters and forest guards. The emphasis was on training of foresters and the duration of vocational training for forest guards was very short (one to two weeks only). In 1965, the course for forest guards was extended to three months. In 1991, the Forest Department decided to abandon the training of foresters at Sylhet, as a diploma course in forestry had been started at Chittagong. It was decided that the school would be used for vocational training, especially for forest guards, and a four-month training course for forest guards was started. It is expected that an appropriate curriculum for vocational training, already formulated by a consultant, will be introduced soon. The existing facilities, however, need to be upgraded.

The subjects taught during the four-month training course include silviculture, forest engineering, surveying, forest extension and rural development, mensuration, forest utilisation, forest law, forest protection, and wildlife and recreation. In the revised curriculum, emphasis has been given to participatory and extension forestry.

## **5.2 Extra Institutional Human Resource Development**

Apart from the formal institutions offering education and training services, considerable efforts have been made by government and non-government organizations to develop human resources for the promotion of social/participatory forestry and rural development in Bangladesh. A brief account of the training

conducted under different government sponsored, NGO operated, and donor assisted social/participatory forestry projects is given below.

### **5.2.1 The Community Forestry Project**

The Community Forestry Project (1982-87) was the first attempt by the Government of Bangladesh to implement a social/participatory forestry project. It was implemented in the north-western part of the country as a pilot project. One of its main objectives was to promote people's participation in forestry programmes. During the project period, eight different in-country training programmes were organized involving 1,087 training sessions attended by 22,158 participants at various levels.

### **5.2.2 Thana Afforestation and Nursery Development Project**

Following the success of the first Community Forestry Project, the Government of Bangladesh, with the financial assistance of the Asian Development Bank, embarked on the second social forestry project entitled the *Thana* Afforestation and Nursery Development Project. The project area included 61 of the 64 districts in Bangladesh and covered about 85 per cent of the total area of the country. The project was implemented for an eight-year period from 1988 to 1995.

Considerable importance was given to human resource development and institutional strengthening to promote participatory forestry

and rural development. By the end of the project, 91,108 people, including at least one individual from nearly every village in the country, had been trained in basic skills for improved tree cultivation. These individuals included community leaders, NGO personnel, women, private nursery operators, farmers, and high and mid-level government officers. Fourteen officials and extension officers were also trained abroad under this project.

### 5.2.3 The Chittagong Hill Tracts Development Board

The Chittagong Hill Tracts' Development Board (CHTDB) was established with the aim of accelerating socioeconomic development in the hill tracts of Chittagong. This board has conducted a number of workshops and training courses through the Promotion of Sloping Agricultural Land Technology (SALT) and Other Appropriate Technologies for Soil Conserving Farming Systems' Project. These include:

- a one-day awareness creating workshop for 34 national-level officers from agriculture, forest, and soil resource departments;
- a three-day workshop for 19 district-level officers from agricultural extension, forest, and soil resource departments and 43 hill farmers from three hill districts;
- a training workshop for 83 field level staff and 120 hill farmers; and

- training of 416 people in Bandarban district in literacy, sanitation, health, nutrition, and cultivation of vegetables and fruit orchards.

### 5.2.4 NGO Efforts in Human Resource Development

There are many different NGOs training grassroots' level people in social/participatory forestry activities.

#### GREEN HILL

GREEN HILL conducts training courses on plantation management, raising of seedlings, and group development. They have so far trained two hundred workers. The number of workers of different levels trained yearly is shown in Table 2.

#### The Christian Commission for Development in Bangladesh

The Christian Commission for Development in Bangladesh (CCDB) started working in the hill tracts of Bangladesh in 1994. It conducts training for its group members in knowledge and skills in horticulture, tree plantation, and vegetable cultivation with the aim of improving the productivity of farms and increasing income. It also imparts training in environmental awareness raising methods and child health care and trains midwives. CCDB has so far trained more than one thousand people.

**Table 2: Training Organized for Different Levels of Staff by Green Hill (1995-1997)**

Level	1995	1996	1997	Total
Supervisor	1	2	3	6
Field Organizer	2	4	8	14
Group Level (Caretaker)	20	56	104	180

## Bibliography

(not necessarily cited in the text)

- CCDB, n.d. *A Brief Introduction to CCDB's Chimbuk Rehabilitation Programme (CRP)*. Dhaka: CCDB.
- ADB, 1979: *Chittagong Hill Tracts Development Project*, Agricultural Development Bank Main Report No. Ban. 24, pp14-18. Dhaka: ADB
- Bangladesh Bureau of Statistics, 1997. *Agricultural Statistics*. Dhaka: Bangladesh
- Ahmed, S and Stoll G, 1996. 'Biopesticides'. In Joske Bunders *et al.* (eds) *Biotechnology- Building on Farmers Knowledge*, pp 52-79. Netherlands: ETC.
- Bose, S.K., 1997. 'Some ITK/WM in Bangladesh'. In ASIAN WATMANET, Newsletter No. 12.
- Planning Commission Ministry of Planning, 1997. *Draft Fifth Five Year Plan (1997 to 2002)*. Dhaka: Government of Peoples' Republic of Bangladesh.
- GOB, 1993. 'Environment and Land Use'. In *Forestry Master Plan (FMP)*, pp102-103. Dhaka: Asian Development Bank (TANO-1355-BAN) UNDP/FAO, BGD/88/025
- GOB, 1992. *Forestry Master Plan (Forest Industries)*. Dhaka: Government of Bangladesh Ministry of Environment and Forests. Asian Development Bank (TA No. 1355 - BAN) UNDP/FAO. BGD 88.025 1993
- GOB, 1993. *Master Plan for the Forestry Sector, Bangladesh - Human Resource Development in Forestry*. (Policy Chapter) p. 90-155. Dhaka: GOB.
- Hammermaster, E.T., 1981. *Village Forest Inventory of Bangladesh*, FAO & UNDP Project BGD/78/020. Dhaka: Bangladesh.
- Khan L.R, 1997. 'Importance of Integrated Watershed Management in Bangladesh'. Paper presented at the National Workshop on The Participatory Approach to Integrated Watershed Management held at the Bangladesh Forest College, Chittagong, Bangladesh from 01 June 1997 to 05 June, 1997, 4 pp.
- Khisa, S.K., 1991. *Hevea Rubber Cultivation and Processing in the Chittagong Hill Tracts* (A Book on Rubber, in Bengali). Chittagong: CHTDB.
- Khisa, S.K., 1995a. 'Upland Settlement Programme with Rubber Based Agroforestry Farming System: A Sustainable Development Initiative for the Tribal Communities of CHT, Bangladesh'. A paper presented in the International Symposium on "Karakorum-Hindukush Himalayan: Dynamics of Changes" held in Islamabad, Pakistan from 29 Sept. -2 Oct., 1995
- Khisa, S.K. 1995b. 'Promoting Farming System Approach to Soil Conservation Extension in Chittagong Hill Tracts, Bangladesh'. A



- poster paper presented at the International Workshop on Soil Conservation Extension held in Chiangmai, Thailand. June 4-11, 1995.
- Khisa, S.K. 1997. 'Farming System Approach to Participatory Land Husbandry and Watershed Management Adapting Sloping Agricultural Land Technology (SALT) in Chittagong Hill Tracts, Bangladesh'. A Paper presented in the National Workshop on the Participatory Approach to Integrated Watershed Management held at the Bangladesh Forest College, Chittagong, Bangladesh from 01 June 1997 to 05 June 1997, 11pp.
- Khisa, S.K. 1997. 'Indigenous Technology/Knowledge of Watershed Management in the Culture of Ethnic Communities of Chittagong Hill Tracts'. A Paper presented at the National Workshop on Application of Indigenous Technology/Knowledge in Watershed Management held at Bangladesh Forest Academy, Chittagong, from 30th Nov. to 3rd Dec. 1997, pp12.
- Ramakrishnan, P.S., 1984. 'The Science Behind Rotational Bush Fallow Agriculture System (Jhum)'. In *Proc. Indian Acad. Sci. (Plant Sci.)*, Vol. 193, No. 3.
- FRMP, 1996. 'Report of the Curriculum Planner', In *Service Training*. Madecor: Consultant for FRMP
- Reza N.A, Kibria M.G, Wazihullah A.K.M, Chowdhury M.H, Rahman A, Islam S.S, 1992. *Forest Statistics of Bangladesh*, 'Bulletin 3. Bangladesh: Forest Economics and Statistics Division, Bangladesh Forest Research Institute
- Roy, A., 1979. *Bangladesher Arthonity Atit and Bartaman. Jatiya Shahity Prakashani*. Dhaka: Publisher not given.
- Satter, M.A., 1996: A Settlement Scheme of the Local Department of Forests for *Jhumia*, with a Focus on Proper Village Land Use, Planning and Implementation; Hill Districts of Bangladesh-Experience in Development; Summary of Working Sessions, pp11-13.
- SRDI, 1986. *Reconnaissance Soil and Land Use Survey: Chittagong Hill Tracts, 1964-1965*. Dhaka: Soil Resources Development Institute.
- Bangladesh Bureau of Statistics, 1996. *Statistical Year Book of Bangladesh*. Dhaka: Bangladesh
- FD/ADB/UNDP/FAO, 1993. *Thana Afforestation and Nursery Development Project, Bangladesh Course Designs (1 to 18)*. Dhaka: FD/ADB/UNDP/FAO.
- FD/CHTDB/UNDP/FAO, 1966. *Thana Afforestation and Nursery Development Project, Bangladesh. Terminal Report. Project Findings and Recommendations*. Dhaka: FD/CHTDB/UNDP/FAO.
- Training Programme on SALT and OATSCFS, organized by the Chittagong Hill Tracts Development Board and sponsored by ICIMOD, Rangamati, Bangladesh 1966

# 1

## Annex

### *Fact Sheet on Bangladesh*

Bangladesh is situated in the north-eastern part of South Asia. It lies between 20° 34' and 26° 36' N and 88° 1' and 92° 41' E. The country is bordered by India in the west, north and north-east. The Bay of Bengal lies to the south, the expansive Gangetic Plains of India to the west (West Bengal), and the dense forests of Myanmar and India to the east (Statistical Year Book of Bangladesh 1996).

#### Population

In 1995, Bangladesh had a population of about 120 million—20 per cent urban, 80 per cent rural—with 19.4 million households living in 59,990 villages, and a sex ratio of 106 males to 100 females. The population growth rate, estimated using the adjusted population census

of 1991, was 2.17 per cent per annum. The country is expected to reach a population of 129.6 million by 2000 A.D. The population density increased from approximately 647 persons per sq.km. in 1981 to 755 persons per sq.km. in 1991. According to the 1991 census, the literacy rate of the population (age 7 years and above) was 32.4 per cent. The percentage of Muslims was 88 per cent, and that of Hindus, Buddhists, and Christians 10.5, 0.6, and 0.3 per cent respectively. There are about one million tribal people living in the hill regions of Sylhet, Mymensingh, Chittagong, Bandarabans, Khagrachari, and Rangamati.

Table 1 shows the total population in Bangladesh between 1951 and 1995, Table 2 the population in the hill areas between 1951

**Table 1: Population in Bangladesh ( in thousands)**

Year	Men	Women	Total	%	Increase/Decrease
1951	21937	19995	41932	5	Increase
1961	26349	24491	50840	25	Increase
1974	37071	34407	71478	38	Increase
1981	44919	42201	87120	18	Increase
1991	57314	54141	111455	20	Increase
1995	61643	58314	119957	8	Increase

Source: Statistical Year Book of Bangladesh, 1996.

**Table 2: Population in the Hill Areas of Bangladesh up to 1995 (in thousands)**

Year	Men	Women	Total	%	Increase/Decrease
1951	-	-	288		
1961	-	-	383	33	Increase
1974	-	-	508	33	Increase
1981	-	-	731	44	Increase
1991	-	-	968	32	Increase

Source: Statistical Year Book of Bangladesh, 1996.



and 1995, Table 3 the population in hill areas by district and sex, and Table 4 the overall rate of population growth from 1901 to 1991.

### Administration

Bangladesh is divided into six administrative divisions, which are further divided into districts. At present there are sixty-four districts in the country—three hill districts and sixty-one plains' districts.

- Percentage of population in the hills 1.1
- Percentage of population in the plains 98.9

The population of the hill areas of the country has increased enormously in the last 30 years (Table 2). It was only 0.385 million in 1961, was 0.974 million at the time of the 1991 census, and is now estimated to be 1.28 million. Thus the population has approximately doubled in the last 20 years and tripled in 30 years (Khisra 1997).

### Natural Resources

#### Land Use

Bangladesh, with a total land area of about 144,000 sq.km., is one of the world's biggest deltaic plains. About nine per cent of the land area of the country is comprised of tertiary hills. The hill areas are situated in the eastern and south-eastern part of the country. The high hill ranges are aligned approximately north-south with altitudes ranging from 300 to 1,100 masl. The low hills (with elevations of less than 100 masl) are strongly dissected with moderate to steep slopes.

Most of the valleys in the hill region are broad and flat with small streams, forests, and swamps. The low hills are suitable for farming. People living in these areas cultivate the marginal lands and harvest fuelwood for their existence. Shifting cultivation, conversion of marginal lands and forest lands to agricultural use, over-harvesting of fuelwood and timber, overgrazing, improper collection, transportation and use of water, and

**Table 3: The Population in the Mountain Areas of Bangladesh in 1991 by District and Sex (in thousands)**

District	Men	Women	Total
Khagrachari	180	160	340
Rangamati	217	180	398
Bandarban	125	105	230

Source: Statistical Year Book of Bangladesh, 1996

**Table 4: Rate of Population Growth in Bangladesh in the Period 1901-1991**

Year of census	Date of census	Population	Increase		Growth Rate (exponential)
			Number	Per cent	
1901	March 1	28,927,786			
1911	March 10	31,555,056	2,627,270	9.08	0.94
1921	March 18	33,254,096	1,699,040	5.38	0.60
1931	March 26	35,604,170	2,350,074	7.07	0.74
1941	March 1	41,997,207	6,393,127	17.96	1.70
1951	March 1	44,165,740	2,168,443	5.16	0.50
1961	Feb. 1	55,222,663	11,056,923	25.04	2.26
1974	March 1	76,398,000	21,175,337	38.35	2.48
1981	March 5	89,912,000	13,514,000	17.69	2.35
1991	March 11	111,455,185	21,543,185	23.96	2.17

Source: Statistical Year Book of Bangladesh, 1996

**Table 5: Land Utilisation in Bangladesh (in thousand acres)**

Year	Forest	Unavail-able for Cultiva-tion	Cultivat-able Wasteland (a)	Current Fallow (b)	Net Cropped Area	Area Sown More than Once	Total Cropped Area (c)
1971-72	5507	6566	734	2101	20371	7798	28169
1972-73	5507	6572	681	1679	20840	8199	29039
1973-74	5507	6575	672	1550	20977	8447	29424
1974-75	5466	6576	670	2009	20559	8078	28637
1975-76	5438	6622	662	1591	20968	8718	29686
1976-77	5449	6626	661	2100	20445	8534	28979
1977-78	5425	6669	665	2838	20693	9009	29702
1978-79	5423	6674	623	1760	20801	11045	31846
1979-80	5427	6686	615	1706	20873	11100	31973
1980-81	5416	6712	619	1404	21158	11363	32521
1981-82	5298	6837	611	1350	21212	11426	32638
1982-83	5296	6876	572	1196	21369	11761	33130
1983-84	5205	7156	810	1124	21442	11571	33013
1984-85	5297	7193	721	1221	21353	11143	32496
1985-86	5237	7220	670	997	21667	11798	33459
1986-87	4910	8141	660	973	21878	11097	34883
1987-88	4703	7685	890	2913	20478	13670	34148
1988-89	4703	7645	888	3285	20148	13739	33887
1989-90	4703	7783	863	2686	20633	14117	34750
1990-91	4693	7958	1442	2379	20198	14482	34680
1991-92	4674	9885	1532	862	19716	14405	34121
1992-93	4674	10137	1512	928	19418	14438	33856
1993-94	4674	10355	1566	984	19090	14225	33310
1994-95	4861	10118	1547	1000	19133	14280	33413

Source: Agriculture Statistics, Bangladesh Bureau of Statistics, 1997

Notes: (a) Cultivable wasteland is the area suitable for cultivation but lying fallow for more than one year; (b) Current fallow is the area already brought under cultivation, but not cultivated during the year; (c) Total cropped area is the sum of the net cropped area and the area sown more than once.

construction of roads are all putting pressure on the natural resource base in the hill areas.

The land in the plains is cultivated in both the dry and rainy seasons depending on the

condition (Khan 1997). The hill areas of Bangladesh account for 10 per cent of the total land area. (Khisa 1997). Hilly areas of Bangladesh are shown in Table 6.

**Table 6: Hill Areas of Bangladesh**

Hilly Regions	Area (ha)	Per Cent
Chittagong Hill Tracts	12,40,889	75.6
Chittagong	235,216	14.2
Sylhet	152,922	9.2
Jamalpur	6316	0.38
Mymensingh	1431	0.09
Comilla	1226	0.10
Feni	1226	0.07

Source: Khisa 1997

## Agriculture

Agriculture is the main occupation in Bangladesh. It employs 86.5 per cent of the labour force and directly contributes about 35 per cent of the gross domestic product.

Bangladesh is one of the most fertile land areas in South Asia but, as a result of paucity of capital and other inputs, the yields per acre are among the lowest in the world. Rice, wheat, jute, sugarcane, tobacco, oil seeds, pulses, and potatoes are the principal crops. Various kinds of vegetables and spices are also produced. The country produces about 49 million kilos of tea per year, a sizeable portion of which is exported to foreign markets. Bangladesh produces about 808 thousand tonnes of superior quality jute

annually; sixteen per cent of export earnings are derived from raw jute and jute products. Bananas, papayas, pineapples, mangoes, jackfruit, guavas, plums, and coconuts are the most important of the fruit and nuts grown in Bangladesh. Only coconuts, bananas, and papayas grow and are available throughout the year.

Bangladesh is marginally deficit in food grains (Statistical Year Book of Bangladesh 1996). Efforts are being made by the government and the people to increase the production of food grain and diversity of agricultural outputs. The index of agricultural production for various products over a period of 10 years is shown in Table 7, and the acreage production and yield rate of agricultural crops in Table 8.

**Table 7: Index of Agricultural Production in Bangladesh (Base: 1972-73 = 100)**

Items	81-82	82-83	83-84	84-85	85-86	86-87	87-88	88-89	89-90	90-91
Total agricultural crops	129	136	139	142	149	148	147	146	163	116
Livestock & poultry	160	174	112	116	119	123	127	131	135	138
Forestry	147	147	178	157	172	134	137	172	175	167
Fishery	79	83	85	85	86	88	90	89	91	96
Agricultural crops per capita	105	108	108	108	111	109	106	103	113	114
Paddy	110	113	110	110	111	111	109	108	120	118
Livestock & poultry	130	138	87	88	89	90	91	92	93	93
Forestry	119	117	138	120	129	98	99	121	121	113
Fishery	64	66	66	65	64	64	65	62	63	65
All groups	103	116	103	102	105	102	100	98	106	107

Source: Statistical Year Book of Bangladesh, 1996

**Table 8: Acreage Production and Yield Rate of Major Agricultural Crops**

Year	Rice		Jute		Sugarcane		Tea	
	Acreage '000' acres	Production '000' metric tons	Acreage '000' acres	Production '000' tons	Acreage '000' acres	Production '000' metric tons	Acreage '000' acres	Production '000' lbs.
1979-80	25105	12539	1874	1065	359	6340	107	80710
1980-81	25474	13882	1569	897	368	6600	109	87541
1981-82	25847	12630	1412	842	398	7136	112	85476
1982-83	26158	14216	1425	886	410	7257	110	90247
1983-84	26064	14509	1701	946	412	6960	140	93031
1984-85	25263	14623	1671	928	404	3878	110	83550
1985-86	25696	15037	2614	1571	396	6640	110	96947
1986-87	26216	15405	1908	1225	407	6896	113	84217
1987-88	25507	15413	1266	853	428	7207	115	90969
1988-89	25265	15544	1343	805	425	6707	115	97621
1989-90	25893	17857	1339	812	461	7423	117	87527
1990-91	25786	17852	1442	962	472	7682	118	102771
1991-92	25315	18252	1453	957	463	7446	118	145230
1992-93	25151	18340	1236	808	456	7507	118	107825
1993-94	24664	18042	1182	806	447	7111	118	112444
1994-95	24517	16833	1383	961	445	7446	118	113877

Source: Statistical Year Book of Bangladesh, 1996

## **Forestry**

Forest areas cover about 14 per cent of the total land area of Bangladesh. The country produces timber, bamboo, and cane. Bamboo grows in almost all areas, but quality timber-producing trees are mostly confined to the valleys. The important species of timber trees include *sal*, *gamari*, *chupalish*, *telsur*, *jarul*, *teak*, *garjon*, *chondul*, and *sundari*. *Sundari* trees grow in Sundarbans located in the south-western part of the country bordering the Bay of Bengal. Plantation of rubber in the hill regions of the country was recently introduced and extraction of rubber has already started.

Many species of wild animals are found in the forest areas. The Sundarban is the home of the world famous Royal Bengal Tigers, elephants, bears, deer, monkeys, bears, and leopards to mention a few. A few hundred species and sub-species of birds are found in the country, some of them seasonal and migratory.

### **Barren and Degraded Land**

Table 5 shows that the area of barren or degraded land increased from 6,566,000 acres in 1971-72 to 10,120,000 acres in 1994-95.

### **Deforestation of Forest Resources**

(In the whole country and in the mountain areas.)

#### **Area Decrease**

The forest cover in Bangladesh decreased from 17.32 per cent (25,026 sq. km.) in 1981-1982 to 13.60 per cent (21,990 sq. km.) in 1995-1996.

#### **National Forest**

All government owned and controlled forests are considered to be national forests. They include Reserved, Protected, Acquired, Vested, and Unclassed State Forests. There are no forests specifically designated as National Forest.

## **Reserved**

The Reserved Forests are controlled and managed by the Bangladesh Forest Department. The area of reserved forest increased from 4,430 square miles in 1975-76 to 5,643 square miles in 1995-1996 (Table 4). A large part of the so-called 'forest' area has no tree cover. Over the 20-year period from 1960 to 1980, the forest cover declined annually by 2.1 per cent.

### **Village Forest**

Village forests provide a significant portion of the wood supply of the country. Village forests produce fruit for human consumption, fodder for livestock, raw materials for cottage industries, and wood for furniture, construction, carts, boats, and agricultural tools. It is an essential support to village life. The combination of different cultivated plants allows permanent production throughout the year. The flow of small quantities of various products helps farmers maintain economic and nutritional stability. But the production of the village forests is decreasing, mainly as a result of the shortage of land for wood. The village forests supply large quantities of bamboo. According to the village forest inventory conducted in 1981, the village forests supplied 528 million bamboo culms in one year (Hammermaster 1981).

### **Private Forest**

There is no information available about the private forests in the country in any report.

### **Protected Areas, National Parks, Rangelands, and Other Grasslands**

Wildlife conservation, including the management of National Parks and Wildlife Sanctuaries, is at present the responsibility of the Forest Department. The Bangladesh Wildlife Preservation Amendment Act, 1974, made provision for a wildlife advisory board, which was created in 1976 under the Chairmanship of the Honourable Minister for

Table 9: Area under Forest by Type of Forest in Square Miles (1 sq. mile = 2,599 sq. km.)									
Year	WAPDA & Khashland	Garden Areas	Reserve Forest	Acquired Forest	Vested Forest	Protected Forest	Unclassified State Forest	Total	% of total area
1975-76	47.75	0.33	4430	365	41	222	3502	8608	15.48
1976-77	47.75	0.33	5104	365	41	222	3502	9282	16.70
1977-78	48.00	NA	5101	367	41	222	3513	9292	16.71
1978-79	47.80	NA	5129	341	43	222	3517	9299	16.73
1979-80	47.80	NA	5427	346	42	222	3521	9606	17.28
1980-81	47.80	NA	5422	399	41	222	3440	9572	17.22
1981-82	48.00	NA	5422	397	42	222	3498	9629	17.32
1982-83	48.00	NA	5425	311	42	222	1553	7601	13.67
1983-84	87.29	NA	4893	306	41	222	1440	7689	13.83
1984-85	47.80	0.34	5644	268	35	231	1768	7994	14.38
1985-86	54.71	0.34	5718	262	35	207	2443	8720	15.68
1986-87	46.15	0.34	4882	361	35	206	1578	7108	13.40
1987-88	54.70	0.34	5097	447	35	206	6823	7420	13.45
1988-89	50.00	NA	4353	492	97	193	1390	7181	12.53
1989-90	400.60	NA	5063	156	87	143	1313	7162	12.60
1990-91	369.00	NA	5028	157	87	202	1335	7178	12.81
1991-92	51.00	NA	5092	496	54	197	1433	7323	13.08
1992-93	481.72	NA	4689	603	31	145	1417	7367	13.16
1993-94	151.68	NA	5109	515	31.82	193	1371	7371	13.16
1994-95	272.55	NA	5643	372	32.95	149	1840	8461	13.60
1995-96	272.55	NA	5643	372	32.95	149	1840	8461	13.60

Source: Statistical Year Book of Bangladesh, 1996

**Table 10: Area of New Plantation in Bangladesh Per Year (ha)**

Year	Hill Forest	Sal Forest	Coastal Forest	USF	Total
<b>First Five-Year Plan</b>					
1974-75	2644	81	1969	287	4981
1975-76	3092	522	4864	1214	9692
1976-77	3361	1140	6727	1781	13009
1977-78	4339	1023	4943	1651	11956
1978-79	4619	957	6607	1123	13306
1979-80	5986	809	6518	2225	15538
Sub-total	24041	4532	31628	8281	68482
<b>Second Five-Year Plan</b>					
1980-81	7367	688	6242	1983	16280
1981-82	8207	1194	6323	6151	21875
1982-83	7223	1059	8094	3845	20221
1983-84	7437	1038	10118	3743	22336
1984-85	5233	615	9996	6961	22805
Sub-total	35467	4594	40772	22683	103517
<b>Third Five-Year Plan</b>					
1985-86	4106	NA	8114	6253	18473
1986-87	3477	NA	8094	4644	16215
1987-88	3368	NA	8195	4553	16116
1988-89	3699	NA	3806	3669	11174
1989-90	6249	NA	4330	3274	13953
Sub-total	20899	NA	32539	22393	75831
<b>Fourth Five-Year Plan</b>					
1990-1991	NA	NA	NA	NA	24887
1991-1992	NA	NA	NA	NA	26190
1992-1993	NA	NA	NA	NA	36961
1993-1994	NA	NA	NA	NA	47582
1994-1995	NA	NA	NA	NA	45862
1995-1996	NA	NA	NA	NA	21185
Sub -total	-	-	-	-	202667
<b>G.Total</b>					<b>450497</b>

**Source:** Reza et al. 1992

**Notes:** Hill Forest: Reserve Forests of Chittagong Hill Tracts, Cox's Bazar, Sylhet, Chittagong; Sal Forest: Greater Dhaka, Mymensing, Tangail, Rangpur, Dinajpur and Rajshahi; Coastal Forest Noakhali and new chart of Chittagong; USF: Unclassed State Forest of Chittagong Hill Tracts.



Agriculture. At present there are 11 wildlife sanctuaries, four National Parks and one game reserve (Wildlife Task Force 1986).

### Socioeconomic Information

In 1997, about 48 per cent of people in rural areas and 44 per cent in urban areas were living below the poverty line. This was a small increase from 47 and 43 per cent, respectively, in 1995; but much reduced from the values twenty years and more previously (Table 11). The average per capita income calculated at market and at factory prices is shown in Table 12.

### Status of Forest-based Industries

The numbers of factories in selected forest resource-based industries are shown in Table 13.

### Education

Bangladesh occupies an important position among the South Asian countries in the field of education. There are 11 government universities for general education located in Dhaka, Chittagong, Rajshahi, Khulna, Sylhet, Jahangirnaga, and Kushtia. There are five institutions for technical education (the Bangladesh University of Engineering and Technology and four other engineering colleges) with a total enrollment of 7,439 students. There are 14 government medical colleges, a Medical University for Postgraduate Medicine and Research, a dental college, a diabetic institution, and an International Centre for Diarrhoeal Diseases' Research. There are a number of other specialised medical institutions offering postgraduate courses. There is an agricultural

Year	Population below poverty line (%)	
	Rural areas	Urban areas
1963-64	88	82
1965(Jan-June)	56	70
1966(June-April)	NA	82
1966-67	62	72
1968-69	79	62
1973-74	94	NA
1994-95	46.8	43.3
1996-1997	47.9	44.4

**Sources:** Roy (1979) and Statistical Year Book of Bangladesh (1997)

Period	At market price			At factory cost		
	Per capita GDP	Per capita GNI	Per capita NNI	Per capita GDP	Per capita GNI	Per capita NNI
1989-90	6785	6990	6515	6401	6606	6131
1990-91	7517	7756	7226	7066	7305	6775
1991-92	8001	8300	7736	7493	7742	7228
1992-93	8208	8544	7953	7640	7976	7386
1993-94	8754	4167	8531	8133	8546	7909
1994-95	9760	10225	9528	4026	9490	8794
1995-96	10660	11152	10386	9858	10349	9583
1996-97	11284	11810	11010	10375	10902	10101

**Source:** Statistical Year Book of Bangladesh 1996  
**Note:** GDP—Gross domestic product; GNI—gross national income; NNI—net national income

Table 13: Number of Factories in Various Forest-based Industries						
BSIC 1986 Code	Category	1987-88	1988-89	1989-90	1990-91	1991-92
331	Wood & cork products	32	1293	1320	962	1138
332	Furniture (wooden)	18	243	410	257	226
341	Paper & paper products	28	45	51	58	90

**Source:** Statistical Year Book of Bangladesh 1996

university at Mymensingh and three agricultural colleges at Dhaka, Dinajpur, and Patuakhali. There are various other colleges and institutes for art, music and fine arts, textiles, leather, glass and ceramics, as well as 20 polytechnic institutes and 51 government vocational institutes. At present there are 5,977 *Madrashas* (schools) and efforts are underway to modernise the *Madras* education system by introducing science and vocational courses. Emphasis will also be laid on attaining proficiency in Arabic. A project for establishing an Islamic University at Kushtia is being implemented.

There are 12,553 secondary schools with about 4.9 million students; and 66,168 primary schools with 15.9 million students. The literacy rate in Bangladesh overall and in different areas is shown in Table 14 and the percentage of the population attending school in Table 15.

## Health

Health is one of the basic requirements for a good quality of life. Since independence, the Government of Bangladesh has consistently pursued a policy for providing essential/minimum health care to all, and particularly to disadvantaged and poor groups. Successive health plans have emphasised primary health care as the key approach to improving the status of health of the people.

Significant progress has been made in the health sector since the inception of Bangladesh, for example in the areas of building up of rural infrastructure; development of medical, dental, nursing, and paramedical manpower; full eradication of smallpox; and control of communicable diseases like tuberculosis, malaria, diarrhoea, and cholera. But the real goal of providing

Table 14: Literacy Rate of for all Ages by Sex (1991)			
District Name	All	Male	Female
Bangladesh	24.92	30.03	19.49
Bandarbans	18.50	25.36	10.28
Khagrachar	20.29	27.00	12.84
Rangamati	28.51	36.45	10.63

**Source:** Statistical Year Book of Bangladesh 1996

Table 15: Percentage of Population Aged 5-24 Attending School						
Name of District	1991			1981		
	Both Sexes	Male	Female	Both Sexes	Male	Female
Bangladesh	36.52	40.66	32.21	21.90	26.80	16.80
Bandarbans	25.83	30.04	21.17	11.08	14.63	7.19
Khagrachari	32.80	37.98	27.55	16.65	21.19	11.84
Rangamati	38.80	42.77	34.44	18.30	22.57	13.19

**Source:** Statistical Year Book of Bangladesh 1996

comprehensive health care covering all the people has still to be achieved.

The number of hospital beds has increased significantly from 1978, when there were 16,583 beds in government and 2,685 beds in private hospitals, to 1995, when there were 24,106 beds in government and 8,025 beds in private hospitals. The numbers of registered doctors and nurses increased from 7,035 and 2,012 in 1978, to 26,482 and 13,830 in 1995. There are now 400 Rural Health Complexes with 12,315 beds (1993-94), thirteen medical

colleges, six postgraduate medical institutes, two paramedical institutes of health technology and five medical assistant training schools (1995). The growth in medical facilities between 1978 and 1995 is shown in Table 16.

Access to clean drinking water is one of the most important factors influencing general health at the household level. The percentage of rural and urban households obtaining drinking water from different types of sources in 1991 and 1994 are shown in Table 17.

**Table 16: The Growth in Medical Facilities**

Year	Hospitals		Govt. Dispensaries	Hospital Beds		Registered			
	Govt.	Private		Govt.	Private	Doctor	Nurse	Mid-wives	Ledy Health Visitors
1978	388	36	1752	16853	2685	7035	2012	1041	413
1979	405	36	1752	17494	2703	7909	2461	1167	432
1980	510	39	1752	18957	3030	9188	3019	1353	440
1981	512	164	1468	19021	4771	10065	3736	2239	449
1982	544	164	1446	19136	4771	10333	4500	2934	473
1983	560	164	1493	20286	4771	11496	5164	3424	758
1984	568	164	1559	21870	4771	13500	5800	3850	1176
1985	596	164	1275	22874	4771	14591	6418	4399	1581
1986	600	164	1275	23306	4771	16090	6912	5199	1584
1987	608	267	1310	26575	6463	16929	7000	5837	1795
1988	608	267	1310	26871	6463	18030	7390	6556	NA
1989	608	267	1310	26913	NA	18917	8056	7035	NA
1990	608	267	1310	NA	NA	20006	9274	7485	NA
1991	610	280	1318	27111	7242	21004	9655	7713	3459
1992	611	280	1362	27111	7242	21749	10607	9363	NA
1993	611	292	1397	27637	7643	22400	9455	10104	NA
1994	639	280	1397	28553	7247	24911	9630	7713	NA
1995	645	288	1397	29106	8025	26482	13830	1100	NA

**Notes:** All figures are progressive totals. Registered doctors includes MBBS and BDS.

**Source:** Statistical Year Book of Bangladesh 1996

**Table 17: Percentage of Households Obtaining Drinking Water from Different Types of Source**

Year	Locality	Source of Drinking Water					
		Total H/H	Tap	Tubewell	Well	Pond	Canal/River
1994	Rural	100.00	.022	91.31	4.60	2.26	1.61
	Urban	100.00	44.01	54.46	0.56	0.30	0.37
1991	Rural	100.00	0.14	77.56	10.56	8.80	2.95
	Urban	100.00	22.48	67.75	4.69	3.87	1.20

**Source:** Statistical Year Book of Bangladesh 1996

## **Community Management**

There are no forest user groups, *Van Panchayat(s)*, or women's groups working with the Forest Department on the basis of a benefit sharing mechanism. But since 1980 linear and block fuelwood plantations have been established under the social forestry programme, with a benefit-sharing mechanism, by groups organized either by the Forest Department or, occasionally, with the

help of an NGO. Preference is given to the landless for group formation. These groups are normally termed 'beneficiary groups'. They are mostly dominated by male members and are normally formed by the Forest Department. In general, participation by group members is essentially passive; the department does all the work related to plantation establishment and the group members are given the responsibility for guarding the plantations from grazing and theft.

## Part 2

# **Participatory Forest Management: Implications for Policy and Human Resources' Development in Bhutan**

*Planning and Policy Division  
Ministry of Agriculture, Bhutan*

# 1 Introduction

Forests are the largest renewable natural resource in Bhutan. The Royal Government of Bhutan (RGOB) has been extremely conscious of the potential for environmental damage from uncontrolled exploitation of forest resources and unsustainable land-use practices. The government consistently emphasises conservation and natural resource management in its national development plans and has now prepared a comprehensive conservation strategy. Nevertheless, increasing human and livestock populations are beginning to exert considerable pressure on forest and land resources in the accessible areas.

All land in Bhutan not explicitly registered as private land has been declared Government Reserve Forest. As a result of both cultural and physical remoteness, Bhutan has retained much of its natural vegetation and therefore has relatively intact natural forests. Until now the remoteness and low population have meant

that forest exploitation was minimised, and this is greatly in Bhutan's favour as it moves towards a reasoned policy for protection, conservation, and sustainability in forest use.

While resource degradation is not acute at present population and extraction levels, it could become severe in 20-50 years time if there is no proper management. In the more populated areas, the quality of forests is being degraded as a result of overextraction of valuable species for firewood, timber, and non-timber forest products, and uncontrolled grazing by livestock. In particular, there is a high consumption of fuelwood in the temperate areas because of the cold climate. There is a growing demand for construction timber in urban and rural areas as development activities increase and cash incomes rise. Development is also creating more wood-based industries dependent on forest resources.



# 2 Background

Bhutan is a small landlocked country covering about 40,077 sq. km. in the eastern Himalayas. It is located between 91° 41' and 91° 25' east and 27° 13' and 27° 25' north. It is bordered on the west, south, and east by India and in the north by the Tibetan Autonomous Region of China. Most of the Bhutanese landscape is mountainous with elevations ranging from 160 to 7,600 masl. Bhutan contains three physiographic zones. The northern zone lies at an altitude above 4000 masl and contains areas of perpetual snow, glaciers, barren land, and alpine grasslands; the central zone lies at 1,000 to 4,000 masl and contains both the important inhabited areas of the country and the major forested areas; the southern zone lies at 160 to 2,000 masl and comprises the Himalayan foothills. The natural ecological and climatic conditions of Bhutan favour forest as the dominant form of vegetation. It is estimated that forests cover approximately 72 per cent of the land area of the country (LUPP 1995). The overall land-use pattern in Bhutan is shown in Table 1.

The largest part of Bhutan's population resides in the steep valleys of the central belt and along the southern border region with India. The total population is estimated at 600,000 with an annual growth rate of three per cent. More than 85 per cent of the population is rural and 54 per cent is literate.

Bhutan has a predominantly subsistence rural economy with over 71 per cent of households classified as rural farms. Most fuelwood, grazing, and fodder are derived from the forest areas adjacent to settlements under customary use rights.

## 2.1 Extent of Forest Resources

Bhutan's forests are found in the central and southern zones of the country. The central zone contains the major forested areas. Forest lying in humid areas at altitudes from 1,000 to 2,000 masl contains a mixture of evergreen and deciduous broadleaved tree species and is classified as warm broadleaf forest. Chir pine

<b>Land Use</b>	<b>Area in sq. km.</b>
Agriculture	3,088
Forests	29,045
Pasture	1,564
Horticulture	58
Settlement	31
Other uses	6,289
<b>Total</b>	<b>40,077</b>

Source: Landuse Planning Project, RGOB (1997)

(*Pinus roxburghii*) forest is more common in drier areas at this altitude. Cool broadleaf forests are found on moist exposed slopes above the warm broadleaf forests, and evergreen oak forests on drier sites at the same elevation. Forests above an altitude of 2,500 masl contain mainly temperate conifers with some hardwoods. These conifer forests of blue pine and spruce are the main forest types of commercial significance. The southern zone has a subtropical climate and contains dense forests. The forests found along the southern foothills at altitudes of from 200 to 1,000 masl are classified as subtropical.

Agricultural lands lie close to, and in many cases within, the forested lands. Degraded forest areas are mostly located close to villages and agricultural lands, reflecting the traditional use of forests for fuelwood, fodder, and timber for rural house construction.

## 2.2 The Role of Forests in the Country's Economy and the Livelihood of the Mountain People

In Bhutan, forests play an important role in the conservation of environmental quality, the welfare of the rural population, and the productivity of agricultural land. The forestry sector directly contributes about 11 per cent of the gross domestic product (GDP) and generates about three per cent of government revenues through royalties and sales by various

agencies. Furthermore, protection of watersheds by forest has facilitated the development of hydropower plants.

The forest sector is estimated to provide employment to more than 25,000 people, mostly in collection of fuelwood for use rather than sale. Forestry is of strategic importance because the young and expanding wood-based industrial sector is largely dependent on forest resources. The wood industry in Bhutan is still in its infancy, and it consists mainly of small sawmills. There are a few medium-sized units including an integrated sawmill, plywood mill and joinery, and a particle board mill. Many sawmills operate sporadically depending on the availability of raw materials. The mechanisation level is very low and the operations are labour intensive. Many of the permanently operating sawmills work on a contract basis for the Forestry Development Corporation. Table 2 lists the major wood-based industries in Bhutan.

The amount of wood used by these industries is about 100-200,000 cubic metres per year. The capacity utilisation rate of the industrial units is thought to be very low (estimated to be 30-40%), mainly as a result of constraints resulting from the availability of raw material. The poor quality of machinery, low degree of mechanisation, and low utilisation rate appear to hamper the efficiency and economy of the sawmills seriously.

Type of Wood-Based Industry	Total
Sawmills	49
Sawmills and Crates/Boxes	5
Particle Board Factories	1
Blackboard Factories	2
Plywood Factories	1
Joineries/Woodworks	4
Broom Handle Factories	3
Furniture Factories	33
Tea Chest/Crate Factories	4
Wooden Handicrafts	1
<b>Total</b>	<b>103</b>

Source: Master Plan for Forestry Development (DANIDA/ADB 1991)

Forests are a major source of leaf litter, forage and fodder, edible fruits, essential oils, and medicinal plants. Although subject to government rules and regulations, the use of forests by households has been sanctioned traditionally as part of use-rights. For centuries, the people of Bhutan have depended on the forests to supply their needs for fuelwood, home construction, and inputs for farming systems. Wood demands from monasteries and government offices, and more recently from urban centres, schools, and other institutions have added significantly to the total demand for wood in the country. More than 98 per cent of domestic household energy demand and 83 per cent of the national energy balance for all users are met from fuelwood. The total consumption of fuelwood in the household

sector in 1988 was estimated to be 1.1 million cubic metres, and in all sectors together about 1.3 million cubic metres (Master Plan for Forestry Development, DANIDA/ADB 1991). Villagers also depend on the forest for grazing their cattle and for collection of fodder and litter for livestock. All individuals have the right to use government forest land to graze their cattle.

Evidence suggests that the pressures on forest are highly localised and mostly in and around the demand centres. This has led to visible forest degradation in certain densely-populated areas. This degradation has probably contributed to the low productivity of agricultural lands. Forest degradation is unlikely to have affected hydrological regimes in Bhutan since the major part of the land still has intact forest cover.

# 3 History of Forest Management in Bhutan

## 3.1 Traditional Forest Management

An important characteristic of the forest sector in Bhutan is that the legal status of the various types of land use has a dominant influence on alternative forest use and resource allocation. Until fairly recently, land in Bhutan was essentially considered as a common property resource, with land use appropriated on a traditional basis. A common property resource in the Bhutanese context is defined as a forest resource held and managed by an identifiable community or communities to meet the needs of an individual or community as a whole, with traditional rules and customs governing its usage. Land was chosen and occupied by the rural population on the simple basis of availability and assumed use capacity. Demands were small relative to the available land, and there were relatively few serious land use conflicts. With the enactment and adoption of the Bhutan Forest Act in 1969, all land in Bhutan that was not privately owned was declared to be government reserve forest. Effectively this act closed the 'commons'; a system of permits was created in its place to authorise limited rights to the use of government forest.

The actual use of the forest is much older than the present system of government ownership and control. Traditional patterns of forest use and management have existed for centuries, and these patterns continue, directly or indirectly, to have an impact on forests. Much of the land used for agricultural purposes and for house building was originally cleared from forests. Similarly much traditional grazing land

and land used for collection of feed and fodder was originally forested. The use of forests for collection of firewood and wood for home construction was traditionally sanctioned as part of customary rights and was incorporated into the Land Act of 1979.

Before the then Department of Forest was created in 1952, every village, community or individual used to own a patch of forest or grazing ground for cattle in or around their village. These forest resources were subject to indigenous management. For example, if a person from outside a village wanted some trees or to graze their cattle in a forest or grazing area owned by a community or individual, then he or she had to get permission from the owner. Those seeking permission had to offer something, usually a bottle of 'ara' (a locally brewed alcohol). If someone from outside a village was found cutting trees or grazing cattle without permission, then that person would be fined or a case filed in court. With the creation of the Department of Forest and the adoption of the Forest Act of 1969, this kind of forest management by the local people faded into oblivion. The Department of Forest became the sole custodian of forest resources in the country. The current efforts of the government to revive the old system through the introduction of social and community forestry programmes have met with little success so far.

## 3.2 Government Management of Forest Resources

Government management of Bhutan's forest resources started with the creation of the

Department of Forest in 1952. The main activities of the Department have included institutional development, surveying, and demarcation of forest land. In 1969, the Bhutan Forest Act was adopted to regulate the use of forest. The National Forest Policy was passed in 1974, it emphasised the conservation and sustainable utilisation of forest resources. A survey of the forests was conducted with the assistance of the Indian Government, which provided information about growing stock, growth, and annual allowable cut.

As a result of inefficiencies in the contract system, forest logging operations were nationalised in 1979, and tree planting by farmers was initiated under a social forestry programme. Greater emphasis was placed on forest demarcation and afforestation activities, and the preparation of forest management plans was initiated.

### **3.2.1 Forest Policy**

The guiding principle of Bhutan's Forest Policy is to ensure that forest resources are used sustainably and contribute to social justice and equity. The policy also emphasises conservation of the environment as the prime aim and derivation of economic benefits from the forest as a rationally managed resource as the second aim. The policy decrees that a minimum of 60 per cent of the country's geographical area is to be kept under forest cover at all times. This policy has mainly been implemented through laws and regulations restricting grazing in critical watershed and protected areas, banning logging on steeper slopes, and restricting the conversion of forest lands to other uses.

#### Historical Evolution of Forest Policy

The government policy on forest was instituted to ensure an adequate supply of forestry products to meet the needs of all inhabitants, and was based on development of customary user rights. The policy also took into account the sustainable management of forestry resources, which has been the principal rule for all state-managed forests. These concepts

were incorporated in the Forest Act of 1969, which declared that all land in Bhutan not privately owned was to be 'Government Reserve Forest', and its use would be regulated by a system of permits. The policy also led Bhutan to embark on a programme of establishing protected areas (parks, sanctuaries, and reserves), the total area of which is now 970,000 ha, 26 per cent of the country's geographic area.

Under the Forest Act of 1969, Bhutan consolidated numerous directives relating to forest rights, forest products, and royalties. The Act protected the country's forests by naming those lands over which no one had permanent inheritable or transferable rights as Government Reserve Forests. Felling of trees, burning of forests by shifting cultivators, and hunting and fishing in forest reserves, national parks, or wildlife sanctuaries were strictly prohibited and brought under the control of the Department of Forest.

Draft Social Forestry Rules were promulgated under the Forest and Nature Conservation Act of 1995 to promote social forestry effectively. These Rules allow trees planted on private land to remain free of royalty. The Rules also allowed five or more households to obtain user rights to an area of partially degraded government forests as long as a reafforestation and management plan is followed. Royalty rates are reduced or rescinded, and individuals may apply for leases under the rules in accordance with certain terms and conditions.

In 1991, as part of its efforts to prepare the Master Plan for Forestry Development, the government formulated a revised Forest Policy Statement that emphasised the necessity of balancing the nation's conservation and economic development goals. It stipulates that forest resources will be managed in a scientific and systematic manner and that this resource base will be expanded through viable investment programmes. It acknowledges the necessity to allocate forest resources to different management regimes such as those for protection forests, production forests, and community forests. The policy recognises the

importance of people's participation in the management, use and expansion of resources, and calls for multiple-use management in recognition of the realities of the country.

The government has taken three important steps toward implementing the forest policy that are intended to give the policy initiatives a proper base:

- preparation and adoption of the Forest and Nature Conservation Act of 1995, this replaced the Forest Act of 1969;

- formulation of a forestry programme framework for the development of the forestry sector; and
- a decision to develop Forest and Nature Conservation Rules based on the Forest and Nature Conservation Act of 1995.

Table 3 summarises the major Bhutanese policies related to forestry. In addition, there are other government policies, such as those on tourism management, that also seek to limit any adverse impacts on forest resources.

**Table 3: Historical Timeline of Forest Policy Development in Bhutan**

<b>Year</b>	<b>Name of Policy, Acts or Rules</b>
1969	Bhutan Forest Act
1974	National Forest Policy
1979	The Land Act of Bhutan
1984	Bhutan Logging Corporation Charter
1985	The Forest Policy of 1985
1990	Social Forestry Rules
1991	Revised Forest Policy Statement
1995	Forest and Nature Conservation Act
1996	Revised Draft Social Forestry Rules



# 4 Social Forestry in Bhutan

Social forestry and community forestry are a new concept in Bhutan and are currently being implemented on an experimental basis. The aim is to regulate and enhance forest productivity, to contribute to sustainable resource utilisation, and to increase farm income by integrating tree growing into existing farming systems. Social forestry involves local people in the process of forest resource management through a system of sharing benefits and responsibilities. Introduction of these new concepts requires fundamental changes in the attitudes of stakeholders including government agencies and staff who have been indoctrinated with the idea that they alone are custodians of the nation's forest resources. Rural communities that traditionally have had unlimited access to adjacent forest areas need to accept new responsibilities and adopt appropriate utilisation systems. There is a need for workshops and training programmes for forestry officials and villagers to create

awareness about the organization of village institutions for community and social forestry programmes.

The RGOB, realising the importance of people's participation in the management of its forest resources, has recently introduced a policy of privatisation and decentralization. As a result, the Forestry Sub-sector has already decentralized the performance of certain forestry functions by allocating them to the district level.

Management Plans have been prepared on an experimental basis by the forest department for four community-managed forests. They are listed in Table 4.

The management plan for Mongar Dzongkhag is being implemented and the rest are under review. A further 22 ha are being managed on small-scale community forestry trial plantations.

Name of Community Forest	Area (ha)
Zhemgang Dzongkhag	250
Punakha Dzongkhag	265
Mongar Dzongkhag	300
Trashigang Dzongkhag	537
Total	1152

# 5 Human Resources' Development for Forestry Development in Bhutan

The key institutions that offer basic forestry education within and outside the country are as follow.

## 5.1 The Bhutan Forestry Institute

The Bhutan Forestry Institute offers a one-year basic forestry course primarily for forest guards. The course includes basic silviculture, forest protection, social forestry, seed collection, forest botany, nursery operations, mensuration, forest survey and engineering, forest policy, wildlife, utilisation, and accounts.

## 5.2 The Logging Training Centre

The Logging Training Centre at Lamegonpa, Bumthang, offers the following courses: Manual Logging (6 months), Cable Crane Operation (6 months), Chain Saw Operation (6 months), Crew Leader (6 months) and Winch Mechanics (12 months).

In addition, the Centre provides a one and a half to two months course for voluntary workers and people using pitsaws. In general, the training courses consist of 1/3 theory and 2/3 practical exercises.

## 5.3 The Natural Resources' Training Institute

The Natural Resources' Training Institute (NRTI) at Lobesa offers a three-year diploma course in agriculture, animal husbandry, and forestry. For foresters, the course includes forest utilisation, silviculture, forest roads and

engineering, forest protection, mensuration, forest law and policy, wildlife and nature conservation, social forestry, and surveying. With the inclusion of a social forestry course in the syllabus, awareness of participatory forest management is now ensured and the faculty is becoming increasingly sensitised to this newly-emerging concept. Until 1992 when the NRTI became operational, nearly all advanced forestry education was imparted by Indian institutions.

The idea for establishing NRTI developed in the late eighties when the government realised that the sub-sectoral approach to the development of the country's agriculture, livestock, and forestry was not effective. The main reason for this was that the Departments of Agriculture, Animal Husbandry, and Forest did not consider the integrated nature of the farming systems practised by the farmers. Thus the respective programmes and activities did not complement each other. Although these Departments were all placed under the Ministry of Agriculture, there was very poor coordination and consolidation of development efforts and this resulted in duplication of efforts and often led to conflicts. In order to overcome these problems and address the needs of the rural population better, a policy decision was made to integrate the functions of the Departments of Agriculture, Animal Husbandry, and Forestry and reorganize them into multi-disciplinary divisions. Five divisions were created: the Administration and Finance Division (AFD); Policy and Planning Division (PPD); Research, Extension, and Irrigation Division (REID);

Forestry Services' Division (FSD); and Crop and Livestock Services' Division (CLSD). At the same time, a decision was made to integrate the training components of the three sub-sectors and bring them under one roof, thus heralding the birth of the Natural Resources' Training

Institute (NRTI) at Lobesa. The NRTI brought together and replaced the diploma-level training conducted by the National Agricultural Training Institute (NATI) at Paro, the Royal Veterinary Institute at Serbithang, and the Bhutan Forestry Institute at Taba.

## Bibliography

(not necessarily cited in the text)

- DANIDA/ADB, 1991. *Master Plan for Forestry Development*, Main Report. Thimphu Bhutan: DANIDA/ADB
- FAO, 1993. *Forest Management and Conservation, Project Findings and Recommendation*. Rome: FAO.
- FAO, 1991. 'Master Plan for Forestry Development', Annex Report No. 11. In *Human Resource Development Plan for Forestry Sector of Bhutan*. Thimphu, Bhutan: FAO.
- FAO, 1997. *Participatory Watershed Management Process, Planning, Monitoring and Evaluation*, Field Document No 10, Asian WATMANET News letter. Kathmandu, Nepal: FAO.
- FAO. 1991. 'Regional Wood Energy Development Programme in Asia', GCP/RAS/131/NET, *Wood Energy Sectoral Analyses*, Field Document No. 32, Bangkok, Thailand.
- Gupta, P.N., 1992. *Bhutan - Distribution of Landuse and Vegetation types*. Thimphu, Bhutan: Publisher not given.
- Magno, V.C. 1994. *Implementation Strategies and Operational Guidelines for the Village Forest Management Subcomponent and Training Programmes*, Field Document No. 5. Khangma, Bhutan: Third Forestry Development Project.
- Ministry of Agriculture. 1992. *Forestry Programme Framework, Executive Summary*. Thimphu, Bhutan: RGOB.
- Ministry of Agriculture, 1992. *Forestry Programme Framework, Programme Document, Volume 1*. Thimphu, Bhutan: RGOB.
- Ministry of Agriculture, 1995. *Forest and Nature Conservation Act of Bhutan*. Thimphu, Bhutan: RGOB.
- Ministry of Agriculture, 1997. *Atlas of Bhutan, Land Use Planning Project, Land Area and Area Statistics of 20 Dzongkhags*. Thimphu, Bhutan: RGOB.
- Royal Government of Bhutan, 1996. *Statistical Yearbook of Bhutan, 1994*. Thimphu, Bhutan: Central Statistical Organization, Ministry of Planning.
- The World Bank, 1993. *Staff Appraisal Report, Bhutan Third Forestry Development Project*. Washington D.C., USA: Agriculture Operations Division, Country Department 1, South Asia Region.

## Part 3

# **Participatory Forest Management: Implications for Policy and Human Resources' Development in Myanmar**

U Myint Sein



# 1 Introduction

## 1.1 Background to Myanmar

Myanmar is a small country located between 9° 58' and 28° 29' N and 92° 10' and 101° 10'E. It has a total land area of 676,577 sq.km. and a population of 46.4 million (69 people per sq.km.).

The country can be loosely divided into three main areas, the coastal regions, the central dry zone, and the northern mountains. The elevation of the land surface ranges from sea level along the coastal lines to about 6,000 masl in the mountains of the north.

Forests cover some 51 per cent of the total land area (16% reserved forest, 35% 'other forest area'). This figure includes both closed and degraded forests. Myanmar is known to have about 7,000 plant species, of which 1,071 are endemic. The recorded species in the natural forests include 1,347 species of big trees, 741 species of small trees, 96 species of bamboo, 1,696 species of shrubs, 36 species of rattan, and 841 species of orchid. The forests contain an estimated 2.2 billion cubic metres of standing growth stock of timber.

## 1.2 Forest Resources

Forest products are life-support resources for all of us on this planet. Thus ensuring long-term utilisation and stability of forest resources with minimal environmental degradation is of paramount importance for a nation's economy and its people's livelihood. However, these resources are dwindling at a rapid rate as a

result of ecologically unstable farming practices, increasing population, and ever-rising demand for forest lands and products. The failure of custodial state-adopted measures to protect and manage natural resources has lent urgency to the search for alternative development strategies and has led to the emergence of people-centred participatory management of resources. The participatory aspect of integrated forest resource management has proved to be an approach with significant potential for addressing problems and issues related to natural resources' depletion in different parts of the world, in general, and in tropical areas of Asia in particular.

Myanmar is a country endowed with a great wealth of forests and other natural resources. In Myanmar, the people-centred approach is mainly practised in three areas: watershed areas, dry zone areas, and mangrove areas. The Myanmar Forest Department (MFD) is facing new challenges emerging out of changes in policy and practice. This paper highlights the implications for policy and human resource development, which are the two areas most crucial to the successful implementation of the approach.

Traditionally, in most parts of Myanmar, a close relationship exists between farming communities and forests. About 78 per cent of the population of Myanmar are rural, and they rely on forests for many of their subsistence needs. Farmers are dependent on forest resources for their household food security and environmental stability around their farms. As a strategy for



survival, communities in different parts of Myanmar have developed diverse sets of traditional rights and indigenous management systems to manage and use natural resources.

In recent years, uncontrolled use of natural resources has been reported in several parts of Myanmar mainly as a result of population growth. Food security is being threatened in once environmentally stable villages, and the production base of natural resources is deteriorating rapidly. Demands for forest products are increasing in line with accelerated population growth. As a result, forest degradation around villages is accelerating, and this is contributing further to environmental degradation.

While it might be possible to arrest forest degradation and to ensure supplies of forest products to communities through a massive government-funded programme, this would be very expensive and would require a large forestry administration to manage the forest resources effectively. At present, there are some resource constraints as a result of the Government's other overriding development priorities. The present forest service is already over-stretched and it does not have the capacity to intervene with a massive government-funded programme. Therefore, it has become imperative that participatory forest management is implemented by the small forestry administration.

# 2 Participatory Forest Management in Myanmar

## 2.1 Emergence of Participatory Forest Management in Myanmar

Increasingly, community-oriented approaches are being recognised as crucial for sustaining forest resources, especially in mountain areas. The concept of and approach to participatory forest management are still relatively new in Myanmar. Since its inception in 1885, the MFD has practised a silvicultural system called the 'Myanmar Selection System' (MSS). Under this system, forest areas are allocated and organized into 'Working Circles' (WC), based on productive and functional aspects, for systematic management.

Forests that are earmarked to fulfill the needs of local people are called 'Local Supply Working Circles' (LSWC). LSWC cover about 0.5 million hectares, approximately two per cent of the total WC areas. The management and allocation of forest resources from Local Supply Forests (LSF) are under the authority of the MFD. These forests are being rapidly degraded and gradually denuded under the constant stresses of population pressure, excessive fuelwood cutting, and encroachment.

In the last two decades, a programme was introduced for establishing fuelwood plantations in local supply reserves in the vicinity of villages. Although this village-owned plantations' programme was introduced in the 1980s, it has not been taken up by local people. One reason was the lack of proper extension activities when the programme was introduced, another that the plantations were controlled by

the Forest Department and there was a lack of clarity related to both land tenure and tree tenure. This top-down approach failed to help in the protection and management of forest resources and did not reduce forest degradation. Recognition of this led to the emergence of a programme for people-centred participatory management of forest resources, also known as 'Community Forestry (CF)'.

The Government of the Union of Myanmar has recognised the need to implement participatory forestry programmes and has initiated participatory forestry projects in different parts of the country. As a prelude to strengthening and expanding community-based forest programmes, a progressive Forest Law was enacted in 1992 to replace the Forest Act of 1902. A Forest Policy of 1995 was promulgated, consistent with the Forest Law of 1992, and Community Forestry Instructions (CFI) of 1995 were brought out to facilitate field activities.

A crucial element of the newly enacted Forest Policy of 1995 is the active participation of people in the conservation and rational utilisation of the forests. The Forest Law 1992 encourages any individuals, communities, or groups to establish and own fuelwood plantations, even in a reserved forest, if it is deemed appropriate by the Myanmar Forest Department. The MFD clearly recognises the rights of the rural communities involved in forest plantation activities to the produce from these plantations. However, the ownership of the land still resides with the government.

The participatory forest management approach is a bottom-up approach, and it is different to the conventional approach which is normally top-down. It emphasises active participation of the people most dependent on forest products. Indigenous knowledge is also given proper consideration and combined with modern approaches in order to achieve a better impact in managing valuable natural resources.

## 2.2 Community Forestry Policy and Programmes

In Myanmar, community forestry is defined as the active participation and involvement of local people in one or all of the following forestry activities. (It doesn't cover management of existing forest.)

- Establishing woodlots in fuelwood deficient areas to meet local people's requirements for energy and other minor products
- Planting trees and crops on farmlands to provide minor tree produce and food for users' groups and facilitate income generation

Community forestry approaches have recently been introduced in some watershed areas, in the 'Central Dry Zone', and in the deltaic areas of Myanmar where the rate of deforestation is quite severe.

The Community Forestry Instructions (CFIs) of 1995 highlight the following as the objectives of community forestry:

- to enhance the national economy;
- to attain environmental stability and balance of the ecosystem; and
- to meet the social needs for food, fibre, fodder, and fuel in rural areas.

The CFIs also state that it is the task of the District Forest Officer to allot a manageable piece of land to users' groups, with the authorisation of the Director General of the MFD, in order that the group can establish a community forest or woodlot. Initially, this land is allotted to the group for 30 years. At the end of this time, the duration may be extended with

the Director General's approval and depending on the activities and wishes of the users. The benefits derived from the community forest are to be shared among the members of the users' group, and no royalties will be levied on forest products extracted from the community forest by the users' group for domestic purposes.

Tree planting along farm perimeters, in gaps, and along roadsides has been encouraged by the Forest Department to meet the need for fuelwood and other household products such as poles and fodder. Now people, especially those living in the fuelwood deficient 'Central Dry Zone', are adopting community forestry to attain self-sufficiency in fuelwood and other forest products.

The Forest Law of 1992 also allows communities to establish fuelwood plantations in the proximity of urban areas for commercial use by private entrepreneurs. This provision has now drawn the attention of local communities, especially in the dry zone. According to the CFIs, groups or communes of local people have the right and privilege to establish and manage their own plantations. They can utilise or market the products from these plantations. Until recently, fuelwood plantations were owned by the government and entirely managed by government staff without any intervention by the community. In 1996, as a new step in community forestry promotion, control over some fuelwood plantations established by the Forest Department was transferred to local communities. Under the CFIs, people's active participation is intended to play a key role in the reafforestation and rehabilitation of denuded areas.

The different problems faced in the three main regions of the country are summarised below.

### 2.2.1 Taungya in the Mountains

There are large areas of degraded and denuded forests in Myanmar resulting from the impact of heavy *taungya* (shifting cultivation) cutting in the watersheds of the four main river systems, and this has led to an increase in erosions and landslides. Heavy siltation is affecting dams and

uncontrolled heavy discharge is leading to breaches in water impoundage, resulting in flooding.

As a result of their geographic isolation, and exacerbated by poor communications and poor literacy rates, mountain dwellers are the most disadvantaged group in terms of both social and economic well-being. *Taungya*, which is their traditional farming practice, is environmentally unfriendly and not very productive. A comprehensive Human Development Initiative (HDI) programme by the United Nations Development Programme (UNDP) and the Government of the Union of Myanmar has been introduced as an initial step to help this group in conserving natural resources through active involvement at all levels of community development activities, from planning to implementation.

### **2.2.2 Fuelwood in the Central Dry Zone**

The 'Central Dry Zone' of Myanmar constitutes about one-third of the country's total area. It has a population of 14 million, of which 11.3 million live in rural areas. This area produces many of the major agricultural cash crops such as cotton, peas, chillies, and sunflowers. It also supports about a half of the nation's cattle population. Environmental degradation is now proceeding at a greater pace as a result of deforestation resulting from excessive cutting of fuelwood. In order to address this issue, the Forest Department has been conducting a nation-wide greening programme, with special emphasis on the 'Central Dry Zone' area which is the most critical area in the country. In order to have a more effective impact, the Ministry

of Forestry, with the support of the government, launched a special project in 1993 to be carried out in nine critical districts of the 'Central Dry Zone'. The main objective of this project is to improve the standard of living of the disadvantaged rural populations of the 'Central Dry Zone' by promoting greening activities to alleviate the acute fuelwood shortage, and by improving the environment.

### **2.2.3 Mangroves in the coastal regions**

The UNDP/ FAO (United Nations Food and Agriculture Organization) assisted Community Multipurpose Fuelwood Woodlots' Project was implemented within the 'greening project' for the duration of two years from 1994 to 1996. The project emphasised peoples' participation and public awareness in forming community woodlots. With the help of the project, village resource management committees have been formed in some 40 villages in the project area.

Mangrove forests occupy extensive areas of the coastal regions of Myanmar. Mangroves are depleting at an alarming rate, especially in the Ayarwady delta, as a result of excessive harvesting of fuelwood and charcoal, and deliberate clearing for farming. The mangrove ecosystem is fragile and is essential for sustained production of fish and inland swamp rice cultivation. Various projects have been launched in these areas from 1992; the most recent one being the UNDP supported Community Development of Ayarwady Mangroves' Project initiated in 1994. It is an integrated project, and includes activities to rehabilitate degraded mangrove areas with grass roots' participation.

# 3 Human Resource Development Initiatives

Current forestry education and training provided at institutions, such as the Institute of Forestry at Yezin, the Myanmar Forest School at Pyin-Oo-Lwin, and the Central Forestry Development Training Centre at Hmawbi, are largely oriented towards the basic bio-physical sciences and technical forestry. These institutions only cater to the training needs of Forest Department staff. Nevertheless, the Central Forestry Development Training Centre has introduced some new initiatives in recent years. The institute now organizes courses on community forestry for communities. Such courses include farmers' attitudes towards the adoption of new techniques, forestry extension, government schemes, technology transfer, incentives, and income-generating activities, and they inculcate a spirit of self-reliance. In community forestry, users are seen as the ultimate managers and decision-makers regarding forest and tree resources. Therefore, capacity building training activities, such as seminars for community leaders and networking workshops for user groups, are conducted for the members of local communities. Seedling nursery development training and environmental awareness raising activities for local schools are also offered.

In order to promote sustainable forest development, a strong forestry extension service is needed that can support effective implementation of forest policy and promotion of rural development. The forest policy, and some elements of the forest law, make it clear that the extension approach must be one that not only emphasises sustainable land use but also promotes an attitude of self-help in problem solving, builds up local institutions and capacity, and aims for the improvement of rural well-being. It is important to realise that participatory forest management is mainly limited to tree planting on degraded or waste land, but it includes management by local people of natural forests and trees and their participation in decisions affecting these activities.

The diversity of bio-physical and socioeconomic situations strongly favours a decentralized approach to forestry extension. The forest policy states clearly that an extension organization, strategy, and structure should be developed in direct collaboration with the ultimate end users - the rural communities - to ensure effective local participation. Forestry problems cannot be resolved by foresters alone - it is necessary to develop an approach that involves other partners not only at the national but also at the local level.

# 4 Conclusion

## 4.1 Issues and Problems

The major issues and problems in Myanmar for effective promotion of participatory forest management are as follow.

- Formulation of a self-sufficient system for local needs (Under the CFs, people's active participation plays a key role in the reforestation and rehabilitation of denuded areas.)
- Raising the awareness of communities, decision-makers, and others influencing public opinion about the vital role of trees and woody vegetation, wildlife, and national parks in national and socioeconomic development
- Ensuring need-based participation and people-based development
- Establishing harmony between the needs of society, the forest resource base, and forest development programmes
- Inadequate research in, and extension support to, participatory forest management
- Inadequate human resources and extension capability of the forestry department to increase public involvement in forestry programmes
- Need for awareness of community forestry and the significance of the problem it seeks to address
- Need to demonstrate the cost and benefits of community forestry programmes
- Development of mechanisms for the distribution of benefits to users to facilitate adoption of the programme by people
- The need for organization building at the grass roots' level to establish an effective recipient system that can serve the interests of the community and promote participatory forestry development.
- The community plantations allowed under legislation have not been established widely.

## 4.2 Suggestions and Recommendations

The following suggestions and recommendations could contribute toward a fuller implementation of participatory forest management programmes in Myanmar:

- develop programmes to create awareness about community forestry and the significance of the problem it seeks to address;
- develop training courses for farmers and between-farm visits;
- abolish rules and regulations that discourage tree planting on individual or communal lands;
- develop people-oriented programmes and projects that focus on income, employment, and fulfillment of basic needs;
- promote women's participation; and
- establish mechanisms to promote joint forest management.



## Participating Countries of the Hindu Kush-Himalayan Region



Afghanistan



Bangladesh



Bhutan



China



India



Myanmar



Nepal



Pakistan

International Centre for Integrated Mountain Development  
4/80 Jawalakhel, GPO Box 3226, Kathmandu, Nepal

Tel : +977 1 525313

Fax : +977 1 524509

+977 1 536747

Email : [distri@icimod.org.np](mailto:distri@icimod.org.np)

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

Cable : ICIMOD NEPAL

