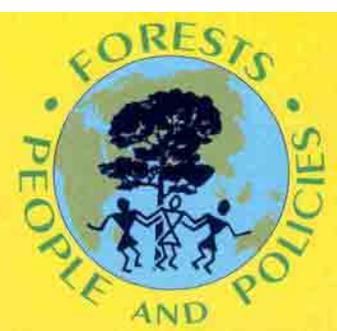


COMMUNITIES AND FOREST MANAGEMENT IN SOUTH ASIA



A
REGIONAL
PROFILE
OF
THE
WORKING
GROUP
ON
COMMUNITY
INVOLVEMENT
IN
FOREST
MANAGEMENT



WG-CIFM

LINKING LEARNING WITH POLICY FORMULATION

The international Working Group on Community Involvement in Forest Management (WG-CIFM) has evolved in the last few years to raise awareness of the roles that communities play in many places around the world in the sustainable management of forests. Over 157 individuals have participated in WG-CIFM sessions representing forest departments, donor agencies, NGOs, and academic institutions from most of the world's regions. The sharing of national experiences provides a clearer picture of common issues, creating opportunities to improve national, regional, and international policies. Funded by the Ford Foundation and the United Kingdom's Department for International Development (DFID) the WG is currently facilitated and administered by the World Conservation Union (IUCN). The WG-CIFM is committed to discovering better ways to engage communities in the sustainable management of forestlands and for providing opportunities to communicate their experience.

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Front Cover: Gorachand Mahanta and members of the Budhikhamari Joint Protection Party stand proudly by one patch of the 3,000 hectare forest that they have transformed from degraded scrub to lush, young secondary growth over the past 15 years through their federation of 95 villages in Mayurbanj, Orissa, India. *(photo: Poffenberger)*

Back Cover: Farm families grow rice between rows of eucalyptus trees under a social forestry project administered by the Bangladesh Forest Department. *(photo: Poffenberger)*

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COMMUNITIES AND FOREST MANAGEMENT IN SOUTH ASIA



Mark Poffenberger, Editor

**A REGIONAL PROFILE OF
WG-CIFM
THE WORKING GROUP ON COMMUNITY
INVOLVEMENT IN FOREST MANAGEMENT**

FOREWORD TO THE REGIONAL PROFILE SERIES

This series of regional assessments was initiated by an international group of individuals concerned about the future of the world's forests. We began meeting during the sessions of the Intergovernmental Panel on Forests (IPF) convened by the United Nations in New York and Geneva between 1996 and 1997. In order to promote regional exchange and better inform international policy dialogues, we formed the Working Group on Community Involvement in Forest Management (WG-CIFM). The World Conservation Union (IUCN) agreed to facilitate our activities and administer financial support which was provided by the Ford Foundation and the United Kingdom's Department for International Development (DFID).

The Working Group currently includes forest administrators, planning officers, forest scientists, environmental activists, and diplomats. Our discussions of the underlying causes of deforestation and promising strategies to bring greater stability to the world's forests revealed many similarities between our regions. Most group members agreed that the expansion of government and private industry control over forests in the past century had increasingly undermined the management role of communities in their nations. In some cases this was reflected in the deterioration of indigenous forms of resource stewardship, in others policies did not allow for localized systems of forest rights and responsibilities to be established. Many participants reported that a growing number of communities in their countries are attempting to gain greater control over their forest resources. Nations in both the South and the North are beginning to address this imbalance by developing policies and programs to re-engage communities in forest management decision-making.

During the meetings of the Working Group we noted that many government forestry agencies are under-financed, their budgets cut over the past decade due to political changes and economic restructuring in both developed and developing countries. While the public forests are under unprecedented pressure from industry as well from local and urban public forest consumers, many forestry agencies face severe financial constraints and staff reductions that frustrate their attempts to sustainably manage national forests. At the same time, economic recessions and government downsizing have been catalysts for innovative solutions to forest management problems.

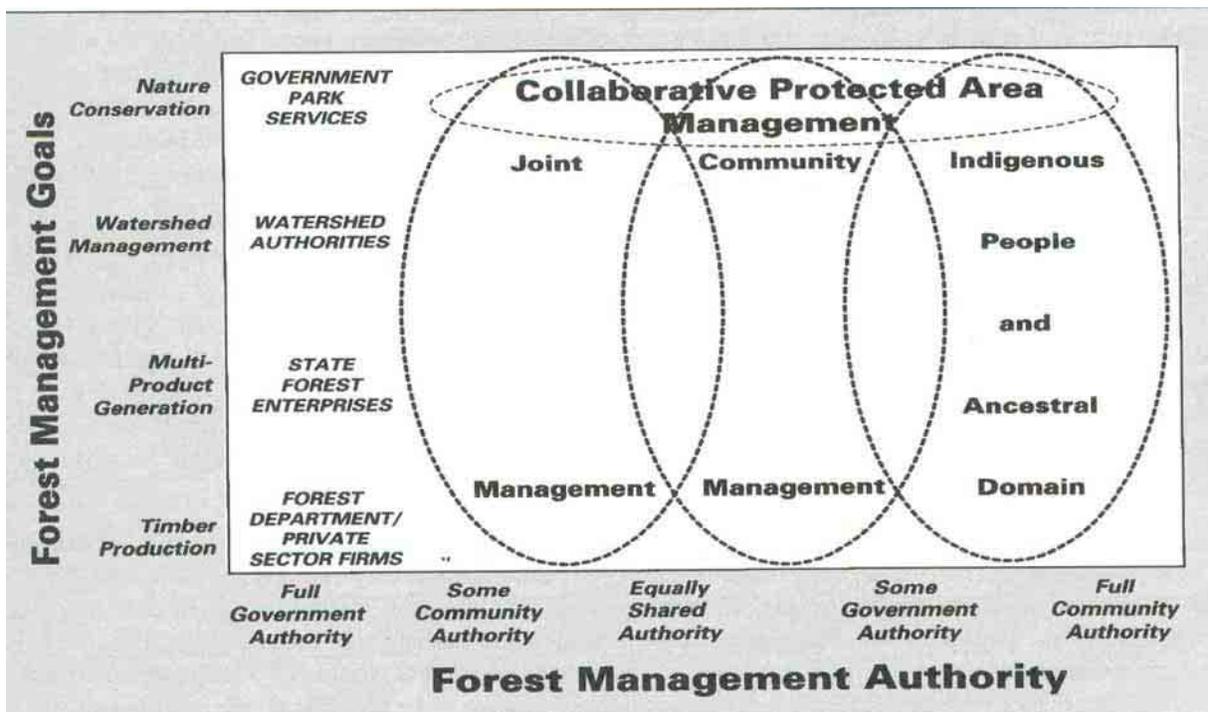
Working side by side with local communities, some forest agencies are forging new partnerships and approaches to forest management. While the subtle pace of this change cannot stem the criticism from conservationists, industry, and local communities not experiencing change, the dialogues and partnerships have sparked a new dynamic animated by citizen's coalitions and regional processes incorporating diverse stakeholder groups. Our group concluded that these parallels warranted a sharing of community forest management experiences between countries in the hope of accelerating the development of more effective strategies to engage forest stakeholders in sustainable forest management.

Throughout the process of the Intergovernmental Panel on Forests, the Working Group sought to introduce language to the draft recommendations that could contribute toward creating new policies that support greater community involvement in forest management. The Working Group convened six times during the meetings of the Intergovernmental Panel on Forests between 1996 and 1998. Over 150 individuals have participated in these sessions. The Working Group was able to effectively influence the

final text of the IPF that resulted in some 135 proposals for action approved by governments in June 1997 at the United Nations General Assembly Special Session.

In order to extend our exchanges to colleagues and other interested readers who were unable to participate in the Working Group, we decided to establish a monograph series that characterizes some of the diverse community forest management experiences from each of the world's regions, emphasizing community perspectives. We defined "community" broadly to include small forest-dependent settlements, indigenous peoples, as well as the greater civil society. This broad definition presented the challenge of capturing the inevitable diversity of opinion present in the realm of forest "stakeholders," literally, all those who have ties to or needs that are met through forest environments. Members of the Working Group agreed that the profiles should reflect a range of views of communities, planners, foresters and other stakeholders within each country. The profiles attempt to be both a synthesis and a mosaic of these complex and diverse national and regional realities.

The degree to which community involvement in forest management (CIFM) is recognized by governments and is integrated into state management goals varies widely. Presently, much of the world's forests are used by local communities, whose interactions are mediated through institutions that range from highly traditional to very modern, and whose legal control ranges from nothing to absolute. Because community forest management is often based on local organizations that are frequently unregistered and fall outside formal policies and prescriptions, local forest-dependent inhabitants have been the hidden component of management in the forestry sector. The communities' role may extend from passive engagement to active participation in goal identification, objective setting, controlling implementation, and assessing results. In some areas community involvement and authority may be comprehensive, based on granted legal autonomy or



simple isolation. In 1997, the Working Group developed the following chart to reflect the broad spectrum of ways in which communities interface with government management strategies and the varying levels of authority they may hold.

The goal of the regional profile series is to communicate CIFM experiences between regions, targeting diverse audiences including international policy makers and national planners who are responsible for shaping forest management policies and strategies, as well as the forestry practitioners and development specialists who implement them. To familiarize our cross-cultural audience with the national contexts, each regional profile provides a brief summary of the region's forest management history, human ecology, and administrative organizations, followed by a series of CIFM case studies.

Each regional profile is compiled with the collaboration of many individuals and organizations engaged in the countries of the region under review. The contributors include a mix of generalists and in-country specialists who draw on an extensive collection of existing histories, policy reviews, ecological assessments, personal interviews, and case materials. During the assimilation of materials for review, the editor and the contributors participate in national and regional meetings to capture contemporary views and policy trends. Outside reviewers read and comment on a succession of draft manuscripts to better ensure a balanced presentation. Nonetheless, given the controversial nature of the forest policy debate, numerous differences over the interpretation of data or the validity of information are likely to occur. For this reason, the Working Group feels that it is important to act independently of any organization or institution. The findings of each regional report are therefore the responsibilities of the editor. I hope our readers find these materials useful in seeking new solutions to forest management issues.

---Mark Poffenberger, Series Editor

PREFACE

This regional profile focuses on five South Asian countries including Bangladesh, India, Nepal, Pakistan and Sri Lanka. The report is based on a wide variety of sources including interviews with villagers, foresters, NGOs, development specialists, researchers, and national planners, as well as books, project documents, field studies, and other materials. This report also draws on the editor's own work in the region over the past twenty years, updated by two visits throughout the region to collect materials for the report in November 1999 and March 2000. Unfortunately, resources were not available to extend the study to Bhutan, Sikkim, or the Maldives Islands.

The regional review process illuminated dynamic national policy environments with civil societies concerned and motivated to take action around forestry sector issues. As part of the larger regional social and environmental context, South Asia's forests are being influenced by a number of broad changes taking place in the region. The growing openness of multi-party democratic processes, the decentralization of governance systems, and the devolution of greater authority over planning and financial management to local administrations are all ongoing trends in many nations. These changes are contributing to the creation of enabling environments allowing communities greater access to public forestlands and driving supportive policy reforms.

At the same time, the forests of South Asia are in poor ecological health. After a century of commercial exploitation, they continue to degrade as rural populations of resource dependent peoples grow and the urban industrial demands expand. Increasingly, rural and urban dwellers alike are cognizant of the decline in the quality of their physical environment and many have begun taking action. In villages, towns, and cities, teachers and students talk about environmental issues in the schools. Village leaders, local government officers, NGO organizers, university staff and students, and other actors are mobilizing public opinion and catalyzing environmental action. The emergence of localized forest protection initiatives in virtually every country in the region is one manifestation of these environmental concerns and efforts to stabilize threatened ecosystems.

In recent decades, national governments in South Asia have begun changing their orientation towards the natural environment. National development strategies no longer view the natural resource base as a means to jump-start economic development. Most countries have instituted strict restrictions on commercial timber felling. Many have formulated new policies giving precedent to protecting the environmental service functions of forests and upland watersheds and limiting use to meeting the subsistence needs of forest dependent communities. Most of the region's forestry agencies are several decades into structural reforms to shift their orientation from timber management to the provision of technical extension and development support to rural villages.

This report attempts to highlight some important trends occurring in the forestry sector in South Asia, both at the national policy level as well as on the ground. In Part I some fundamental shifts in dominant forest management paradigms are discussed, with an emphasis on the transition from industrial forestry, to government driven social forestry, and most recently the vesting of varying degrees of control over public forests with community user groups. Part II examines the history of varied forest management traditions in the South Asia region, providing a brief summary of how these legacies continue to influence the new directions forest management systems are taking. Part III offers a short description of important forest ecosystems in South Asia.

Part IV provides a series of national profiles of the forest sector describing the events that have shaped the contemporary policy environments in each nation as well as the current projects and programs that embody its operations. National forest policy frameworks are analyzed in terms of their limitations and support for engaging communities as forest managers and supporting local initiatives. Part V provides readers with a selection of case studies from South Asia that reveal some of the diverse contexts in which community forestry is practiced, as well as the challenges villagers face as they attempt to stabilize their forest resources and the roles outside actors play in current transitions. Part VI provides a brief overview of the challenges confronting community forestry in the region including the framing of supportive national policies, integration with democratization and decentralization processes, the needed reform of forestry agencies, establishing sustainable sources of financing, and the building of local management capacities.

The intention of the regional profile series is to capture the experiences of communities, forestry agencies, NGOs, and development projects with participatory modes of forest stewardship in order to communicate them to the people of other parts of the world. The South Asia story told here is important, as some of the world's most vital and innovative community-based forestry initiatives are located in this region. This profile seeks to explain why and how some of the earth's poorest people have been able to establish effective management systems over millions of hectares of nationalized forestlands, facilitating their rapid regeneration. As this profile indicates, while daunting challenges confront the forest-dependent communities of South Asia, in many parts of the region grassroots environmental movements are gaining momentum and political support. If present trends prevail, in coming decades much of the region's forestland will be transferred to the custodianship of rural people. South Asia's experience therefore carries important lessons for other regions of the world.

---Mark Poffenberger, Editor

ACKNOWLEDGEMENTS

The goal of this regional profile is to provide a broad overview of South Asian experiences with community forest management. Countries covered in this review include Bangladesh, India, Nepal, Pakistan, and Sri Lanka. The materials presented here are drawn from field visits, group discussions, interviews with villagers, foresters, and policy makers, as well as from papers prepared by contributors to the review and secondary documents. While the views presented herein hopefully reflect a broad composite of these sources, they are ultimately the responsibility of the editor, and are not necessarily those of the funding or administrative organizations. Dozens of individuals have made this report possible, and while it is not possible to list them all, they have all enriched the content of this profile and I am indebted to them for their support and guidance.

Part I provides a broad introduction to the region's forest management context, highlighting some important paradigm shifts that have occurred as South Asian societies struggle to sustain their natural ecosystems in a context of expanding populations and increasing urban-industrial demands. I am especially grateful to Madhav Gadgil, Ramachandra Guha, K.B. Shrestha, and other scholars and foresters who have helped to identify important management paradigms emerging in the region, as well as the forces that shaped them.

Part II delves into the rich history of forest management in South Asia. Dietrich Brandis and B. Ribbentrop in particular, left the world with an important legacy in documenting the history of forestry pioneers during the colonial period. Richard Grove, Ranabir Chakravarti, Ramachandra Guha, Richard Tucker, Ajay Rawat, Chetan Singh, Krishna Ghimire, David Arnold, David Hardiman, Mahesh Rangarjan, and many other scholars, are expanding our understanding of the history of forestry. In particular, how the past continues to affect us today and provide society with indications of where we might be tomorrow. In Part III, the discussion of South Asia forest ecosystem is based primarily on the excellent work of H.G. Champion and S.K. Seth, enriched by the scholarly work of G.S. Puri and M. Salar Khan.

The national reviews presented in Part IV received contributions from many individuals. The section on Bangladesh was co-authored with Junaid K Choudhury. I would also like to thank the Bangladesh Forest Department for their assistance with this project and the use of their library. Special gratitude is due to Shaikh Mizanur Rahman for his thoughtful writing and to the foresters who accompanied me to the field. I am also grateful to Anun Nishat for his valuable input. Many individuals helped develop the India overview. Special appreciation is due to N.C. Saxena, my co-author and longtime chronicler of social and community forestry in India. I am also most grateful to C.P. Oberai, Inspector General of Forests and his additional IGF, M.K. Sharma, for their generous time providing interviews for this report. Thanks, too, to V.K. Bahuguna, Emmanuel D'Silva, Ashish Kothari, Angana Chatterjee, S. Palit, and Irshad Khan. The Nepal country report was co-authored with Amrit Joshi, with much valuable input from KB. Shrestha, Kaji Shrestha, Nick Roche, and Anupam and Kiran Bhatia. The report on Pakistan is based on the excellent work of Javed Ahmed and Fawad Mahmood. Finally, the Sri Lanka national profile was co-authored with Anoja Wickramasinghe. I am grateful to the Sri Lankan Forest Department for their supportive inputs, with special thanks to Sarath Fernando.

The case studies presented in Part V are the stories of communities involved in forest management, and the villagers themselves deserve first acknowledgement for their accomplishments. The case of the Garo of Bangladesh was carefully documented by Kibriaul Khaleque in the 1980s, and was recently updated in an excellent book by Philip Gain. The Madhupur case study draws heavily on the work of both authors. The Indian case study from Rajasthan was co-authored with D.N. Pandey, who spent several years working in the area as a Divisional Forest Officer. The report on forest protection committees in Orissa is informed by the work of Gorachand Mahanta, a leader of the FPC movement in Mayurbanj District. This case also draws on the prior research of many individuals including Angana Chatterjee, Deepak Pani, Bibekananda Pattnaik, Neera Singh, B.P. Singh, Abhash Panda, and others. The study of Kavre UDC was written collaboratively by Raj Bahadun Shresta and the editor. The case study from Pakistan is based on earlier reports by Tariq Husain, Abdullah J an and Fawad Mahmood, with commentary by Javed Ahmed. Finally, the Sri Lankan story of Ritigala was based on the fieldwork of Anoja Wickramasinghe and her students.

Special thanks are due to Simon Rietbergen, Dagmar Timmer, and Ursula Senn who facilitate and administer the Working Group on Community Involvement in Forest Management (WG-CIFM). I would also like to express my appreciation to the agencies that financed this project and their program staff, in particular John Hudson at the United Kingdom's Department for International Development (DFID) and to Michael Conroy at the Ford Foundation.

The production team that brought this report to its present state included Kevin Kolb, our reliable and artistic cartographer, Shirley Poffenberger, our careful manuscript reader, Inna Jane Ray, our lay-out expert and artist, and Drew Herzoff at Postscript Press in Oakland, California, for a great printing job. But, most of all, I am indebted to Kate Smith-Hanssen, Assistant Series Editor, for helping to develop and organize the text into its present form and for her thoughtful and careful editing.

---Mark Poffenberger, Editor

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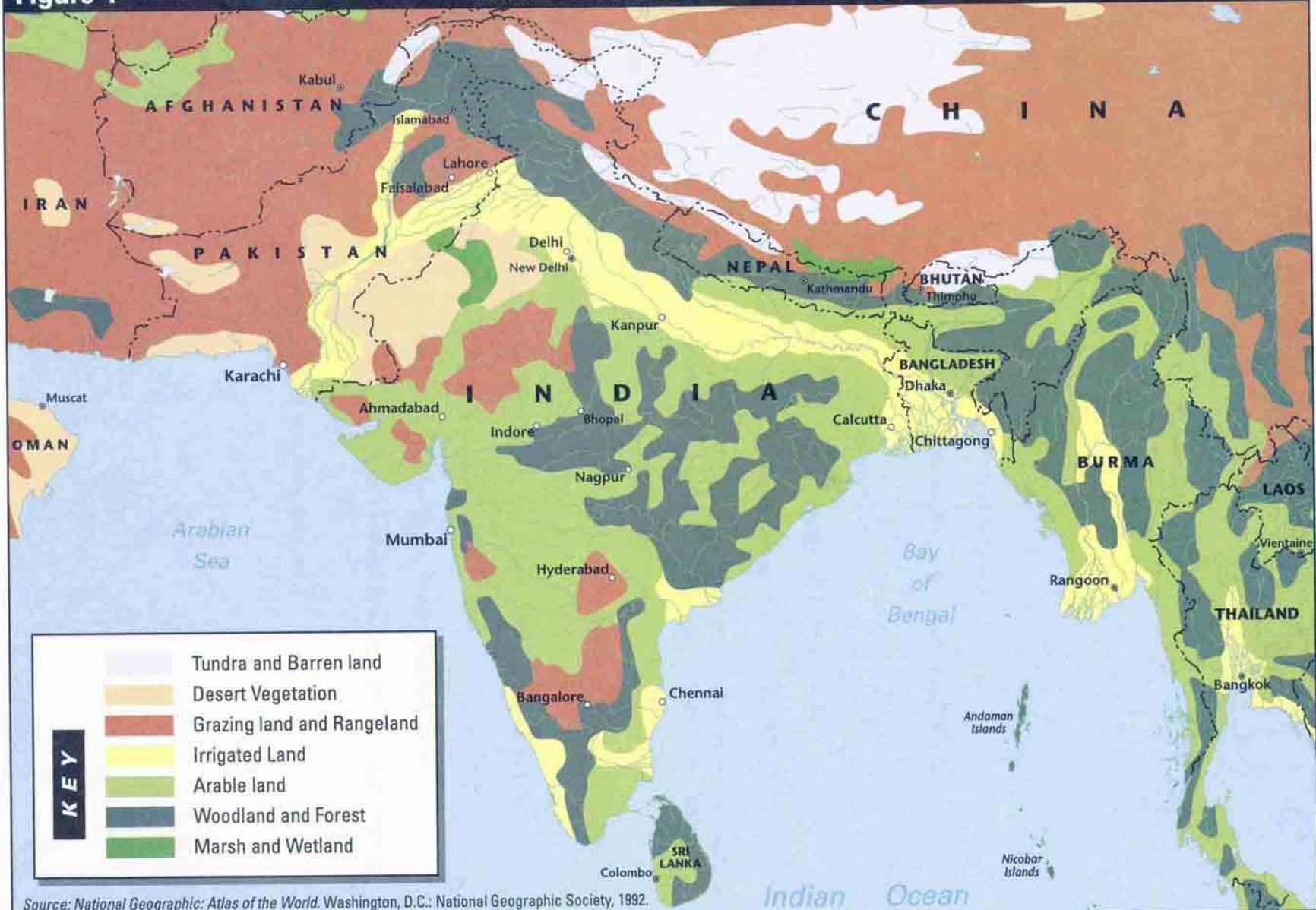
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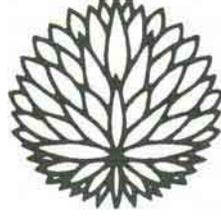
Figure 1

LAND COVER IN SOUTH ASIA



Source: National Geographic: Atlas of the World. Washington, D.C.: National Geographic Society, 1992.

PART 1



INTRODUCTION

For millennia, South Asia's landscape possessed extensive and diverse forests. Five thousand years of written history bears testament to the region's natural beauty and abundant wildlife, present in a myriad of contexts. Montane forests stretched the length of the Himalayas from Burma to Afghanistan, towering evergreen rainforests rich in biodiversity cloaked India's eastern and western Ghats, deciduous monsoon forests blanketed the central Deccan, with dry thorn forests stretching into the semi-arid western parts of the region. In the massive river deltas of the Ganga, Brahmaputra, Yamuna, and Indus rivers, vast mangrove forests stretched far out to sea. As recently as a century ago, South Asia still retained vast forest lands, but currently less than 10 percent of the land area possesses intact forest ecosystems (see Figure 1). According to O.H.K. Spate and A.T. Larmonth's classic study of India and Pakistan:

*The natural vegetation of the Indian Subcontinent, except on the higher mountains and in the more arid parts of Baluchistan and the Thar, is essentially arboreal. It has, however, been cleared, exploited and degraded to such an extent that this statement has little practical significance today... Three millennia of clearing for cultivation and of unregulated grazing, both often produced by burning the jungle, have thus stripped the forest from nearly all the plains, and much of the lower hills and plateaus, or turned them into scrub.*¹

While the transformation of South Asia's forested landscape has occurred over thousands of years, the acceleration of forest clearing has largely taken place in the past one hundred and fifty years. The dimensions of human and livestock pressures on South Asia's natural resources are of an immense scale presenting private, community, and government managers with tremendous challenges. Creating effective management systems that can meet the demands for social and environmental services, industrial timber, and other raw materials is a daunting task. Since the forces influencing forest use are highly dynamic so, too, are the evolving strategies. This introduction examines the types of pressures currently impacting forest ecosystems in the subcontinent, and then reviews how forest management paradigms are shifting in response to growing social and physical demands upon natural resources.

EXPANDING RESOURCE PRESSURES

Historical evidence points to extensive forest cover in the Gangetic plains well into the nineteenth century.² As the region's population quadrupled in the twentieth century to over a billion, pressure on natural resources has expanded dramatically, especially forest clearing for agriculture and industrial demands for timber.³ By 2000, the population of South Asia exceeded 1.3 billion people on a land area one half of the size of the United States. Approximately three of every four South Asians live in rural areas and

most are involved in agriculture. Across the region, the average per capita income is only \$400, ranging from \$210 in Nepal to \$810 in Sri Lanka, in sharp contrast to the \$30,000 per capita figure for the United States.⁴ With hundreds of millions of people subsisting on less than one dollar per day, the dependence on deriving livelihood from the natural environment is an important strategy for a large part of the region's population.

Forests produce immense quantities of fuelwood to supply households with cooking and heating materials, as well as providing wood and charcoal to hundreds of thousands of small industries. Forest leaves are a critical source of nutrients for agricultural systems, providing fodder for livestock and green manure for farmers' fields. Forests provide important services in enhancing water supplies, controlling erosion, and moderating microclimates. In upland areas where erosion rapidly depletes the bare agricultural soils, only through the transfer of nutrients from forests can the productivity of the land be sustained. In many parts of the subcontinent, forests are key elements of local watersheds and catchment areas, slowing the run-off during periods of heavy rainfall and facilitating the recharge of shallow aquifers. Local water sources, whether they be shallow wells, springs, or streams, provide the domestic water critical to the survival of rural families.

The population of forest dwellers in South Asia is estimated between 120 and 150 million people, of whom approximately 70 to 90 million are members of tribal communities.⁵ Forest dwelling communities are among the poorest segments of the society, heavily dependent on the natural environment for the collection of food, fodder, fuel, medicines, materials for shelter, and sources of raw goods for cottage industries. In most countries within the region, over 95 percent of all natural forests are under state management and, as a consequence, forest resident peoples often have no or limited resource or land tenure security.

In addition to forest residents, an estimated 350 to 400 million people are directly dependent on forests for products and environ-

mental services. India possesses 20 percent of the world's cattle, often relying on forests for fodder. The appetites and hooves of hundreds of millions of goats, sheep, camels, and other ruminants has constrained the regeneration of natural forests in South Asia through their continuous grazing pressures. Forest dependent peoples are placing increasing demands on natural forests for fuelwood, fodder, and raw materials that are collected on a regular basis providing important supplements in the form of subsistence goods or cash income.

Rural and urban residents who live at greater distance from the forests are still indirectly dependent upon them for ensuring that upstream watersheds are conserved, climates are stabilized, flooding is minimized, and water supplies are enhanced. The region's population of 1.3 billion all share varying levels of dependence on the forest, and this will grow with increased consumption as the population expands to 2 to 2.5 billion by the year 2025. While demographic pressures amplified by increasing consumption are rapidly expanding demands on the region's forests, the productivity of natural forests across South Asia is falling steadily. The overall rate of deforestation ranges from 1 to 3 percent annually in Bangladesh, Pakistan, Nepal, and Sri Lanka. While India claims that deforestation has ceased after experiencing annual losses of one million hectares throughout the 1970s and 1980s, the apparent stabilization is supported by statistics from reforestation projects, while many natural forests continue to be rapidly depleted.

For example, the Government of India recently reported that only 5.5 percent of all forests possessed a crown cover of 70 percent or more.⁶ Estimates made in the mid-1980s of the area of degraded forests in India placed the figure at over 35 million hectares, more than half of all forest area. While approximately 23 percent of India's land area is registered as forest only 9 to 11 percent retains good forest cover. In Nepal and Sri Lanka, official figures are 33 percent and 28 percent respectively, though the area covered by good forest is far less. In Bangladesh and Pakistan, legally designated forest alone is a fractional 7 percent and 2 percent respectively.

The impact of forest fragmentation, shrinkage, and degradation combined with population expansion means that the forest area per capita has diminished far below levels considered desirable. In societies with rural, resource dependent populations, 0.5 hectares of forest per person is considered minimal. In most South Asian countries the level is between 0.1 and 0.05. In examining the underlying causes of deforestation there is often a tendency to place blame on loggers, dam builders, landless people, women fuelwood cutters, or swidden farmers, but the reality is often far more intricate. No single actor, policy, or project is responsible for the degradation of South Asia's forests. The clearing of the forests of South Asia is part of a process of ecological change shaped by many actors through their interactions with the natural environment over time.

Government authorized timber extraction, illegal logging, fuelwood cutting, grazing, fire, and agricultural conversion have often occurred in the same areas and have contributed to the deterioration of South Asia's forest ecosystems. In recent decades, government planners, forest managers, and communities have taken a wide variety of steps to slow forest loss including formulating policies, designing new management systems, and implementing projects to control use and ensure forest protection. Some of these initiatives will be presented in Parts IV and V of this report. Before moving to subsequent sections in this regional profile it may be helpful to briefly describe some of the important forest management paradigms that shape the behavior of South Asia's local and national communities towards the stewardship of the region's forests.

TRANSITIONS IN FOREST MANAGEMENT PARADIGMS

While populations and forest exploitation levels have expanded dramatically over the past one hundred and fifty years, fundamental shifts in human resource management systems have also played a part in shaping the fate of the forest. These changes in social approaches to forestry result from the competition of different paradigms or models of management. Each paradigm is based on a set of assumptions that reflect the

beliefs of the holder regarding values, goals, operational methods, and so forth. Government administrators, rural communities, foresters, NGO leaders, development specialists may each work from a different perspective in their approaches to forest management, and these change over time. As a consequence, in South Asia a variety of forest management paradigms exist concurrently, sometimes in direct conflict, at other times in a parallel existence, or even in collaboration. The paradigms are also being constantly rearticulated and transformed to adapt to alterations in the political, economic, social, and natural environment. The following discussion attempts to describe some important forest management paradigms that have operated in South Asia in the past and continue to play an important role in defining how society approaches the management of the region's forests.

THE INDIGENOUS FOREST MANAGEMENT PARADIGM: COMMUNAL AND FEUDAL

South Asian cultural communities practice a wide variety of resource use systems that they have adapted over the centuries according to local environmental conditions, with each strategy retaining important roles for trees and forests. The resource use systems of different cultural communities often overlap, with dominant practices determined by environmental, economic, cultural, and historical factors. Rural resource use systems include sedentary agriculturalists, shifting cultivators, forest hunters and gatherers, coastal fishers, and pastoralists, both migratory and sedentary. Farming systems are intricately designed to conform to the conditions imposed by mountains, riverine valleys, dryland plains, and deltas. Forests provide a wide variety of different services, one of the most critical being the regulation of hydrological functions. In drier regions, forests slow watershed run-off and assist aquifer recharge.

Madhav Gadgil describes two major social systems of resource use that dominated South Asia during the pre-colonial period. The first system was practiced by the hunter-gatherer-shifting cultivator societies, that extended throughout northeastern India and the eastern hills

of Bangladesh, across central India from the Aravalis to the Chota Nagpur plateau, down the Eastern and Western Ghats encompassing the Deccan, and in much of interior Sri Lanka. These tribal systems were dependent on homogenous, hamlet-based groups who held their territory as communal property. Long rotation farming allowed fallow land to regenerate into young forests as part of the agricultural cycle. Valuable trees like mango and *mahua* were protected from felling, while selected aquatic and terrestrial areas were set aside as *refugia*, socially sanctioned and protected as sacred groves and ponds.⁷ Today, sacred groves are found throughout the Indian subcontinent, and historical research often links them to sites established by tribal communities centuries ago, even if they have been adopted by dominant Hindu or Islamic agricultural communities. In addition to sacred woods and ponds, tribal communities chose individual species for protection including a range of totemic plants, birds, and animals. An example, of such management systems is presented in Part V.

Since much of the area inhabited by the tribal communities was dense forest with endemic malaria to which indigenous peoples had developed some immunity, these regions retained low population densities and were slow to be settled by outside farming and pastoral groups. Tribal peoples were also frequently engaged in internecine warfare with one another, and were experienced in repelling the attacks of outside forces, relying on the forest as a place of refuge.

Gadgil contrasts the tribal system of resource use with the agrarian system of South Asia that was practiced in the fertile river valleys. These farming communities shared certain similarities with the tribal hunting and gathering settlements in maintaining autonomous social units with internal administration. Reflecting their communal identity, farming villages paid taxes to local rulers as a unit, not as individual households. While the chiefs held nominal authority over these communities, their welfare was dependent on that of the villagers. While sedentary farm fields were privately owned, all other property was kept and administered by the village as a whole. Each cultural community had systems of

roles, rules, fines, and fees to ensure that water, forest, grassland, and other critical resources were sustainably managed.

A major social distinction between the tribal and agrarian systems was the existence of hierarchical caste structures within the farming communities. In addition, each caste or group had distinctive relationships with the resource base. In one study from the Indian state of Karnataka, researchers found that up to the present time each of the eight caste groups in the village collect a specific and strikingly different variety of plants, reflecting their occupational specialization such as cane furniture maker, palm leaf mat weaver, etc.⁸ The diversity of resource use systems in South Asia remains immense, and while there has been continuing integration of the tribal system into the agrarian system over the past two hundred years, tribal communities retain many of their traditional values, organizing strategies, and technical orientations towards forest management. It can be argued that the greater economic dependency on the forest by tribal communities and the corresponding centrality of forests in their belief systems explains the remarkable spread of hamlet-based forest protection groups in tribal areas of South Asia over the past twenty years.

In the Himalayas, among the sedentary farming communities, forests also play a critical role in sustaining upland agriculture. Immense quantities of leaf litter are transferred every season from the forest to the field in order to add nutrients to the soils that are particularly subject to erosion given the steep topography. Forests, too, provide the grass and leaf litter to feed the cattle and buffaloes that in turn supply the urine and manure to enrich compost for their farmland. Finally, forests provide the fuel needed to survive in a temperate environment, as well as the timber for housing and tools. Himalayan communities routinely sanctify forest above hillside springs to ensure their water resources, while using forests as a source of wild vegetables and game.

Lowland farming communities in river valleys and dry land areas often live in regions long deforested or in environments where they have lost forest access to the government or

private sector. To meet their own needs for forest products including food, fruit, timber, fuelwood, fodder, and others, they plant trees on their private lands. Some trees are planted on the edges of fields, while existing trees of value are frequently left within the field itself. Forest gardens are often established around or near the house, usually comprising a complex mix of trees, shrubs, climbers, grasses, and herbs that provide fruit, timber, fuelwood, fodder, spices, medicines, ornamentation, and fibers. Seeds are often tossed on compost pits in order to germinate them for replanting within the house garden. Trees are used in emergencies to generate cash, but are also planted as long term investments for children and grandchildren.

South Asia has a diverse group of pastoral peoples. In Pakistan and western India alone these include the *gujars*, *ahirs*, *jars*, *gaddis*, *raikas*, and *Sindhi* Muslims. Many of the communities that inhabit the Himalayas, stretching from Central Nepal to northern Pakistan, are pastoral or agropastoral peoples. Pastoral communities in South Asia take advantage of open-access fallow land where they may forage for a day or two, leaving behind the manure from their sheep, camels, and goats. They also seek the stubble of the harvested crops and young grass. In drier climatic zones, where rains are infrequent and highly localized, or where elevation accentuates seasonal differences in the location of abundant grass, moving livestock to fodder is an efficient way to capture scarce resources.⁹

Forests have always provided important grazing grounds and refuge for migratory pastoralists. The forests of the Shivalik range at the foothills of the Himalayas have been important in the seasonal migration routes of many of northern and western India's pastoral peoples. Higher in the Himalaya, pastoralists take their herds to upland meadows and forests during the warmer summer months. It was a threat to these forests that resulted in the Gilgit community mobilizing to resist logging which is depicted in Part V's case study from northern Pakistan. Pastoral peoples have encountered problems as open access forests throughout South Asia have been closed as communities and planners deem

that greater protection is required to sustain remaining natural forests. Many migratory herding routes that have functioned for centuries are now closing, implying the gradual decline of these ancient resource use strategies. While changes in governance systems, forest nationalization, the expansion of transportation and marketing infrastructures, economic monetization, and other social changes have eroded indigenous use systems, these traditions continue to be important components in management in much of the region's natural resources.

THE INDUSTRIAL AND SCIENTIFIC FOREST MANAGEMENT PARADIGM

Across South Asia, concepts of forest management have been heavily influenced by the British colonial administration, which shaped the formal forestry sector during the nineteenth and twentieth centuries. British colonial forestry created a complex paradigm that included legal and policy frameworks, extensive administrative infrastructures, production and conservation management procedures, and training and scientific research programs. The British transferred approaches to sustainable silviculture that were being developed in Prussia, drawing on the expertise of European foresters like Dietrich Brandis and Berthold Ribbentrop, who spent the later part of the nineteenth century establishing technocratic forestry firmly in the Indian subcontinent. Along with new approaches to sustained timber stand management came European concepts of government ownership of forest lands, and bureaucratic and technocratic management. During the same period, the British colonial government in Canada, Africa, and other parts of the Empire was implementing similar land tenure policies, setting aside vast tracts of forest as Crown lands. This process is discussed in the regional profile on Canada and the United States.

Much of the forest policies and land laws that were articulated throughout colonial South Asia during the nineteenth century were retained by newly independent nations of the region in the middle of the twentieth century. The influence of the British Raj on the forestry sector was felt not only in the regional Presidencies under direct



Dressed in khaki uniforms, forestry field staff in South Asia still carry the legacy of the British colonial forest service and its militaristic traditions, however this is changing with the advent of community-oriented management programs.

(photo: Poffenberger)

colonial political control, but within the Princely states as well, where many Maharajas hired British foresters to institute modern methods of forestry. As a result, the colonial forestry legacy has created strong commonalities in the structure and functions of government forest departments in every South Asian nation. This forest paradigm is perpetuated through the national forestry academies and rangers colleges. Across the region, forest administrative units are typically organized in circles, divisions, ranges, beats and blocks, while officers are ranked from conservators, divisional foresters offices, range officers, foresters, and guards. Management prescriptions are based on circle and divisional working plans that are redrawn every ten to twenty years.

There has been a tendency in the past to blame the colonial period for deforestation and the breakdown of indigenous systems of forest management. According to one environmental historian, "Quite clearly colonial rule involved an unprecedented degree of economic penetration and exposure to global market forces."¹⁰ But prior

to the establishment of direct British colonial rule, traders, planters, and other businessmen, both English and South Asian, operating under the East India Company, were involved in the rapid exploitation and forest clearing. In fact, the British Colonial Raj laid the groundwork for the establishment of scientific and industrial forestry throughout South Asia in part to create a framework for controlling forest exploitation and insuring a sustainable supply of timber and natural resource conservation.

Early foresters like Dietrich Brandis saw the need to conserve forests, protect watersheds, and establish systematic felling cycles that insured sustainable yields. Brandis also saw the need to incorporate existing systems of local control and use into the new scientific management paradigm. For example, in 1868, just four years after the establishment of the Indian Forest Service, Brandis proposed the creation of a federation of village forests in Mysore district to regenerate wastelands.¹¹ For Brandis, the potential problems of establishing a state monopoly over

South Asia forests was not so much with the process of nationalizing the land, but in dealing with local resource dependent populations. He noted over a century ago that:

*The trouble of effecting the forest rights and privileges on limited, well-defined areas is temporary and will soon pass away, whereas the annoyance to the inhabitants by the maintenance of restrictions over the whole area of large forest tracts will be permanent, and will increase with the growth of population.*¹²

Brandis' position on the role of communities in forest management, however, was not adopted as government policy. Over the decades to follow, forests were gradually nationalized. By 1929, approximately 22 percent of India's land area had been placed under the jurisdiction of forestry agencies. This systematic dismantling of local usufruct rights and the displacement of customary systems of management through the establishment of bureaucratic agencies redefined human interactions with the forest. In its place, forest departments were established across the region supported by training and research departments. To this day, all South Asian nations continue to share this historic legacy. The scientific forest management paradigm introduced in the later half of the nineteenth century throughout South Asia is discussed in Part II.

THE SEARCH FOR NEW FOREST PARADIGMS

Since the 1950s, the independent nations of South Asia passed through a number of policy phases, reflecting new perspectives on forestry and novel management paradigms. The first policy phase extended from independence until the mid-1970s. It was characterized by the extension of forest nationalization processes initiated during the colonial period, combined with an intensification of industrial forestry activities. These trends were not confined to South Asia, but were apparent in much of the developing world. Throughout the region, governments nationalized most of the forest land held under feudal tenure,

including those that had been the domain of semi-autonomous rulers, sultans, and rajas. A major exception was the recognition of lands held under customary *shamilat* (community property) jurisdiction in Pakistan and northwestern India, as well as the communal forests of the hill tribes of northeastern India. By the late 1960s, 97 percent of all India's natural forests were under the jurisdiction of government agencies, primarily state forest departments.

While rhetorical statements changing the mandate of forestry organizations from "channeling goods and services to the empire" to the "provision of goods and services to populations," the newly independent countries of the region were eager to stimulate industrial development and economic growth by exploiting their natural resources, especially forests. Through state enterprises, national corporations, and leases to private sector firms, logging accelerated and resulted in a rapid decrease of timber stocking levels in each nation. Often allocating exploitation rights at highly subsidized rates, industry quickly moved to take advantage of opportunities to extract timber on reserve forest lands. Throughout South Asia, deforestation rates accelerated during the 1950s, 1960s, and 1970s.

The second policy phase arose in response to the concerns of development planners over the increasing rate of deforestation. The impact of industrial forest use on both important environmental services as well as subsistence fuelwood, fodder, and related needs of South Asia's growing rural populations caused policy makers to rethink their reliance on an industrial forestry model. Yet, letting go of the industrial forest management paradigm was a gradual process. The reasoning in the late 1970s was that industrial utilization of natural forests could continue on a sustainable basis if the demands of rural people could be met from fuelwood plantations and farm forestry located on non-forest lands.

External development agencies were also showing interest in supporting programs to meet the needs of rural people for forest products and, in each country in the region, a variety of social

forestry schemes began to be developed. Typically, these projects targeted non-forest land including village common properties, community pasturage, roadsides and canal embankments, revenue department land, as well as private agricultural land. Between the late 1970s and the early 1990s, hundreds of millions of dollars in project financing flowed into government forest departments from multi-lateral development banks and bi-lateral assistance agencies. National, provincial, and state forest departments created new social forestry wings to implement community woodlot and farm forestry projects in India, Pakistan, Sri Lanka, Bangladesh and Nepal.

This strategy appealed to national, provincial, and state level forestry agencies as it protected their exclusive authority over the protected and reserve forest tracts, while providing them with much larger project budgets to finance their operations. At the same time, social forestry projects in the later 1970s and 1980s provided planners with a vehicle to address the forestry needs of rural populations, while continuing industrial timber operations on public forest lands. These early social forestry schemes encountered some success as well as problems. Progress occurred in reorienting government forestry agencies to respond to the needs of rural people, mobilizing NGOs involvement in the forestry sector, and creating a network of rural forestry extension nurseries, training centers, and environmental awareness campaigns. The early social forestry strategies failed to resolve use and tenure conflicts between forest departments and rural people over access to state forest lands, or to slow their degradation.

The establishment of rural nurseries and subsidized seedlings spurred tree planting on private farms throughout South Asia. However, efforts to target "beneficiaries" and vest "communities" with management responsibilities for newly established plantation woodlots ran into problems in virtually every country. Project planners, for the convenience of implementation and to satisfy donor demands for "participation," often targeted formal village administrative bodies (panchayats, etc.) as the "community" management organization. These bodies were often found

to be far removed from daily forest use activities, had little regulatory capacity or incentive to act as viable resource custodians. Panchayats were often dominated by higher status, political leaders who utilized the project opportunities to meet their own needs, but had less interest in longer term management. Poorer, forest-dependent households had little say in decision making regarding species composition and minimal control over tree harvesting and product distribution.

PEOPLE CENTERED FORESTRY: REBIRTH OF AN OLD MANAGEMENT PARADIGM

Since the early 1980s, South Asian governments have been increasingly concerned over the depletion and loss of their national forests. Each country has launched major initiatives to slow deforestation through a combination of regulatory mechanisms to reduce commercial logging pressures on natural forests, and to engage communities in forest protection. The search for sustainable forest management strategies has increasingly relied on participatory approaches to forest protection and restoration South Asia.

In India and Nepal, a third shift in the post-independence forest management paradigm occurred in the 1980s. While farm forestry was taking off throughout the region in response to the expanding demands of local and regional markets for timber, social forestry projects were failing to meet expectations that they would be able to divert pressures from natural forests. Reserve forests and protected forest areas were continuing to be degraded at rapid rates. Urban-based environmentalists, within and outside government, began voicing the need for conservation, and support for a move away from industrial forestry grew. In 1980, India passed the Forest Conservation Act establishing the primacy of environmental and social service functions for forests, while placing clear restrictions on commercial logging. At the same time, learning from earlier social forestry experiments indicated the need for greater involvement of communities in managing state forest lands. In 1988, Indian policy makers recognized the difficulty in excluding people from natural forests under state

agencies and formally shifted the management goals for natural forests to address the needs of local people and the environment.¹³

In 1990, Nepal dissolved the *panchayat* structure and identified user groups as the primary social unit for managing the forests of the Middle Hills. In the same year, the Government of India established a Joint Forest Management (JFM) strategy to extend authority to hamlet-based groups to act as custodians of degraded reserve and protected forests. JFM programs are designed by state forest departments in India to encourage communities to protect and manage the public forest domain. In the past decade, twenty-two Indian states have passed guidelines to promote the engagement of communities in the management of reserve and demarcated forests. During the 1990s, 10 to 15 percent of the national forest lands in India and Nepal was transferred to local user groups. In February 2000, the Government of India began extending the JFM strategy to encompass well-stocked forests as well as degraded forests. Nepal is currently debating to what extent it will allow community user groups to manage the valuable sal forests of the Terai. This third phase of management, however, has not taken root to the same extent in Pakistan, Bangladesh, or Sri Lanka. Rather, those nations have continued to pursue the second phase social forestry strategies that allow forest departments to retain exclusive controls over state lands. No substantive policies have yet emerged that legally ratify significant shifts in authority to forest dependent communities over resources situated within the public domain.

SUMMARY

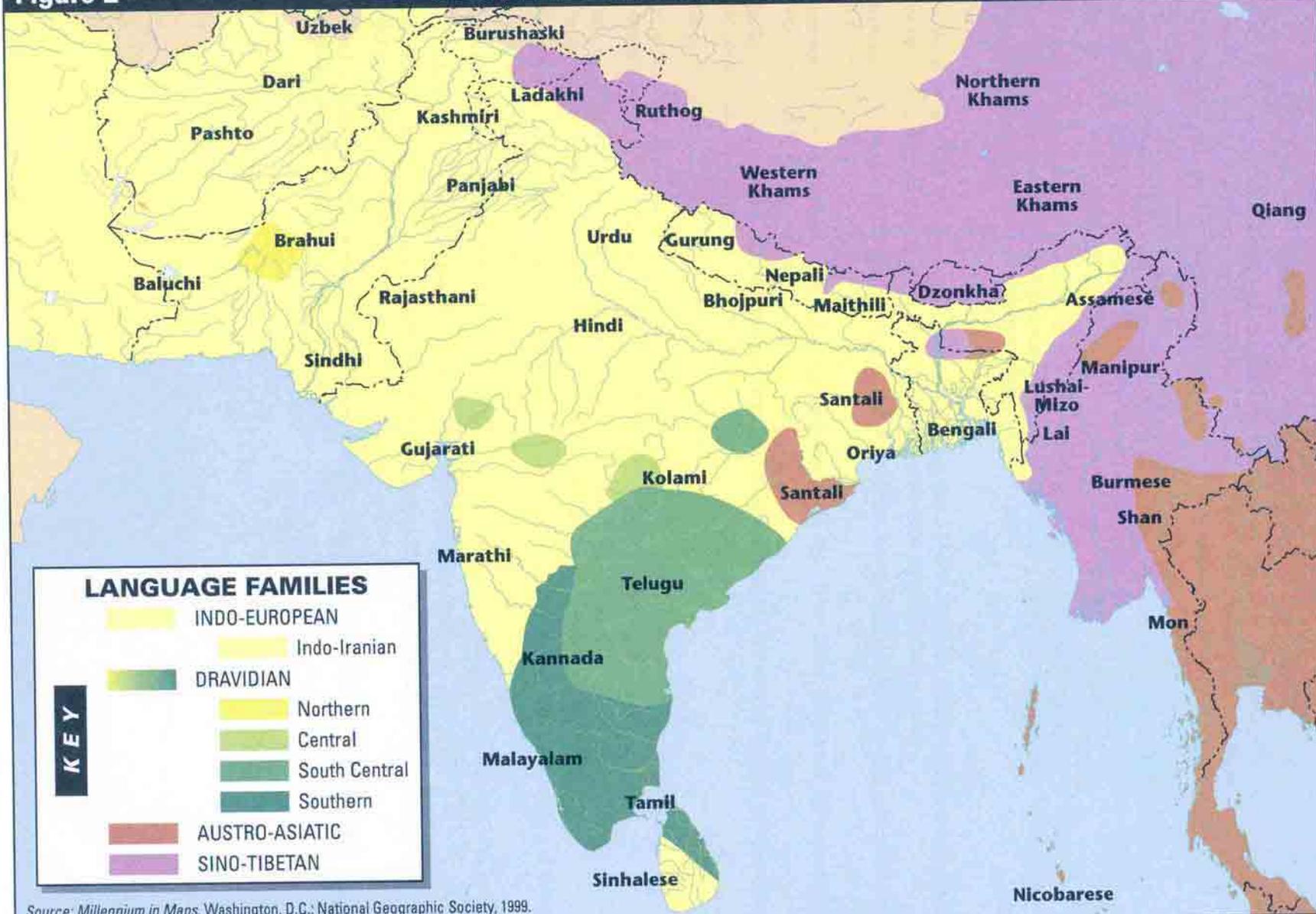
The increasing appearance of localized community forest protection initiatives across the South Asia region reflects growing concerns of

rural people over the deterioration of their natural environment, including deforestation, hydrological disruption, soil erosion, depletion of species diversity and other changes. The rapid spread of community forest management systems across the state forests of India and Nepal has been supported by policy changes taking place over the past decade. Much of the forest protection activities apparent in these two countries are not based on an extension of traditional or indigenous systems of resource stewardship and customary tenure. Rather, they are a new response to a perceived environmental crisis emerging in recent decades as forests have reached states of advanced degradation.¹⁴ The disruption of hydrological systems characterized by reduced stream flow, disappearance of springs, and falling groundwater levels, have greatly contributed to the growing pressures for communities to regain control over degrading forest resources. In addition, the decreasing availability of critical forest products such as fodder, fuel wood, traditional "famine foods," fibers, and other goods essential to the survival of millions of forest dwellers in South Asia are essential factors.¹⁵

Tens of millions of slum dwellers in South Asian cities are rural refugees from collapsing natural environments. Many of those who remain in rural areas know that unless they are able to more sustainably manage their forests, soil, and water resources they, too, will be forced to find their way to urban slums. The emergence of innovative paradigms that foster partnerships between rural communities, government foresters, NGG staff, and university scientists is encouraging. The national profiles and case studies presented in the following pages indicate that from capitol cities to remote villages, promising strategies are beginning to address continuing threats to the region's natural forests.

Figure 2

CULTURAL GROUPS OF SOUTH ASIA



Source: Millennium in Maps. Washington, D.C.: National Geographic Society, 1999.

Notes

- ¹ O.H.K. Spate and A.T. Learmonth, *India and Pakistan* (London, 1967) p.73 cited by George Erdosy, "Deforestation in Pre- and Protohistoric South Asia," Richard Grove, Vinita Damodaran, and Satpal Sangwan, *Nature and the Orient: The Environmental History of South and Southeast Asia* (New Delhi: Oxford University Press, 1998) p.51.
- ² George Erdosy, "Deforestation in Pre- and Protohistoric South Asia," Richard Grove, Vinita Damodaran, and Satpal Sangwan, *Nature and the Orient: The Environmental History of South and Southeast Asia* (New Delhi: Oxford University Press, 1998) p.51.
- ³ E.P. Flint, "Deforestation and Land Use in Northern India with a Focus on Sal Forests 1880-1980," Richard Grove, Vinita Damodaran, and Satpal Sangwan, *Nature and the Orient: The Environmental History of South and Southeast Asia* (New Delhi: Oxford University Press, 1998).
- ⁴ Erdosy, p. 51.
- ⁵ The World Bank, *The Little Green Book 2000* (Washington, D.c.: The World Bank, 2000), note these figures are based on dividing the national Gross Domestic Product by population figures for each country.
- ⁶ These figures are based on estimates made in reports by the FAO, World Bank, and WRI, as well as those of the Asia Forest Network.
- ⁷ Government of India, *National Forestry Action Programme-India, Vol. I* (New Delhi: Ministry of Environment and Forests, 1999) p.18.
- ⁸ Madhav Gadgil, "Deforestation: Problems and Prospects," Ajay S. Rawat (ed.) *History of Forestry in India*, (New Delhi: Indus Publishing Company, 1991) p.18.
- ⁹ *Ibid*, pp. 21-22.
- ¹⁰ For an excellent discussion of pastoral people of western India see Arun Agrawal, *Politics, Markets, and Community Among a Migrant Pastoral People* (Durham: Duke University Press, 1999) p.21.
- ¹¹ Richard Grove, Vinita Damodaran, and Satpal Sangwan, "Introduction" in *Nature and the Orient: The Environmental History of South and Southeast Asia* (New Delhi: Oxford University Press, 1998) p.14.
- ¹² Ramachandra Guha "Dietrich Brandis and Indian Forestry: A Vision Reaffirmed," Mark Poffenberger and Betsy McGean (eds.) *Village Voices: Forest Choices* (New Delhi: Oxford University Press, 1998) pp. 86-90.
- ¹³ B. Ribbentrop, *Forestry in British India* (Calcutta: Government Press, 1990) cited by Ramachandra Guha, p. 90.
- ¹⁴ N.c. Saxena, *Forest Policy in India* (New Delhi: WWF-India and TIED, 1999) p.7.
- ¹⁵ Mark Poffenberger, *Grassroots Forest Protection: Eastern Indian Experiences* (Berkeley: Asia Forest Network, 1996) Research Report Number 7.
- ¹⁶ Owen J. Lynch, "Securing Community-based Tenurial Rights in the Tropical Forests of Asia" *Issues in Development* (Washington: WRI, 1992).

PART II



A BRIEF HISTORY OF HUMAN-FOREST RELATIONS

Human resource use practices have greatly altered South Asia's landscape, eliminating forests in many places, while modifying the species composition and structure in others. Natural processes such as climate change, flooding, erosion, and other forces have also contributed to land cover modification, though none as profoundly as the impact of human beings. While human inhabitants of South Asia have been a major reason for the deforestation of vast areas of the subcontinent, in many areas they have also acted as stewards, protecting the forest from damage by animals, fire, and other groups of people.

The importance of trees and forests is deeply rooted in the region's history and culture reflecting South Asia's social diversity (see Figure 2). Present generations draw on historic traditions as they develop forest management strategies for the future, whether they be Vedic values, custodial practices from the Moghul Empire, or the scientific forestry traditions that grew in India from the early nineteenth century. Due to the continuing influence of South Asia's forest management history on contemporary practice, it is important to review how forestry concepts and practices have evolved in the region.

EARLY PERIOD (2500 BCE - 1000 CE)

There is little evidence of human forest relationships during pre-history and the Indus Valley period (2500 - 1500 BCE). But, human inhabitants of the subcontinent were likely to have been heavily dependent on forest resources. In pre-historic times forests covered much of the

region and, prior to the spread of agriculture, human communities were primarily dependent on hunting and gathering. Forest roots and fruits were an important part of the diet supplemented by wild game, herbs, fungi, honey, seeds, and other forest foods. In Sri Lanka, archeological evidence suggests that man utilized caves, rock-shelters and jungles for his habitation, or built small leaf huts surrounded by wood fences to deter wild animals.¹

Repeated references to forests are found in Vedic texts compiled between 1400 and 700 BCE onwards. The Vedic literature poetically depicts the natural environment, linking the sacred Himalayas, abode of the gods with the holy river Ganga, identifying the forests as the home of great sages. Forests are identified as the location of sacred learning, where individuals of fifty years or more are expected to reside in search of truth. This tradition of intellectual pursuit is called *Tapovana* (forests) and those texts that were prepared and studied in the forests came to be known as *Aranyakas* (belonging to forests).² Early Vedic hymns like the *Atharvaveda* describe medicinal plants in considerable detail relying on a technical vocabulary to identify the morphology and special properties of different species. By the post-Vedic classical period, Ayurvedic knowledge had progressed significantly. The *Dhanvantari Nighantu* directs the physician to master the names of plants in Sanskrit and Prakrit, while the Caraka states that, "a pharmacologist is one who knows the uses and actions of herbs though he may not know their forms (morphology), but an expert physician is one who know the herbs botanically, pharmacologically, and in every other respect."

During the Maurya Period (321 BCE to 236 BCE) King Kautilya's administrative manual, the *Arthashastra*, includes guidelines for the management of forests. According to the text, a superintendent was assigned to monitor forest production, including overseeing timber felling and protection. Fines were levied for illegal logging, arson, and poaching. Eight forest classifications were established, in part reflecting the availability and quality of elephants present in each forest type. The great Mauryan ruler, Asoka, declared several dozen species of animals strictly protected from hunting including parrots, *maina*, geese, swans, partridge, tortoise, squirrels, monkeys, and doves as well as prohibiting the unnecessary use of forest fires for hunting and land clearing.⁴ The Chinese pilgrim Hieun Tsang, who traveled through India from 629 to 645 CE, noted the abundance of wildlife and its protection through religious beliefs and government regulations.

MEDIEVAL PERIOD (1000-1700)

The medieval period began with a succession of invasions by Arabs, Ghaznavids, and Ghoris from the west culminating with the establishment of the Delhi Sultanate (1206-1526). This period was followed with the founding of the Moghul Empire (1526-1850). At times, the authority of these empires covered much of the subcontinent. As the Islamic invaders moved across India, many Hindus took refuge in more remote forested areas, clearing the land for agriculture. More elaborate feudal structures were established for revenue collection from both agricultural as well as forest reserves. As the economy expanded during this period so, too, did the trade in forest products. Monetization was promoted through the collection of land tax in cash. Moghul government policies encouraged the clearing of forests as a way to establish more taxable agricultural lands. Prosperous *zamindar* (landlords) promoted this policy to enhance their personal revenue base. The toll that this agricultural expansion placed on forest resources is reflected in historical documents. While trees were often abundant in the cities, the countryside was widely deforested to allow the expansion of cultivated lands. "The scarcity and dearness of fuelwood was, there-

fore, obvious in such areas, and the poorer people were compelled to use cow dung, mixed with straw and dried in the sun."⁵

Parts of what is now India, Nepal, Sri Lanka, and Bangladesh fell beyond the Moghul realm, however, and was governed by local Hindu rulers or by indigenous tribal communities. In the more remote, dense forest tracts tribal peoples managed the forests for hunting and gathering, as well as practicing long rotational swidden cultivation. Trade in non-timber forest products such as resins, gums, honey, wax, and medicinal herbs was an important component of the economy.

The medieval rulers of India typically viewed the forest as state domain. However, for the most part, they were also cognizant of the customary rights and needs of their villagers. The 1670 edict of the Maharashtran ruler King Shivaji reflects this perspective:

*There are trees like teak in our Kingdom. Such of these as are needed may be cut with the permission of His Highness. What is needed over and above this should be purchased from outside. The mango and jack trees in our own kingdom are of value to the Navy. But these must never be touched. This is because these trees cannot be grown in a year or two. Our people have nurtured them like their own children over long periods. If they are cut, their sorrow would know no bounds. An end achieved by harming one person can serve only in the short run. Rather it would bring ill repute to the ruler who hurts the citizenry. Furthermore, there is grave danger in the loss of tree cover.*⁶

While much of India was cleared of forests during the medieval period, large tracts of forests remained, especially in upland watersheds. The description of a European traveler in the mid-seventeenth century describes an area in the foothills of the Nepal Himalaya.

From Gorakhpur to the foot of the high mountains are still eight or nine days marching, during which the caravan

*suffers much, because the whole country is full of forests, where there are numerous wild elephants, and the merchants instead of sleeping at night must remain on the watch making large fires and firing their muskets to frighten these animals.*⁷

As timber became scarcer in the lowland agricultural plains, logs were transported from the mountains and hill tracts for use in house construction, boat building, and as a source of quality fuel for lime kilns and iron workers. For example, timber from the hills was floated down the Chenab River to Wazirabad to supply the boat building industry. In Kashmir, lime pits eight feet in diameter required 2,000 logs and 16 days labor to properly heat one batch thoroughly.

Local use of the forests in the Himalayas also had considerable impact on tree cover. In 1824, in the Indian hill district of Almora, British visitor Bishop Heber noted that:

*Great devastations are generally made in these woods, partly by the increase of population, building and agriculture, partly by the wasteful habits of travellers, who cut down multitudes of young trees to make temporary huts, and for fuel, while the cattle and goats which browse on the mountains prevent a great part of the seedlings from rising. Unless some precautions are taken, the inhabited parts of Kemaon will soon be wretchedly bare of wood, and the country, already too arid, will not only lose its beauty, but its small space of fertility.*⁸

Historical analysis indicates there was a rapid increase in timber extractions from the Himalayas to the plains of South Asia between the seventeenth century and the early decades of the nineteenth century. In Kirkpatrick's account of his trip to Nepal in 1793 there are frequent references to "wood-dealers" and "wood-merchants" and he notes that logs from the Terai plain are already being shipped to Calcutta. Revenues from timber from a single Terai district were the second largest source of income for the Nepal Government in 1809.⁹ The development of the

South Asia railway system fifty years later would greatly exacerbate forest extraction pressures throughout the continent.

COLONIAL PERIOD (1700-1947)

While deforestation driven by land clearing accelerated during the Moghul period, as the subcontinent was absorbed into the British Empire between 1770 and 1860 the process of timber extraction increased dramatically, reflecting the transition in the region's political economy.¹⁰ During the early colonial period there was little control over timber sales or forest land clearing. According to Dietrich Brandis, India's first Inspector General of Forests:

*Over large districts and entire provinces the forests have been cleared to make way for the plough and the increasing population, and where forests were left, most of the accessible timber was cut and brought away to be used as fuel and charcoal, for shipbuilding, for railway sleepers, for bridges and other buildings.*¹¹

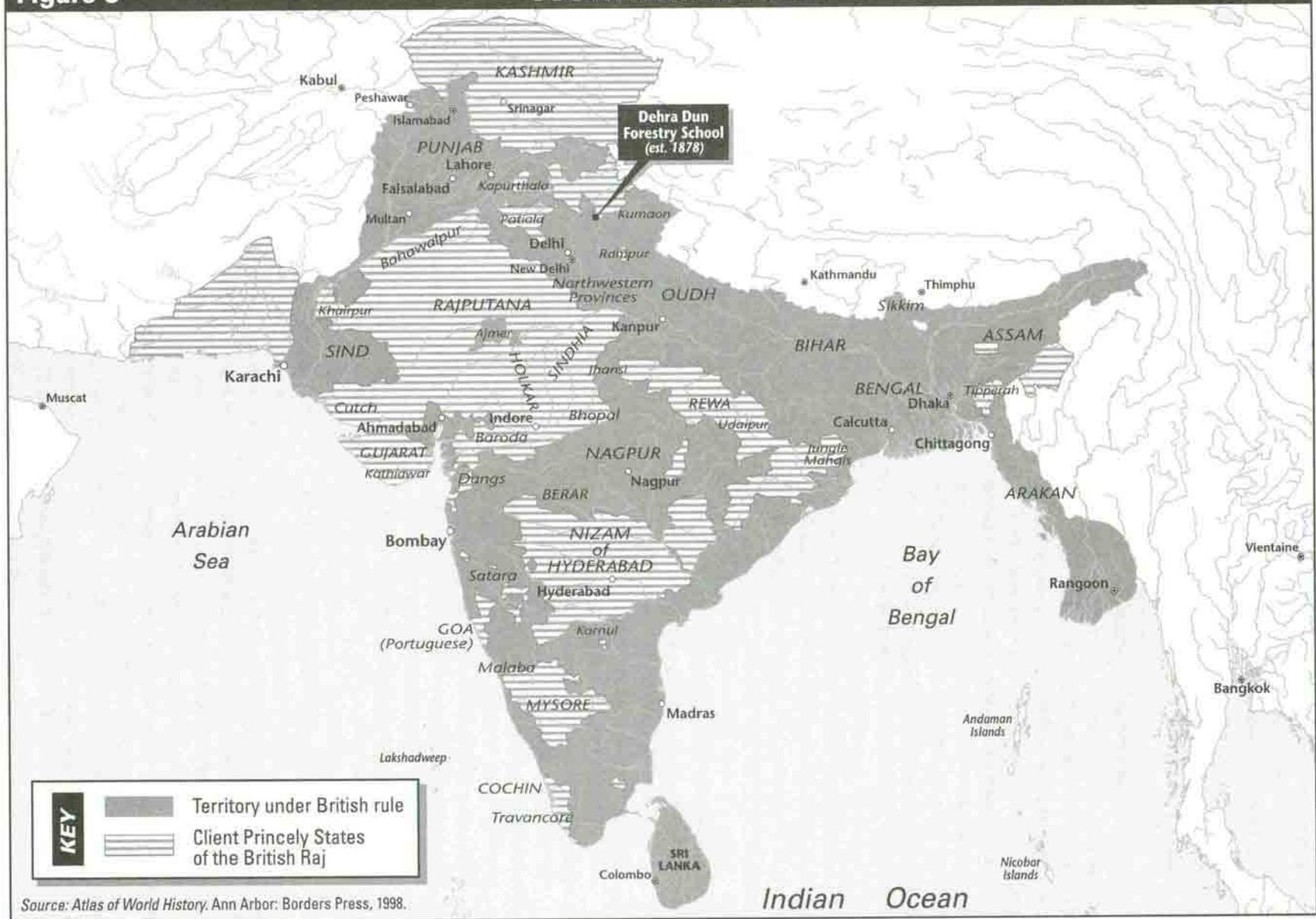
Referring to the early British teak exploitation, Munro writes in 1838,

*The system of throwing open teak forests to all who wish to cut, or giving them to contractors, is in the highest degree ruinous. They cut indiscriminately all that comes in their way; any range of forests, however extensive, would be destroyed if left to their tender mercies.*¹²

The nationalization of forest lands caused widespread displacement of forest-dependent peoples throughout South Asia. The cohesion of rural communities in the subcontinent was undermined as the colonial governance structures were put in place and systems of common property management were eroded. In eastern India's Jungle Mahals, in what is now the intersection of the states of West Bengal, Orissa, and Bihar, the tribal Santal inhabitants resisted British colonial encroachment into their forest lands for over a century. The colonial government was eager to bring the vast uncultivated forests under taxable

Figure 3

SOUTH ASIA IN 1856



agriculture. Landlords subsidized the migration of peasant cultivators to clear forest land and convert it to agriculture. From 1767 to 1816, the Santals staged a series of rebellions, using the forests as a basis for their guerilla resistance struggle.

In the Dangs of southwestern Gujarat, the forest lands of the tribal Bhil chiefs were taken over by the British to supply the navy with high quality teak in 1843. The Bhil chiefs were forced to sign leases hanging over their rights to all timber. According to the petition of the Anandrao, the Bhil chief of Vasurna, "No interruption to our control of the forest was ever experience by us during the Moghul and Peshwa's Government, nor under the British till now." As one colonial official gloated in 1843, ". . . such leases were obtained at marvelously cheap rates from the rude and uncivilized owners by means of persuasion."¹³ The struggle of tribal communities to retain control over their lands and forests in the face of encroachment by governments and outsiders continued well into the twentieth century. One study identified sixty-four incidences of major tribal revolts between 1778 and 1971 in the Chotanagpur Plateau of eastern India among the Bhils of Gujarat and the tribes of northeastern India.¹⁴

The rapid loss of high value timber trees, especially teak and other species used in ship-building began to cause concern among colonial administrators. As early as 1806, Captain Watson of the Police was appointed Conservator of Forest for the Malabar-Travancore region. He moved quickly to establish tight controls on the timber trade, but the government abolished his position in 1823 after timber merchants raised loud protests. In 1840, the Government of Bombay Presidency issued an order to stop teak felling on government land, followed by the appointment of a Conservator of Forests in 1847. In the early 1860s, commissioners of forests were appointed for the North-Western Provinces (now part of Pakistan), Bengal (including what is now Bangladesh), as well as Punjab, the Central Provinces, Coorg, Assam, and several other regions. This process of establishing formal forest management systems culminated with the creation of the Indian Forest Service (IFS) in 1865.

The IFS provided a foundation for the development of land use policies and systematic timber management systems for the British Indian Empire covering most of what today is India, Pakistan, Sri Lanka, and Bangladesh, with parallel systems being followed in British Burma (see Figure 3). Many of the Indian princely states, as well as the Kingdom of Nepal, invited professional foresters to help them establish forest departments and management plans. While South Asian nations have been independent for over one-half century, they share the colonial legacy of a single set of forest management policies, structures, and procedures that have changed little in the interim.

In 1855, Lord Dalhousie, Governor General of India, appointed Dietrich Brandis, a German botanist, to take charge of the teak forests of Pegu in Burma. Based on his impressive work in Burma, he became the first Inspector-General of Forests in India from 1864 until his retirement in 1883. Together with his two successors, Schlich and Ribbentrop, both Germans, the Prussian model of forest management was adapted to South Asian conditions. Dietrich Brandis heavily influenced the IFS through the development of "scientific forest management" Brandis developed a system of age-based classification, primarily for teak and *sal* forest environments, to ensure that a sustainable cutting level could be determined. Sustained-yield management of forests on a scientific basis was the intent of the new system, though its primary goal was to provide a steady stream of valuable commercial timber for industry, while little consideration was given to non-timber forest products or environmental functions beyond basic watershed management

Over the last one hundred and fifty years, the IFS has been frequently criticized for its elite, hierarchical, authoritarian structure and its exclusion of local communities in management. Yet, after a careful review of Brandis' writings, Dr. Ramachandra Guha notes that the first Inspector General realized that:

A narrow reliance on state control and punitive methods of management would lead to great disaffection in the countryside.

Keenly aware of rural rights and demands, this man had suggested, a century and a quarter ago, that India adopt a system of forest management based on a collaborative relationship between the state and local communities. ¹⁵

Brandis' advice to develop collaborative forest management strategies that included rural communities was ultimately rejected by Baden Powell and other colonial government leaders, with the Forest Act of 1878 clearly endorsing a strong state monopoly over forest resources.

The strategy the colonial government adopted was to demarcate and reserve forest areas from the vast area over which the state held nominal claim. At the end of his career in 1897, Brandis wrote:

The administration of forests generally, and in particular the constitution of these Reserved Forests and the procedure by which they are gradually freed from customary rights, which villagers and private persons have been in the habit of exercising in them, are now regulated by legislative enactments. ¹⁶

The Indian Forest Act of 1878, the Burma Forest Act of 1881, and the Madras Forest Act in 1882 provided the legal framework for nationalization, further strengthened by the 1927 Indian Forest Act. All reserves were intended to be retained permanently as forested areas, with first and second class designations assigned to indicate levels of restricted use.

Brandis was eager to expand professional forestry in South Asia and that demanded the training of a new generation of foresters to replace those imported from Germany.

Ultimately it is hoped that a large proportion of native forest officers for the higher appointments may be available... unless the practice of rational forest management becomes the common property of the natives of this country, the permanence of the measures now initiated and their

ultimate beneficial effects will remain uncertain. ¹⁷

He proposed that all protective and executive foresters be natives of India and that they should receive a thorough professional training to allow them to rise to high appointments. He selected Dehra Dun, in the foot of the Himalayas, as the location of the Indian Forest School. Many in government were opposed to the establishment of the school, claiming it was an "over-refinement," and claiming that the only requirement of good foresters was to "be a keen sportsman, have a strong constitution, and plenty of common sense." ¹⁸ In 1878, Brandis was permitted to establish his training center, but was forced to raise most of the funding through managing the forests around Dehra Dun Division. In 1881, the first rangers graduated from the Forest School, and by 1895, 273 professionally trained foresters, all natives of India, had received certification as forest rangers. The students came from across the subcontinent, and in the decades that followed, aspiring young foresters arrived from Southeast Asia, Africa, the Americas, and Europe.

A fundamental component of the scientific approach to forest management was the preparation of working plans. Working plans had to envisage and anticipate the requirements of tree crops that could take one hundred years or more to mature. The time consuming nature of working plan preparation required a large number of professionally trained foresters. All working plans had to be sanctioned by local governments with final approval given by the Office of the Inspector General of Forests. At the local level, forest rangers worked under the supervision of the Civil District Officer. As such, forest policy was divided between the provincial government and the central government.

By the late nineteenth century, forest ranges had been identified as the primary territorial unit of management and were clustered into administrative circles. In 1869, the senior positions of "controlling staff" consisted of Conservators, Deputy, and Assistant Conservators. Under the controlling officers came the "Executive" or Ranger Service who were

assigned at the provincial level. As a consequence, there was a two tiered national "Imperial Service" and a "Provincial Service," with controlling officers part of the former, and executive (rangers) and protective field staff (deputy rangers, foresters, and guards) part of the later.¹⁹ India and many other South Asian countries have retained much of this hierarchical forest agency structure up to the present time.

One result of the process of forest reservation and demarcation was that forest reserves received considerable management attention from government, while natural forests that fell outside the reserves were left open to public use. Writing of Madhya Pradesh forests, one historian reports: "The reserved forests were managed to suit British interest in quality teak and other timber species which were grown and harvested to the prescribed sizes, leaving interests of fodder, grazing, and local timber, bamboo and other forest produce, uncared for." As a consequence, forests outside the reserves were often neglected, even though they were three to four times the size of many of the reserves.²⁰

Yet as additional areas of forest were classified as "reserve," the availability of other forest resources contracted. In Dttara Kannada district, for example, minor forests available for local use shrank from 780,000 hectares in 1880 to only 35,000 hectares in 1910. In 1921 Mr. Collins, a forest settlement officer, noted that villages were appointing watchman to regulate fuel wood collection and felling, and that the government should assist resource dependent communities to form committees to care for village forests.²¹ Yet, it was an industrial model of forestry that dominated South Asia during the first half of the twentieth century. Massive amounts of timber were felled to provide sleepers for railway beds, poles for mines, lumber for the building of urban areas, to meet the needs of industry, and the World Wars I and II. In the forested hill region of the Kumaon in the Province of Uttar Pradesh (V.P.), fuelwood cutting rose from 7.7 million cubic feet in 1914 at the outset of World War I to 24 million cubic feet in 1918.

Tension between the forest department and local communities turned into outright hostility as forest reserves were increased and timber extraction rates in the Kumaon grew. By early 1921, fires broke out across the resinous *chir* pine plantations in the new reserves and the U.P. government feared a mass peasant uprising might take place. Kumaon nationalist groups began to target the provincial forest department's policies. For example, one populist leader, addressing a rural audience in 1921, noted the need for direct action to recover local rights to forests. "Government that sells the forest produce is not liable to be called a real government, and indeed it was these mercenary motives that made God send Gandhi." ²²

One local organization involved in the independence struggle passed a resolution urging the people to decide themselves whether or not to set forest fires on forest lands claimed by government. When the fires broke out, many villagers not only refused to help extinguish them but, instead, assisted them to spread. In the end, 250,000 acres were burned. It was one of the largest fires in recorded history in India up to that time. Incendiary action as a form of social protest sent a clear message to the government, especially as fires targeted commercial forestry areas, particularly those exclusively devoted to *chir* pine production for resin and timber. Percy Wyndham, Commissioner of the Kumaon considered the events a "direct challenge to government to relax their control over forests." ²³ As a consequence, a special commission was convened to review the forest policy grievances of Pahari hill communities with the result that the new reserves were cancelled. ²⁴ The Grievances Committee considered the establishment of village forests along the lines of indigenous panchayat forests that already existed in the region. While there was ample evidence that many forests falling under community control were well-managed, most forestry officials remained skeptical and the program was only implemented on a limited basis.

In part, due to the growing opposition towards the colonial government administration in South Asia in general, forest departments retained a relatively low profile through the close of the

colonial era. While timber production and prices in South Asia tended to decline somewhat during the worldwide 1929-1933 depression years, by the 1940s commercial extraction was on the increase, only to surge after Independence. This was certainly the case in the hill areas of U.P., where the annual production of fir and spruce sawn wood grew from 5,000 cubic meters in 1948 to 85,000 cubic meters in 1978, while *chir* pine increased from 59,00 cubic meters to 319,000 cubic meters over the same period.²⁵

MODERN ERA (1947- PRESENT)

After Independence, with the departure of the British administrators, the vast majority of South Asia's foresters were convinced that colonial forest laws and practices should be retained and that the management system implemented in reserves should be extended to other areas. The abolition of the feudal system, that included *zamindari* and *jagirdari* forests, led to rapid exploitation of many of the tracts. Feudal landlords, anticipating the loss of their authority over these tracts accelerated logging activities in many parts of India, Pakistan, and Bangladesh between 1947 and the early 1950s. After Independence, many forest departments began reserving forests held under feudal control. The impact of this was twofold. First, it resulted in the breakdown of localized systems of control yet, given the limited custodial capacity of the forest departments to manage additional territory, many areas experienced further degradation. Secondly, the reservation of additional forest areas placed greater access restrictions on their use by local communities, constraining the availability of forest products.

Throughout South Asia, the decades of the 1950s, 60s, and 70s were times of industrial growth and economic expansion. Development and modernization strategies assumed natural resources should be exploited to create investment capital and supply raw materials to nascent industries. As a consequence, policy makers encouraged national forest departments to accelerate timber extraction, often in excess of prescribed cutting levels outlined in the working plans for each circle. Forest utilization began to be defined more broadly as industrial demands grew. A

variety of trees that had previously been viewed as non-commercial species began to be logged.

Forest revenues were also channeled into the election coffers of politicians seeking elections. Ministers from outside the forest services systems began taking a greater role in the placement of officers, in some cases down to the level of foresters and even guards. Corruption within the forest departments became a growing problem. Madhav Gadgil likens the Indian situation to what the Americans have called the "iron triangle."

*The hallmark of this system is the use of state power to systematically under-value biomass, and even more so biological diversity and organize its supply to those in power at highly subsidized values. The elite also pay unfairly low prices for natural resources... our political masters making policy decision as to who will be subsidized at whose costs: and the bureaucracy that administers the subsidies ... which insures that this system of resource use is perpetuated.*²⁶

This system operates at the expense of the resource dependent rural poor, who have been legally alienated from the management of nationalize forest lands. Excluded from any formal role in management, in much of the subcontinent they were left to struggle to meet their subsistence forest needs through their private lands or illegal use of the state domain, often done in a competitive and unsustainable manner.

In many parts of South Asia, communities struggled to retain some control over local forest resources. One of the most prominent rural community forestry political actions in the post colonial period was the Chipko movement, often referred to as "tree hugging." This effort represented the continuing peasant opposition to government usurpation of local control over forests. The movement grew in response to intensifying commercial forestry taking place in the mid-1960s, in the Garhwal area of the U.P. hills in the western Himalaya, as new roads opened access. Communities were concerned that not only larger trees were being felled, but saplings as

well, which undermined regeneration potential. Dozens of trucks hauled logs from the area each day, while one contractor responded to the protests by remarking that, "he would not leave any part of the tree behind."²⁷

In late 1978, Chipko leader Sunderlal Bahuguna organized a hunger fast to protest the large felling contract in the area. Local villagers, schoolteachers, but particularly women played important roles in staging non-violent protests and hugging trees to protect them from loggers. As Bahuguna noted, "Due to washing away of fertile soil, the menfolk were compelled to leave their families and wander in search of employment, thus making the women bear all the responsibilities, collecting fodder, firewood, and carry water, which form the main chores besides farming."²⁸ In April 1981, Bahuguna went on an indefinite fast to promote a ban on all green felling in the Himalaya above a 1,000-meter elevation. In response, the Indian Government formed an expert committee to prepare a comprehensive report on Himalayan forest policy, ultimately resulting in a fifteen-year ban on commercial logging in the U.P. hills.

Across South Asia, other rural populist movements emerged during the 1970s, 1980s, and 1990s in response to concern over environmental degradation, especially deforestation. Forest-dependent communities in Bangladesh, Nepal, Sri Lanka, Pakistan, and India organized to protect their local forests from commercial timber extraction. Distrust of forest department staff remained high in many areas. Foresters spent immense amounts of time in civil and criminal litigation, preparing cases and appearing in court in an effort to defend outdated forest policies.

By the late 1970s, industrial forestry was encountering problems in many South Asian countries. Commercial grade timber stock was exhausted in much of the region. Community resistance to outside logging operations was intensifying as the democratic processes in the region's countries evolved, giving greater political voice to rural peoples. National planners were increasingly aware of the growing environmental problems that were tied to deforestation. Upland

erosion, downstream sedimentation, disruption of hydrological systems exacerbated flooding and droughts, while water tables continued to fall as deep tube wells drew down underground reservoirs and barren watersheds failed to adequately facilitate aquifer recharge. The degradation of forest cover in many rural parts of South Asia was also intensifying fuelwood and fodder shortages, compounded by expanding demands as population increased. In 1980, India passed the Forest Conservation Act emphasizing the social and ecological importance of forest resources, while placing strict control on logging. Yet, the new policy did little to acknowledge the special needs and rights of local communities over resources, in fact it further limited access of rural people to protected areas.

While many South Asian countries began establishing restrictions on timber felling by the early 1980s, the region's forest departments were reluctant to bring communities formally into the management of forest reserves and protected areas. Bi-lateral development agencies, as well as the World Bank and the Asian Development Bank, began making major investments in social forestry projects. India made social forestry an important component in its fifth Five-Year Plan (1976-1981). The goal of the social forestry program was to produce firewood, fodder, and small timber resources to meet the biomass needs of local communities and relieve pressures on natural forests. As a consequence, most of the project activities were located away from forest department lands targeting village commons, revenue land, canal embankments, roadsides, and farmlands.

Virtually every country in South Asia experienced a proliferation of projects, with mixed results. With timber and fuelwood scarcities growing, markets for these products created attractive prices for farmers, and planting on agricultural lands often vastly exceeded project targets. Fast growing species like poplar and eucalyptus generated comparatively high returns, especially in lowland agricultural plains near urban centers that presented good market access and an alternative crop that required less labor when wage rates were rising. In Uttar Pradesh,

farmers exceeded the original target of 8 million tree seedlings, planting 350 million between 1979 and 1984.

Community woodlot projects, by contrast, often fared poorly. Many forest departments had limited experience implementing village-based development projects. Lack of local participation often resulted in a limited sense of ownership of the new plantations among households. In some cases, critical grazing land was planted in monoculture stands with species of little economic value to villagers. Village *panchayats* were frequently assigned to manage community woodlot plantations but, in many cases, households residing in smaller hamlets distrusted the political leadership. Decision-making was often dominated by wealthier, higher caste hamlets, leaving tribal and low caste forest-dependent hamlets with few rights over woodlot resources.

Over the past thirty years, billions of trees were planted in South Asia with investments in social forestry projects heavily favoring the eucalyptus (especially hybrids of *E. tereticornis*). On private lands, these plantings were typically harvested after 8 to 10 years and, while forest plantations helped slow national rates of defor-

estation, pressures on natural forests grew while total forest cover declined. In India at the height of the social forestry plantation projects, the deforestation rate was estimated at 1.3 to 1.5 million hectares per year.²⁹

SUMMARY

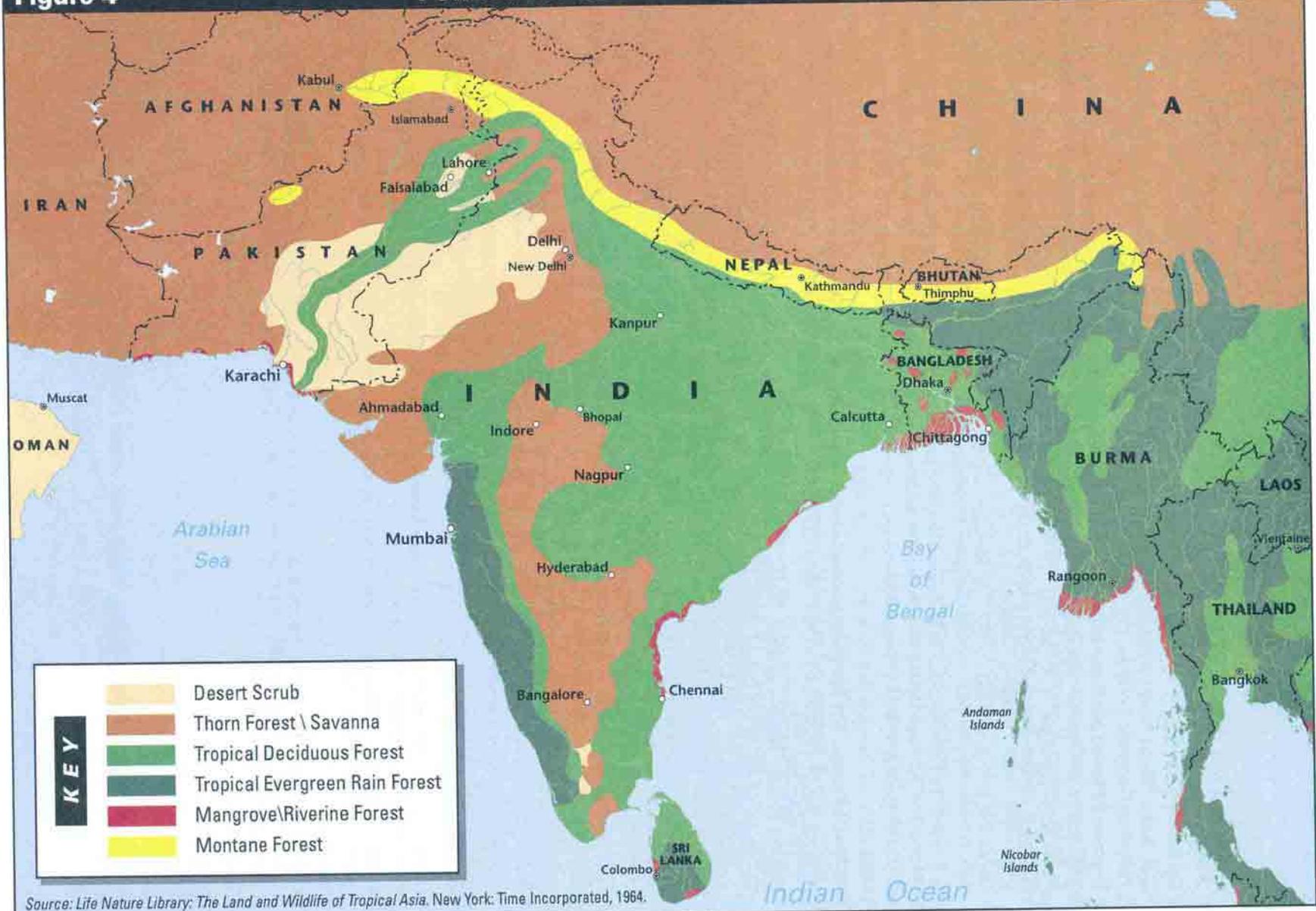
In recent decades, the orientation of government and external agencies towards forest management, and much of the investment flowing into the sector, has emphasized the expansion of farm forestry and the establishment of monoculture timber plantations. The historic legacy of state custodianship of natural forests placed a major impediment in the path of efforts to address the underlying causes of deforestation. While the achievements of woodlot oriented social forestry projects in South Asia are considerable, in recent years attention has begun to turn to the problems of sustaining the region's natural forests. The growing openness of governments to reconsider who is best positioned to be managers of the public forest domain is beginning to allow fundamental questions regarding tenure rights and responsibilities to be addressed. In Part III, the report examines the ecological characteristics of South Asia forest types.

Notes

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- ³ See Rawat, p. 249.
- ⁴ Ajay Rawat, "Indian Wild Life through the Ages," in Ajay S. Rawat, *History of Forestry in India* (New Delhi: Indus Publishing Company, 1991) pp. 134.
- ⁵ Francisco Pelsaert, *The Remonstrantie of Francisco Pelsaert*, translated from the Dutch as *Jahangir's India* (1925) pA8, as cited in Chetan Singh, "Humans and Forests: The Himalaya and the Terai during the Medieval Period," in Ajay S. Rawat, *History of Forestry in India* (New Delhi: Indus Publishing Company, 1991) p.165.
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- ⁸ M.A. Laird (ed.) *Bishop Heber in Northern India*, (Cambridge, 1971) p.221 cited in Chetan Singh, "Humans and Forests: The Himalaya and the Terai during the Medieval Period," in Ajay S. Rawat, *History of Forestry in India*, (New Delhi: Indus Publishing Company, 1991).
- ⁹ Singh, pp.172-173.
- ¹⁰ Richard P. Tucker, "The British Empire and India's forest Resources: The Timberlands of Assam and Kumaon, 1914-1950," in John F. Richards and Richard P. Tucker, eds., *World Deforestation in the Twentieth Century* (Durham: Duke University Press, 1988).
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- ¹³ See David Hardiman, "Farming in the Forest: The Dangs 1830-1992," in Mark Poffenberger and Betsy McGean (eds.) *Village Voices: Forest Choices* (New Delhi: Oxford University Press, 1998) pp.107-108.
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- ¹⁵ Ramchandra Guha, *Foundation Day Lecture for the Society for Promotion of Wastelands Development*, June 1993.
- ¹⁶ Brandis, p.37.
- ¹⁷ *Ibid*, p.151
- ¹⁸ *Ibid*, p.155.
- ¹⁹ Berthold Ribbentrop, *Forestry in British India* (New Delhi: Indus Publishing Co.: 1900 [reprinted 1989]) pp. 73-90.
- ²⁰ S.S. Chitwadgi, "History of Madhya Pradesh Forests," in Ajay S. Rawat, *History of Forestry in India* (New Delhi: Indus Publishing Company, 1991) pp. 211-212.
- ²¹ Madhav Gadgil, "Deforestation: Problems and Prospects," in Ajay S. Rawat, *History of Forestry in India*, (New Delhi: Indus Publishing Company, 1991) p. 39.
- ²² Ramachandra Guha, *The Unquiet Woods: Ecological Change and Peasant Resistance in the Himalaya* (Delhi: Oxford University Press, 1989) p. 114.
- ²³ *Ibid*, p. 115.
- ²⁴ Richard P. Tucker, "The British Empire and India's Forest Resources: The Timberlands of Assam and Kumaon, 1914-1950," in John F. Richards and Richard P. Tucker, eds., *World Deforestation in the Twentieth Century* (Durham: Duke University Press, 1988) pp. 96-97.
- ²⁵ Guha, p. 140.
- ²⁶ Gadgil, pp. 15-16.
- ²⁷ Guha, pp. 165-166.
- ²⁸ *Ibid*, p. 169.
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Figure 4

FOREST BIO-REGIONS IN SOUTH ASIA



KEY	
Light Orange	Desert Scrub
Brown	Thorn Forest \ Savanna
Green	Tropical Deciduous Forest
Dark Green	Tropical Evergreen Rain Forest
Red	Mangrove \ Riverine Forest
Yellow	Montane Forest

Source: Life Nature Library: The Land and Wildlife of Tropical Asia. New York: Time Incorporated, 1964.



FOREST BIO- REGIONS IN SOUTH ASIA

This section provides an overview of some of the major forest bio-regions in South Asia. The authors of the early Vedic texts like Caraka and Susruta divided the subcontinent into different bioregions including *Jangala* (dry wilderness), *Anupa* (swampy riverine plains covered with dense forests), and *Sadharana* (intermediate zone). Writing several thousand years later in the nineteenth century, Dietrich Brandis, an early pioneer of scientific forestry, divided the subcontinent by rainfall zones and prominent tree species. His zones included the dry zones of the west and the southern Deccan, with the former characterized by acacia species (*Acacia arabica*) and the latter by sandal (*Santalum album*). The moderate rainfall region, with precipitation above 30 inches annually, stretches across central and eastern India, with prominent species including teak (*Tectona grandis*) to the west, and sal (*Shorea Robusta*) to the east and in the Himalayan foot hills. Finally, Brandis identified the moist zone with normal annual rainfall exceeding 75 inches, comprising the outer Himalaya stretching from Dhaoladhar range near Dharmasala in the west to Assam and the Chittagong Hill tract in the east, as well as down the entire length of the western Ghats.

By 1900, Berthold Ribbentrop, then Inspector General of Forests for India, noted seven major forest contexts in South Asia. These included: 1) Evergreen forests, 2) Deciduous forests, 3) Dry Forests, 4) Alpine forest, 5) Tidal or monsoon forests, 6) Riparian forests, and 7) Desert environments. In 1936, H.G. Champion greatly elaborated on these major categories, creating a much more comprehensive system of

forest classifications. This typology included 16 major forest groups subdivided into 221 minor types reflecting structure, physiognomy and floristic characteristics.¹ This report uses a system of five forest classifications, including: Tropical Evergreen Rain Forests, Tropical Deciduous Forests, Thorn Forests and Desert Scrub, Montane Forests, Mangroves and Riverine Forests (see Figure 4).

TROPICAL EVERGREEN RAIN FORESTS

Evergreen tropical rainforests are found in the Andaman and Nicobar Islands, the Western Ghats, along the coastline bordering the Arabian Sea, as well as small remnants in the eastern Ghats in the state of Orissa. The other large tracts of tropical rainforests in South Asia are found in southern Sri Lanka, northeastern India, and eastern Bangladesh along the Burmese border. The evergreen tropical rainforests of South Asia are strikingly diverse, with 13 major *Dipterocarpaceae* species found in the western forests, and 9 in the northeast, with no common species. Much of South Asia's evergreen tropical rainforests have been transformed into semi-evergreen forests, or exist as residual fragments as a result of human action.

The rainforests of the Western Ghats are more influenced by monsoon than those of northeastern India. These forests possess an enormous variety of tree species. At least 60 percent of the emergent tree canopy are of species that represent less than one percent of the total population. The towering rainforest giants often rise from their



This tropical evergreen rainforest is located on low elevation hills on the border of mainland South and Southeast Asia. Indigenous people rely on these forests for hunting and gathering, as well as opening small clearings for agricultural fields which are usually left to regenerate after two to three years. (photo: Poffenberger)

buttressed roots over 30 meters in height before branching out. In the Western Ghats, rainfall can reach up to 6,000 millimeters annually, declining to 1500 mm. where the rainforests transition into monsoon deciduous forests. In northeastern India, evergreen rainforests are found up to 900 meters in the foothills of the Himalayas in the states of Assam, Nagaland, Manipur, Mizoram, Meghalaya, and Tripura. In Assam, giant dipterocarps like *Dipterocarpus marcocarpus* and *Shorea assamica* can attain a girth of 7 meters and a height up to 50 meters, towering above a closed evergreen canopy of 30 meters.² Tropical rainforests alter as elevation increases, transforming into subtropical and temperate montane evergreen forests.

In Sri Lanka, tropical evergreen rain forests are restricted to the southwestern corner of the island up to 1,000 meters elevation, where rainfall ranges from 3,750 to 5,000 mm. yearly. Dipterocarp species are common on alluvial soils, with many *Malesian genera* and great biodiversity. The evergreen rainforests of Sri Lanka were heavily logged during World War II, and were often replanted with

mahogany (*Swietenia macrophylla*). Lowland rainforests now cover approximately 74,000 hectares or about one percent of the island.

In Bangladesh, the remnants of the dense, tropical evergreen rainforests that once covered the Chittagong Hill tracts, Cox's Bazaar, and Sylhet Forest Division are still apparent. An important transition zone between South and Southeast Asia, the area was once one of the richest regions of biodiversity in the world. In a survey conducted in 1980, Bangladesh possessed nearly one-quarter of all mammal species found in South Asia and one-half of all bird species.

TROPICAL DECIDUOUS FORESTS

The dominant forest types in South Asia are deciduous, due to the prominent influence of seasonal monsoons and the extended, hot dry season that lasts from April through July. Champion and Seth broadly divide tropical deciduous forests into those that are moist and those



This young stand of regenerating *sal* (*Shorea robusta*) trees is one of the prominent tropical deciduous forest types found in South Asia. Other important deciduous forest ecosystems are dominated by teak and *terminalia* species. (photo: Poffenberger)

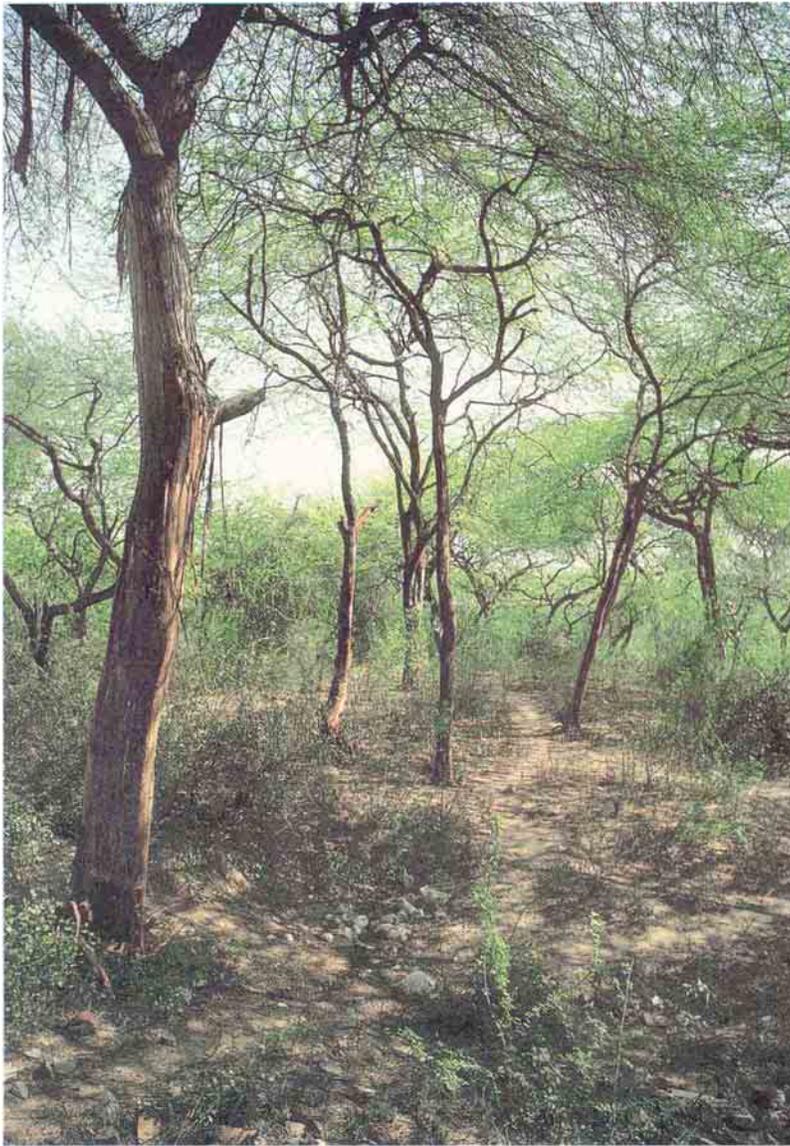
that are dry, with further regional variations. The southern tropical moist, deciduous forests are composed of tall trees with heights up to 36 meters and closed canopies. These multi-storied forests have semi-deciduous trees in the canopy and evergreen species in the lower story, with bamboo and canes in the undergrowth and climbers. Another type of deciduous forest found in the southern Indian states of Karnataka, Tamil Nadu, and Maharashtra are the Sandal forests, often encountered between elevations of 650 and 1,300 meters. In these areas, Sandal grows to a height of 12 meters and the forests are fairly open, with bamboo in the understory.

Teak is the most important constituent of the moist, deciduous forests of peninsular South

Asia extending from southern India to the north into the Aravali mountains in Rajasthan. Teak is found from very wet to dry contexts. The deciduous forest's dominant trees lose their leaves during March and April, refoliating just before the monsoon. Aside from teak, other important forest species include *Terminalia tomentosa*, *Grewia tiliifolia*, *Emblia officinalis*, and *Dalbergia*. Fires are common occurrences during the dry season as the forest floor is often burned to promote new fodder grasses and clean the ground to facilitate the collection of *mahua* fruit.

In the tropical, moist deciduous forests of northern India, *sal* replaces teak as the dominant forest species. In transition zones like Keonjhar, teak and *sal* occur together. *Sal* is the prominent species in the upper canopy that reaches 25 to 35 meters in height. In old growth stands, the canopy is closed and regular, with a relatively clean understory. Due both to its natural tendency to dominate, as well as because of forest management practices that remove other less valuable species, *sal* often exists in almost pure stands. In the lower Himalaya, *sal* can be found up to 1,500 meters.

Due to the ability of *sal* to coppice vigorously, with shoot growth up to two meters annually, forest management working plans in *sal* areas often require coppice cutting on a 10 to 15 year rotation, after the initial felling of old growth stands. Tribal communities and other forest dependent peoples rely heavily on *sal* for its oil seeds, fruits, and leaves that are used for weaving disposable plates that are sold to supplement household incomes. *Sal* trees figure prominently in the culture of many ethnic communities that reside in that forest zone. The degradation of millions of hectares of natural *sal* forests in eastern India's Chota Nagpur Plateau since the 1950s, has resulted in a massive grassroots movement to protect and regenerate these important ecosystems (see Mayurbanj case study in Part V).



In the Aravali Hills of western India, thorn forests like this one are common. Frequently found tree species include *babul* (*Acacia nilotica*) and *khair* (*Acacia catechu*). (photo: Poffenberger)

The monsoon forest region of Sri Lanka is extensive, stretching from the southeast across the northern parts of the island. Much of the monsoon forest has been disturbed by timber felling and *chena* (swidden cultivation) and, as a consequence, has become thorn forest and scrub. Nonetheless, throughout Sri Lanka's dry zone, many tracts of monsoon forest in critical watersheds above communal irrigation tanks continue to be carefully protected by farming villages.

Dry; deciduous forests are found throughout much of northern Gujarat, Rajasthan

and Pakistan. One of the main components of the mixed, dry, deciduous forest is *Anogeissus latifolia* and *Acacia catechu*. Much of the very dry, deciduous forest cover of the subcontinent has been degraded by human activities. Intact dry, deciduous forests are typically three-storied, with the upper canopy reaching a height of 15 to 25 meters and understory of 10 to 15 meters. Few herbs or grasses are present in the ground cover.

THORN FORESTS & DESERT SCRUB

Western India and Pakistan possess a variety of arid scrub and thorn forests. The climax vegetation of much of Pakistan's lowland areas is tropical thorn forest, "an open low forest in which thorny usually hard-wooded species predominate."³ Thousands of years ago, climax thorn forests existed in extensive stands throughout much of the lowlands, however they have been widely degraded, and transformed into open savanna to better meet the needs of the early pastoral peoples of the country. In Pakistan, scrub forests cover 1.2 million hectares in the foothills and are an important source of fuelwood, primarily *Dodonea viscosa* or *Sanatha*. Other important forest types include sand dune forests, Baluchistan juniper and pistachio scrub forests, and tropical thorn forests.

Today, thorn and scrub forests cover only 2 percent of Rajasthan's land area, having decreased rapidly in ten years between 1951 and 1961 from 13 million hectares to 11 million hectares. Indian's northern tropical thorn forests average annual rainfall varies from 20 to 70 cm. and typically falls within 15 to 40 days. Three types identified include desert thorn forests, ravine thorn forests and *Runn* thorn forests. Common species are *Prosopis spicigera*,



As climates become increasingly arid moving into the Great Indian Desert, thorn forests transition into desert shrubs with *Euphorbia* and *Prosopis cineraria* common species. Villagers plant date palms (*Phoenix sylvestris*) and other trees for fruit, fodder, fuel, and other products. (photo: Poffenberger)

Euphorbias, *Salvadora spp* and, in ravines, *Acacia nilotica*. Southern tropical forests in India and Sri Lanka have slightly greater rainfall, with the number of dry months varying from four to nine. Important species include *A.nilotica*, *Aleucophloea*, and *A.planifrons*.

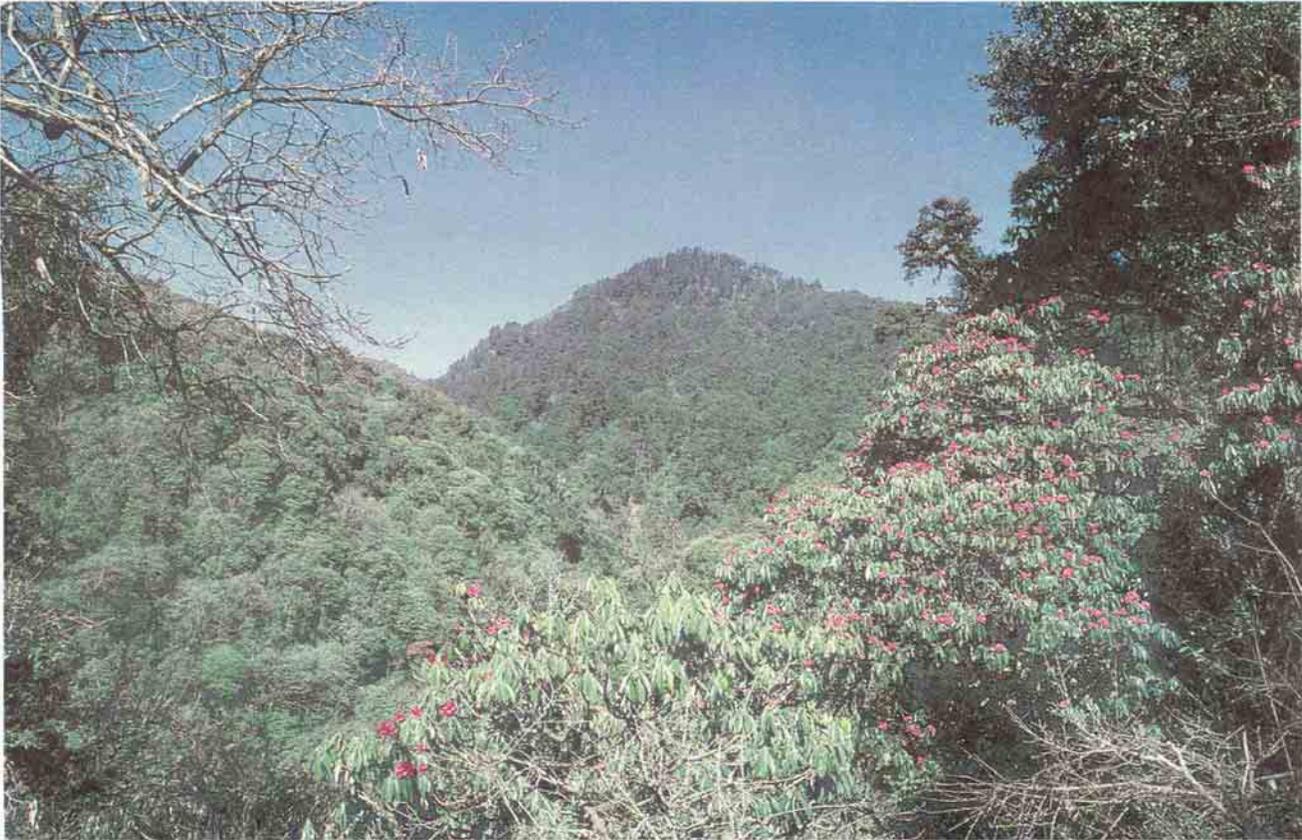
Palms can be important components of dry forest environments in South Asia. Of special important are *Borassus falbellifer* and *Phoenix sylvestris*, both of which are used for many purposes including tapping, leaf weaving, and timber. The fruits of *zyzyphus jujuba* provide important source of nutrients, as do *mahua (bassia latifolia)*, mango (*mangifera indica*), and *bela (feronia elephanticus)*. *Mahua* is especially valued for its heavily scented small and juicy white flowers that it bears in abundance and are eaten as food, and used as fodder and for liquor production.

Moving deeper into the Thar Desert, which borders India and Pakistan, the desert thorn

forests that are encountered are characterized by Salvador scrub and tropical *Euphorbia* scrub, with the chief woody species *Prosopis cineraria (khejri)* located on fixed dunes. Foresters believe that the Thar desert has experienced major climatic and ecological changes over the past 8,000 years, and may once have been covered with thick vegetation in the past. Today, the plant composition is tied closely to the length of the drought period that may vary from 7 dry months to 11 or 12 months.⁴

MONTANE FORESTS

The species composition and structure of the montane forests of South Asia is predominately influenced by elevation moving from subtropical, to temperate, to alpine, and, finally, to above tree line. Montane forests also change from west to east as rainfall levels increase, as well as moving from the highlands of Sri Lanka northwards towards the Himalaya and further



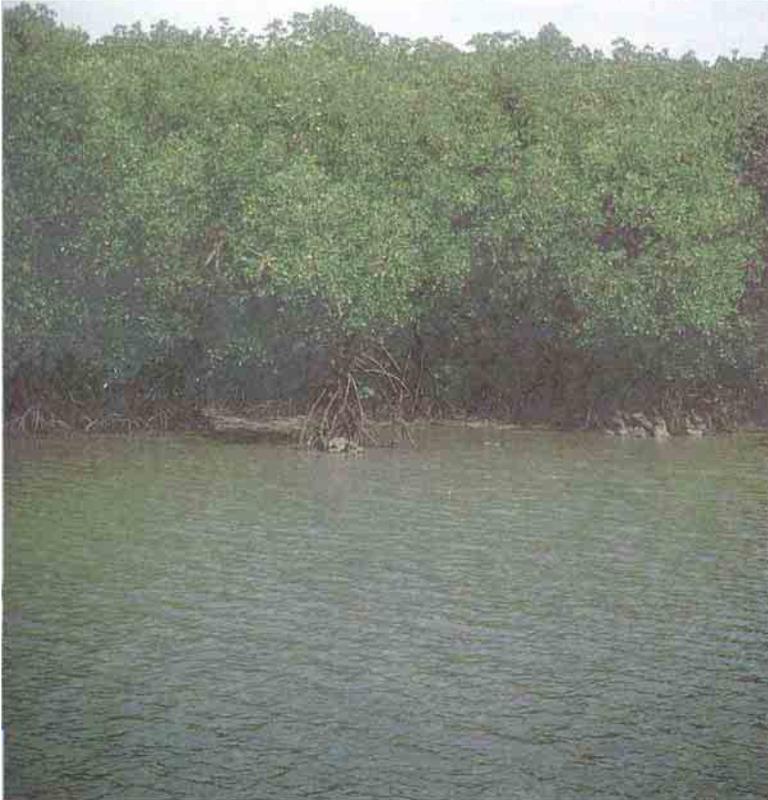
Montane forests take diverse forms shaped by elevation, aspect, and rainfall levels. This forest in the middle hills of the Himalaya is dominated by oaks and rhododendrons. (photo: Poffenberger)

from the equator. Further north is the inner Himalaya, a region within the rain shadow, where precipitation is minimal and forest cover is limited. Finally, the forests transition into the arid regions of Afghanistan and the Tibetan plateau.

Hiking up from the Shivalik foothills of the Himalayas, one passes through *sal* forests, the primary species found up to 1,000 meters, together with *Terminalia tomentosa*, *Adina cordifolia*, and *Anogeisus latifolia*. *Dalbergia Sisoo* and *Acacia catechu* occupy the stream bottoms and lower hills. *Pinus longifolia* begins to occur in compact patches and *Bauhinias* as the elevation increases, turning into extensive forests at higher elevations. Entering a temperate region between 1,300 and 2,000 meters, oaks and rhododendrons dominate throughout much of the western Himalayas. In the far western Himalayas, poplars and maples are also common. Between 2,000 and 2,800 meters, Deodar and Blue pine as well as Cypress are frequently encountered, followed by Himalayan Spruce

(*Picea morinda*), Himalaya Fir (*Abies webbiana*), and another oak species (*Quercus semecarpifolia*) from 2,800 to 3,700 meters. Above 3,800 meters is the realm of the birch (*Betula Bhojpattra*) with shrubby Rhododendron and, at higher elevations, one can find Juniper present up to the snow line.

In northeastern India, at elevations above 1,000 meters, the tropical evergreen rainforests gradually change to subtropical and temperate montane evergreen forests, especially on the south facing slopes. In many areas where they have been disturbed by logging, shifting cultivation, and fire they have been replaced by *Pinus roxburghii*, *Pinus wallichiana*, and by shrub and grassland. In Sri Lanka, patches of both montane evergreen rainforest and montane monsoon forests can be found in the south central portions of the island above 1,000 meters elevation. Important montane rainforest species include *Gordonia spp.*, *Palaquium rubiginosum*, and *Shorea gardneri* at intermediate elevations, and



Mangrove forests like this are common in the major river deltas of South Asia, though they have been cleared in many areas for fuelwood and to accommodate aquaculture, leaving coastal shorelines vulnerable to tidal erosion and cyclonic storms. (photo: Poffenberger)

Calophyllum sp., *litsea, spp.*, and *Michelia nilagirirca* in the upper montane formations.⁵

MANGROVES & RIVERINE FLOOD FORESTS

Mangrove forests are present along the coastline of South Asia, especially in the larger river deltas that empty into the Bay of Bengal. The largest mangrove forest in the world, approximately 400,000 hectares in size, is located at the mouth of the Ganga and Brahmaputra rivers, covering the southern coastline of West Bengal and Bangladesh. Protected as a Reserved Forest since 1875, the region is an immense tidal swamp

with a mosaic of mangrove forest types with a variety of species including the commercially valuable *sundri* (*Heritiera fomes*). The entire area is laced with a complex network of interconnecting waterways, with occasional large channels transecting it from north to south. Each year about 2.4 billion tons of sediment is transported through the Sunderbans, carried by the Ganga, Brahmaputra, and Megna rivers. As this immense load is deposited along the coastline, it creates 3,500 hectares of land area each year secured, in part, by the extension of the mangrove forest into the Bay of Bengal.⁶

Mangrove forests are distinctive, often diverse, ecosystems. According to one report, "Mangrove forests form a unique environment of floral-faunal assemblages, providing a complex detritus-based food web for a number of marine and brackish water organism."⁷ Due to the isolation imposed by the intricate system of canals, wildlife is well isolated from the mainland providing an ideal habitat for a immense diversity of species including 120 types of fish, 270 birds, and 32 recorded species of mammals, as well as marine turtles and the endangered estuarine terrapin. The Sundarbans mangrove forests are best known as the habitat of the royal Bengal tiger, with the world's largest surviving population estimated between 350 to 600.

The Sundarbans mangrove forests face a number of threats. Declining fresh water flow through the tidal basin resulting from natural changes, river diversion, and diversion of river water for irrigation has caused a rise in tree mortality. The intrusion of salt water inhibits the growth of important mangrove forest species, especially *sundri*. The expanding populations in

southern Bangladesh, West Bengal, coastal Orissa, and Sri Lanka places growing pressures on the use of the mangrove forests for livelihood generation. Sri Lanka's mangrove forests now exist only as scattered stands along the coast and, despite their important in protecting coastal erosion and providing a hatchery for fish fry, the island's mangrove forests have been declining at a rate of one to two percent annually. In Orissa, the loss of critical mangrove forests resulted in the absence of a coastal forest buffer during the disastrous cyclone in the fall of 1999, allowing huge ocean waves to penetrate inland for dozens of kilometers. Pakistan has the largest arid-zone mangrove forest on the Arabian Sea. It is located at the mouth of the Indus River and totals approximately 345,000 hectares.

In Bangladesh, one-third of the population living around the Sundarbans mangrove forests were assessed to be dependent on that environment for a substantial part of their household income. Common mangrove species like sundri are harvested on a 20-year felling rotation for timber, as is *gewa* (*Excoecaria agallocha*), while other species are cut for fuelwood. Commercial *gewa* felling in the Sundarbans in order to supply newsprint mills has threatened

the forests. A 1985 ODA study found a decrease in standing volume of 45 percent since industrial logging began in 1959.⁹

In addition to coastal mangrove forests, there are also many riverine forests that are seasonally flooded in South Asia. Some of the most extensive are in Bangladesh and are situated in bowl-shaped depressions known as *haors*, that are located between the natural levees of rivers subject to overflow during the monsoon. In eastern Bangladesh, the *Haor* basin covers an area of 2.5 million hectares. Dotted with permanent and seasonal ponds and lakes filled with aquatic vegetation, the *Haor* basin supports swamp forests, once abundant with evergreen trees reaching heights of up to 12 meters. These forests were dominated by tree species that could withstand inundation for three to four months of the year including *Hijal* (*Barringtonia acutangula*), *Komch* (*Pongamia pinnata*), and *Barun* (*Crataeva nurvala*). Traditionally, communities have managed these forests by taking coppice cuttings on a three-year rotation when the trees reach five to seven years of age. Flood forests have been significantly diminished over the past century, but are still maintained to shelter villages from wave erosion.⁹

Notes

¹ H.G. Champion, "A Preliminary Survey of the Forest Types of India and Burma" *Indian Forest Record* 1: 1-286.

² N. Mark Collins, Jeffrey A. Sayer and Timothy C. Whitmore, *The Conservation of Tropical Forests: Asia and the Pacific* (New York: Simon and Schuster, 1995) p. 126.

³ H.G. Champion, S.K. Seth, and G.M. Khattak, *Forest types of Pakistan* (Peshawar: Pakistan Forest Institute, 1965) cited in M. Dove "The Coevolution of Population and the Environment," *Population and Environment*, Vol. 15, No.2, November 1993, p.91.

⁴ G.S Pun et. al., *Forest Ecology - Volume 2* (New Delhi: Oxford University Press, 1989) pp. 421-473.

⁵ N. Mark Collins, Jeffrey A. Sayer and Timothy C. Whitmore, *The Conservation of Tropical Forests: Asia and the Pacific* (New York: Simon and Schuster, 1995) p.216.

⁶ M. Salar Khan et. al. *Wetlands of Bangladesh* (Dhaka: Bangalesh Centre for Advanced Studies, 1994) p.16.

⁷ *Ibid*, p.15.

⁸ *Ibid*, p.10.

⁹ *Ibid*, pp. 16-18.



FOREST POLICIES AND SOCIAL CONTEXTS

INTRODUCTION

The following national profiles describe the changing relations between the society and the forest environment in Bangladesh, India, Nepal, Pakistan, and Sri Lanka. Each country summary provides a brief review of historical events and the social and environmental context that has contributed to current developments in policies and programs that are shaping the roles communities are playing in forest management. As noted in Part II, during the British colonial period the establishment of forest policies and operational departments drove a process of land nationalization that consolidated vast tracts of forests that had previously been held under

customary and feudal systems of tenure. The state forest domains present in South Asia today are largely a legacy of this process. As Box 1 indicates, state forest territories vary from 2 to 37 percent of the land areas of each South Asian country and mostly fall within the jurisdiction of government forest departments. While the concept of the state as a forest lord is hardly an invention of the colonial period, the creation of technical bureaucracies as natural resource managers was greatly elaborated during this period and continues to dominate forest management throughout South Asia.

But, at the close of the twentieth century, the norms and procedures that have guided forest

Box 1 SOUTH ASIA'S LAND AND FORESTS					
	Bangladesh*	India**	Nepal***	Pakistan+	Sri Lanka++
Land Area ('000s km²)	134	3,290	147	880	65
State Forest Area (% of Total Area)	17%	22%	37%	2%	28%
Well-Stocked Forests (% of Total Area)	6%	10%	28%	NA	18%
Annual Deforestation Rate 1990-98 (% of Total Area)	3.3%	1.0%	1.0%	2.9%	1.1%

*Philip Gain, *Bangladesh, Land, Forest, and Forest People* (Dhaka:SHED,1998) p.30
 **Government of India, *National Forestry Action Programme-India*, (New Delhi: MOEF, 1999)
 ***S. Palit, "Comparative Analysis of Policy and Institutional Dimension of Community Forestry in India and Nepal," Mountain Natural Resources discussion Paper No. MNR 96/4 (Kathmandu: ICIMOD, 1996)
 +Javed Ahmed and Fawad Mahmood, *Changing Perspectives on Forest Policy* (Islamabad and London: IUCN Pakistan and IIED, 1998)
 ++Anoja Wickramasinghe, *Land and Forestry* (Colombo: CORRENSA, 1997)

Box 2**SOUTH ASIA'S POPULATION (in millions)**

	Bangladesh	India	Nepal	Pakistan	Sri Lanka
Population 1998*	128	980	23	132	19
Projected Population 2020	171	1,400	35	200	25
Annual Growth Rate*	1.9%	2.0%	2.8%	2.8%	1.4%
Forest-Dependent Peoples 1998**	30-40	275	15	NA	6-8

*World Bank, *Entering the 21st Century: World Development Report 1999/2000* (Washington, DC: The World Bank, 1999) p.235

**Estimates based on populations directly dependent on natural forests for the collection of fuelwood, fodder, and other forest products.

management over the past one hundred and fifty years have come under growing scrutiny, with questions being raised regarding the future role of the region's Forest Departments. Nepal and India have already embarked on a process to reform public forest lands management through national programs to devolve authority to user groups that will eventually encompass the majority of the forest lands in those countries. Political and demographic pressures are driving the implementation of these policies, while community forestry mandates and public forest land reform agendas are likely to emerge as well in Pakistan, Bangladesh and Sri Lanka in the not too distant future.

Indigenous systems of forest management are also widely present throughout South Asia, both those that draw on ancient traditions, as well as newly emerging systems of communal stewardship and private forestry. Every country in South Asia possesses a diverse range of cultural communities and traditions of forest management that evolved over time in response to bio-physical conditions and socio-economic factors. In the past century, the four-fold increase in the region's population, the dramatic expansion of the industrial sector, and the growth of the urban infrastructure has placed immense demands on natural forests, transforming the landscape (see Box 2). The expansion of markets for forest products has

stimulated the growth of farm forestry at remarkable rates. During the 1970s and 1980s, the appearance of trees on field embankments and private woodlots grew with a rapidity that shocked government planners and development workers alike.

In Bangladesh, with the highest rural population densities in the world, forest cover has declined to 6 percent of the land area, with per capita forest land only 0.02 hectares.¹ In India, well-stocked natural forests are estimated to be present in only 8 to 12 percent of the whole country. A recent study in Pakistan indicates that forest cover may be as low as 5 percent, with most of the remaining closed canopy natural forests located in the mountainous north. In Sri Lanka, the total forest land area declined from nearly 5 million hectares to approximately 1 million over the past century. During the same period that the population has grown five-fold. While government figure indicate that forests cover 18 percent of the land area, only remnant patches remain of the rich rainforests of the south, now present on little more than 2 percent of the country.² Nepal retains the highest percentage of national forest coverage in the South Asia region, approximately 28 percent. Yet, Nepal's forests are also under extreme pressure and face fragmentation and degradation.

Throughout the region, productivity of natural forests has decreased as commercial timber felling, grazing, hacking, and fires have degraded these ecosystems. The outright loss of natural forests continues, though overall forest cover statistics are beginning to stabilize in some countries due to the expansion of forest plantations. There is growing recognition among planners, however, that these monoculture stands of fast-growing timber species are not an adequate replacement for natural forests either in terms of their permanence nor the ecological and social services that they provide to rural populations. While national forest statistics indicate a stabilization of total forest cover at the national level, the quality of South Asia's natural forests continues to deteriorate.

Even though many nations have placed strict curbs on commercial logging, a combination of illegal felling, commercial fuelwood headloading, fire, and grazing erodes the density, structure, and diversity on a continual basis. The few exceptions in these trends for natural forests have been in areas with active community involvement in forest management that has resulted in the imposition of strict access controls, often referred to as social fencing, and halting degradation processes while allowing regeneration to occur. The fragmentation of natural forests in recent decades has created such extensive boundaries that Forest Departments have found it impossible to mediate use without the active involvement of local communities and user groups.

Throughout South Asia, forest gardens are also found, primarily in areas with higher rainfall. Under the ownership of individual households, tenure is clear and labor and capital is invested as needed to ensure high levels of productivity. In Bangladesh, Bengal, Sri Lanka, and Southern India, fruit and spice bearing trees and shrubs are interplanted in complex patterns to create highly productive agroforestry systems. Private farmlands are also a critical source of timber and fuel wood in much of Pakistan and northern India. In 1990, private farmlands produced over three times the timber generated from Forest Department lands.³

BANGLADESH

Community forest management systems in Bangladesh are characterized by the distinctive cultural and physical environments in which they occur, while external CFM projects also reflect these contextual differences. For this reason, this review examines the experiences of the Chittagong Hill Tracts and other upland regions with their tribal inhabitants, separately from the social forestry practices of the lowland Bengali-speaking majority. The mangrove forests of the southern delta represent a third important context in which communities are involved in forestry activities. As one of the world's most densely populated nations, the experiences of Bangladesh are important as it seeks to find a place for forest ecosystems in a country with a scarcity of land resources.

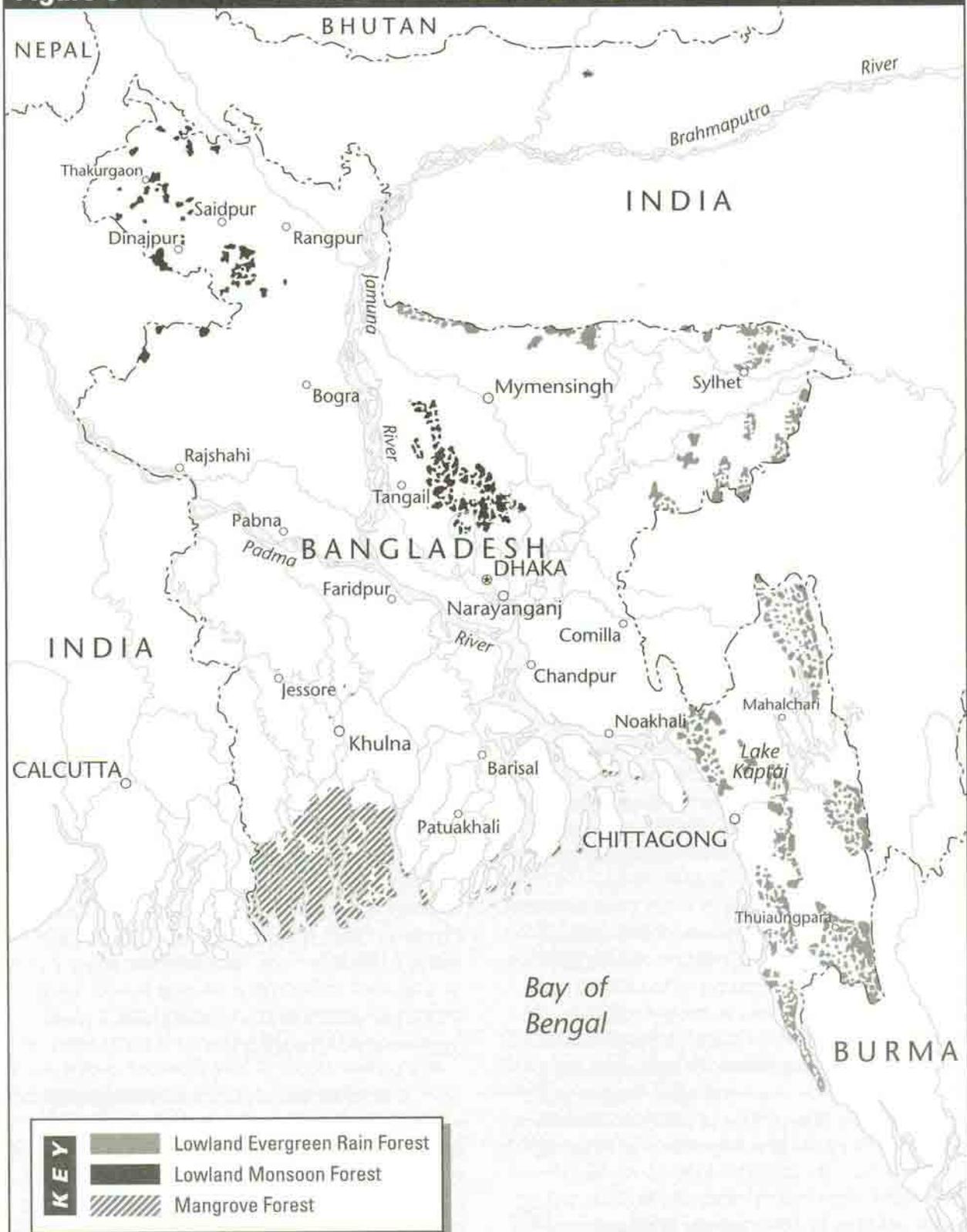
HISTORY AND CONTEXT

Bangladesh possesses the largest river delta in the world fed by the Ganges, the Brahmaputra, and the Meghna rivers. Ten percent of the country is comprised of upland areas, including the Chittagong Hill Tract that borders Burma to the Southeast. The majority of the land area is composed of the flat alluvial plain, much of which get flooded during the rainy season. The forest rich areas are located at Sylhet, Chittagong, Chittagong Hill Tracts and Khulna. Extensive mangrove forests, known as the Sunderbans (beautiful forests), cover the southwestern delta area of the country bordering the Bay of Bengal. This extends over an area of 2300 sq. miles and is the world's largest compact mangrove patch (see Figure 5). These massive mangrove forests are managed both for wood and wildlife, and act as an important refuge for the Royal Bengal tiger, monkeys, spotted deer, etc. along with a small population of crocodiles.

In 1998, the population of Bangladesh was estimated at 128 million, making it one of the most densely inhabited countries in the world. Between 85 and 90 percent of the population are rural residents and heavily dependent on agriculture, fishing, and other natural resources for their survival. The climate is tropical and very wet, with annual rainfall varying between 1200

Figure 5

FORESTS OF BANGLADESH



Source: N. Mark Collins, Jeffrey A. Sayer and Timothy C. Whitmore, *The Conservation of Tropical Forests: Asia and the Pacific* (New York: Simon and Schuster, 1995) p.9.

and 6500 mm. annually. Much of the rain falls during the monsoon period from April to August, when rivers overflow their banks and inundate much of the alluvial plain. Fishing is pervasive throughout the country providing the primary source of protein.

Bangladesh is dominated by Bengali speaking peoples who comprise 98 percent of the population. Eighty-six percent of the inhabitants are Muslims and twelve percent are Hindus divided into more than 130 castes and 1,500 sub-castes. Of the remaining two percent, approximately one percent is Buddhist and Christian and the other one percent is tribal and ethnic community. There are approximately 36 important tribes in Bangladesh, many of which retain their animist belief systems. As a group, these tribal communities total 1.2 million people.⁴ While only a small minority in the total population of Bangladesh, tribal communities are frequently the dominant social groups in the remaining natural forest areas.

The northwestern forests retain a significant population of Santal and Khasis who migrated from the Chhota Nagpur Plateau over the past one-hundred and fifty years. As the forests have disappeared they have settled in agricultural settlements. In Northern Bangladesh, are members of the Tibeto-Burmese language family, including Garo, Hajong, Koch, and Tipras. In the hill tracts of the northeast live the Kukis and Lushais, who also inhabit Mizoram State across the border. In southeastern Bangladesh, there are thirty different tribes, the largest of which is the Chakma, followed by the Tipra and the Murung (see Figure 6).

While Bangladesh was once richly forested, forest cover has fallen from 20 percent to 6 percent over the course of the last hundred years. Official forest area is listed at approximately 2.5 million hectares, representing 17 percent of the country's land area. Sixty percent of all forest lands are managed by the Forest Department, with the remaining 0.8 million hectares un-classed State Forest (USF) under district administration.⁵ Extensive deforestation has aggravated flooding and erosion and has contributed to the increased sedimentation in most

river systems,⁶ especially the Kaptai water reservoir for hydraulic power generation.

Only ten percent of the country's forest, totaling one-quarter million hectares, is located on village owned land. But, it is extremely productive. Privately owned homestead and village forests are well stocked with fruit trees and are important sources of fuel wood, construction timber, food, and other goods. In fact, an estimated 88 percent of all wood supplies are drawn from village forests, with state lands supplying the remaining 12 percent. Despite the important contribution of homestead forests in meeting the forest product needs of Bangladesh, the country only produces one-half of the timber and fuelwood required, with the deficit met through imports and the burning of cow dung. At present, trees provide only 20 percent of all cooking fuels, with agricultural residues and dung the primary sources.⁷ As shown in Figure 5, the only extensive forest tracts are found in the Sunderbans and the Chittagong Hills, aside from small fragments in the northeast and northwest, and around Madhupur Ghar, the site of our case study in Part V.

In the past, most forest dwelling tribal communities practiced *jhum* (shifting cultivation). The ethnic groups of the Chittagong Hill Tracts and the Garo of Madhupur in Tangail and Mymensingh districts were especially dependent on *jhum* cultivation until the government prohibited it in the early 1950s. The displacement of tribal communities from their ancestral domain lands and natural resources due to the construction of the Kaptai dam in the 1960s has further disrupted indigenous land use practices.

Under these policies, tribal communities were pressured to establish permanent villages and practice sedentary agriculture. The upland soils are more fragile and lose fertility rapidly explaining why long rotation systems have predominated in the past. Many forest communities that previously practiced swidden agriculture are shifting to perennial cash crops. In north central Bangladesh, for example, the Garo are having some success in transforming old swidden fields into pineapple gardens (see case study in Part V). In the Chittagong Hill Tracts, ridge

Figure 6

TRIBAL AREAS OF BANGLADESH



dwelling tribes are experimenting with mixed fruit tree orchards. As in many parts of Southeast Asia, small upland ethnic groups are challenged by the imposition of external political control over their ancestral domain, the influx of migrant populations, and external market forces.⁸ A key issue in this conflict is the question of forest land control. According to a leading Bangladeshi anthropologist, Kibriaul Khaleque:

*Although the ethnic communities have been maintaining political and economic relations with the mainstream Bengali people, some of them do not appreciate the government policy towards the ethnic communities. They consider such policies to be the means for economic and political suppression by the government authorities. It is not hard to find cases of conflict and tension in the ethnic areas and ethnic peoples' reaction against certain Government policies.*⁹

RECENT POLICY AND PROGRAM INITIATIVES

Community involvement in forestry has a long history in Bangladesh. As early as 1871, tribal swidden farmers in the Chittagong Hill Tracts were engaged in the planting of teak trees in abandoned dry land fields. This system of *taungya*, derived from the Burmese terms for hill cultivation (*taung* or hill and *ya* or cultivation), originated in the mid-1800s. The history of formal institutional strategies in support of social forestry emerged first in Bangladesh in 1967 when two forest extension divisions were established with headquarters in Dhaka and Rajshahi.

For the first ten to fifteen years, this forest extension program was extremely modest and limited to the establishment of nurseries and training centers in selected districts. Seedling raising and distribution combined with occasional tree planting campaigns comprised the core program. Most foresters remained skeptical regarding the value of community involvement in forestry operations. Foresters feared that the involvement of communities would undermine their legal control over the nationalized resources.¹⁰ While many foresters desired to retain

sole jurisdictional control over public lands, the department's limited staff and finances was an obstacle. With a total of about 10,000 staff, including 4,850 professional and technical personnel, the Forest Department holds direct responsibility for 1.5 million hectares of land upon which tens of millions of people are dependent.

In 1980, CFM gained greater prominence after the Asian Development Bank agreed to support a five-year program (1982-87) in the northwestern part of the country. Over the next two decades a variety of donor supported social forestry activities were implemented including those in tribal areas, *sal* forest areas, roadsides and nursery programs.

SOCIAL FORESTRY IN TRIBAL AREAS

In 1960, the Kaptai dam was constructed, inundating 550 sq. miles including some of the richest agricultural land in the region of Chittagong Hill Tracts. Approximately 100,000 Chakma and other tribal people were displaced from their agricultural settlements and homes. Some of the first Social Forestry projects involved resettling affected communities into the upland watersheds of the Chittagong Hill Tracts.¹¹ Like other resettlement projects in Asia, this project involved removing the community from forested watersheds and off government lands. The Asian Development Bank funded the first program of this type in the early 1960s, targeting 18,000 displaced people for relocation. The project also attempted to reforest long rotation swidden (*jhum*) areas. This involved the replacement of early succession natural forest vegetation with exotic timber plantation species, often in monoculture stands. The role of the community was largely limited to providing manual labor for plantation establishment in return for wages. Under the vestiges of *taungya* traditions, communities were sometimes allowed to plant annual food crops on newly reforested land until shaded out by the closing forest canopy. Over the next twenty years, under the administration of the Chittagong Hill Tracts Development Board, 3,662 families have been involved in resettlement projects, with 20,000 hectares reforested. Major projects included:

- Afforestation and Settlement in Chittagong Hill Tracts I (1979-90)
- Integrated Afforestation and Jhumia Rehabilitation in Chittagong Hill Tracts (1984-90)
- Pulpwood Plantation in Chittagong Hill Tracts (1984-00)
- Afforestation and Jhumia Rehabilitation in Reserve Forests in Chittagong Hill Tracts (1995-2000)

These projects yielded mixed results. Survival rates for saplings in fast growing timber plantations were often low. Agricultural lands for displaced people were frequently of poor quality and inadequate size. Bengali migrants from the lowlands entered the area, some under government sponsorship creating further land competition and conflict. Traditional tribal headman and village elders (*karbaries*) were rarely consulted. Many tribal people from CHT were dislocated from the lands and left no choice but to migrate to Tripura, India. According to a European Community report:

*One of the main human rights violations concerning the Chittagong Hill Tracts (CHT) people is Bangali settlers coming from the plains into the Hill tracts...causing conflict in the region.*¹²

In 1979, conflict over lands and the lack of recognition of tribal land rights led to the formation of the Shanti Bahini guerilla movement, creating political instability in many areas of the CHT. Finally, on December 2, 1997 an accord was signed with the Government and the guerilla's political wing, the *Parbatya Chattagram Jana Samhati Samiti* (JSS) that directly addressed many tribal land tenure issues.¹³

In contrast to the social forestry strategies described above that emphasized tribal resettlement and plantation establishment, an alternative approach has been developed in the area. Initiated in 1980 in Betagi and Pamora villages in Chittagong District, the project was designed by Professor A. Alim, the Conservator of Forests in

Chittagong, working closely with Professor M. Yunus, the founder of the Grameen Bank, and Mr. Chashi, the founder of the Shawnirvar Self Reliance Movement. At that time, the Forest Department was reluctant to allow communities rights to reserve or demarcated areas and, as a consequence, project planners sought out government revenue lands (*khas*) for the project. Generally, these *khas* lands were denuded hill forests that were made available in small parcels for landless agricultural laborers. Project planners targeted communities that had been working as laborers for illegal logging companies. Families had to be willing to live on the land and develop it themselves, devoting full time to their plots.

Land terracing was one of the main components in the project, using agro-forestry systems that transitioned from food crops to fruit tree production after 4 to 6 years. No outside subsidies were involved though credit was provided through Grameen Bank, as well as training and group facilitation. Tenure rights to the land were registered in the names of both husband and wife.¹⁴ The success of this approach to community forestry is, in part, due to the authority given to each household in managing their resources and being responsible for their own financing through credit agreements. However, some analysts conclude that its key ingredient has been that strong and clear tenure authority is vested to the family over the forest land.¹⁵

Since the 1980s, social forestry strategies in the Chittagong Hill Tracts have placed greater emphasis on supporting hill tribes to adopt fixed location agro-forestry systems. Each participating family is allocated two hectares of land, which it divides for annual crops, fruit trees, and forestry plantations. In return for wages and housing subsidies during the initial years, the families must share their timber harvest with the government. While programs have become more responsive to community needs for greater security, a larger share of production, and more local control, social forestry strategies have often taken place after long periods of hardship for local communities.

The Khasia tribes in the hill forests of Sylhet Forest Division grow *betel* leaves, locally

known as *paan* in the forest area. While the *betel* leaf creeper is allowed to grow on the trees, the branches are lopped for light and better growth of the *betel* leaves. This type of agro-farming is locally known as *Paan Punjee* and often lead to conflicts with the forestry administration. This activity and intensity of lopping of trees are yet to be weighed and balanced under a scientific study to evaluate this aspect of indigenous agro-forestry practices. Instead the forestry administration is advocating against such practices, which exacerbates tension between these ethnic tribal communities and the government. Hill farmer's attempts to develop commercial fruit farms are constrained by a poor infrastructure. The limited response of government in addressing land and natural resource use rights allows tenure insecurity to prevail, undermining community forestry management initiatives both within and outside government sponsored projects.

TREE NURSERIES, FUELWOOD PLANTATIONS, STRIP AND ROADSIDE PLANTATIONS AND HOMESTEAD WOODLOTS

While the early social forestry projects of Bangladesh were located in the Chittagong Hill Tracts, since the 1980s the national social forestry strategy has invested heavily in extension and nursery programs (see Box 3). Major support for community forestry schemes comes from the Asian Development Bank, the World Food Program and the World Bank. A common goal of these projects is to generate productive employment for low-income households and to provide income from tree products, with secondary objectives to enhance environmental services provided by forests. Typically, these socially forestry projects involved the formation of beneficiary groups of ten members, selecting landless people, and widowed, divorced, and destitute women from areas around the project site. In some projects, up to eighty percent of participants had to be women.

Through these projects, an estimated 46,000 kilometers of strip plantations were established and 38.5 million seedlings planted. By 1998, this program included approximately 308,000 women along with sixty-one NGO

support organizations.¹⁶ Strip plantations along national roads, railways, and canals met with reasonable success. In some projects, an estimated 70 percent of saplings survived.¹⁷ Protection by local guards was budgeted for three years and financed through the projects. However, once that ceased, survival rates fell dramatically as a result of theft and damage by animals and people. Project sponsored fuel wood plantations also met with mixed success. Problems often arose when the Forest Department attempted to plant land that was already being used for grazing or food crops. Some woodlots were sabotaged, while others were not properly thinned or harvested due to the absence of appropriate management plans. In other areas, while good tree cover was established, community involvement failed to take place, raising concerns regarding long-term management.

In the late 1980s and early 1990s, the Thana Afforestation and Nursery Development Projects were initiated. These programs allowed landless families opportunities to cultivate paddy and other agricultural crops within the forest plantation sites. Each participating household was given between 0.4 and 1.2 hectares of land for use as kitchen gardens, poultry keeping and homesteads. To allow ground crops, the alley width between tree rows varied between 3 and 10 meters. Communities were allowed 100 percent of their agricultural harvests and fifty percent share in the final timber on an eight-year rotation. After eight years the eucalyptus and acacia plantations yielded an average of 9 cubic meters of timber and fuelwood per hectare per year, while agricultural produce from paddy, pineapple, turmeric and ginger was substantial. Farmers preferred the wider width of 10 meters spacing to allow more room for their agricultural crops, especially ginger. Revenues from the wood harvest averaged Taka 5,900 (\$132) per hectare per year vs. Taka 40,000 (\$900) to 70,000 (\$1500) per hectare each year from ginger. While ginger required high cost inputs, it exemplified the benefits of increased cash flow that can be generated through agro-forestry systems that include high value, shade tolerant medicinal and spice commodities.¹⁸ By contrast, farmer income from paddy was quite low averaging around 1700

Box 3**PRIVATE NURSERIES OF BANGLADESH**

With less than 5 percent of its land area under forests and a population of nearly 130 million, the vast majority of whom are heavily dependent on natural resources, trees are scarce commodities of high value. These conditions help to explain the marked success of the private nursery program in Bangladesh.

The small private nursery in Shofipur Bazar in Gazipur district is located at the intersection of two main roads that pass through the township, just 70 kilometers north of Dhaka. It has done well since it was established nine years ago. In the rainy season from May through July the nursery sells 200 seedlings each day generating 20,000 Taka each month (\$500). According to thirty year old Mohammed Abdur Rashid who has worked at the nursery for the past two years:

Everyone comes to buy our seedlings, rich and poor, villagers and town folks. Our biggest selling fruit seedlings are guava and Jackfruit, while mahogany, neem, and rain tree are our most popular timber species. People prefer seedlings that are around two years old. We sell fruit and timber species for 5 to 10 Taka (\$0.12-0.25) each. Demand grows daily. We had to move our nursery to this larger space. We rent this one hectare plot from the township.

Mohammed explained he germinates seedlings from seeds collected from mother trees in homestead gardens located in villages surrounding the township. He also propagates saplings from cuttings taken from local trees. Cow dung, urea, potash, and TSP (Triple Super Phosphate) are all used along with soil in preparing the potting media.

Our expansion is limited by inadequate water supplies to our nursery. We also lack the capital to purchase better quality saplings, and good quality seeds. We also need more training on seedling raising and marketing of seedlings, vegetative propagation, especially grafting and air layering etc. During the dry season, from August through April our income falls by 90 percent, but when the rains come, business surges. We have begun selling seed potatoes and flowers during the winter to generate income. The big private nurseries with large orders from NGOs with forestry projects may sell 300,000 seedlings each month.

The importance of private village nurseries in Bangladesh has grown dramatically in recent decades. During the 1st Phase of the Social Forestry Program from 1961 to 1980, 59 nurseries were established. Today, the number of private nurseries has increased to 5,000 that sell about 120 million seedlings a year. The seedlings are cheaper in government nurseries but the species diversity, quality, size and vigor, are poorer than that found in the private nurseries. The government plans to gradually withdraw subsidies to state run nurseries which may make these private nurseries more profitable.

Taka (\$37) per year versus 3500 Taka (\$80) annually from wood sales. Project planners hope to raise participant income flows by maintaining wider alleys, implementing more intensive thinning, and encouraging the cultivation of more high value, shade tolerant crops like pineapple and ginger, (see back cover photo).

One of the most successful initiatives has been the promotion of private nurseries the number of which has expanded from 59 in 1980 to about 5000 at present (see Box 3). Nationwide, this network of small private operations distributes an estimated 120 million seedlings each year. Under this program over 100,000 people have received

training in nursery management. The nurseries perform a very useful function by making a wide range of species available during the rainy season. While seedlings were initially distributed free of charge, project administrators found that planting and care improved if farmers selected the species themselves and paid a nominal price.

SOCIAL FORESTRY IN THE SAL FORESTS

Most of the *sal* forests of Bangladesh are located in the flat countryside in the middle of densely settled agricultural land. The country's 120,000 hectares of *sal* have been severely

degraded and encroached over the past century. In the early 1980s, the Forest Department recognized that conventional plantation and management methods were failing. According to a Bangladesh Forest Department report, the "Forest Department realized that people's participation is necessary for expansion and protection of forest resources, and thus the benefit-sharing approach of forest management evolved."¹⁹ World Food Program support was used to restore degraded *sal* forests in lowland districts like Dhaka, Tangail, Dinjapur, Comilla, and Mymensingh. The goal of the project was to involve communities in the protection of degraded *sal* forests, similar to early efforts in neighboring West Bengal. In these areas forest watchers were hired to look after 50-hectare plots of degraded *sal* forest for the first three years of protection, after which the Forest Department would reassert direct control.

Drawing on experience from West Bengal, NGOs like Proshika began sponsoring "forest protection" rallies to draw the attention of rural communities and urge them to form forest protection committees (FPCs) to gain official recognition for their activities. While some communities came forward to protect the degraded *sal* forests, the movement has been hampered by the absence of a policy to formalize joint management agreements and provide long-term guarantees to local stewards. Nonetheless, several dozen FPCs, primarily comprised of women and landless farmers, are operating in Kaliakoir and Sreepur Upazila, with rapid forest regeneration occurring through *sal* coppice growth. Some of the older groups have begun harvesting fuelwood and poles for marketing. Timber traders and landowners have attacked some of the groups because they resent imposition of community access controls. According to a beat officer at Boali, "we try to stop the destruction of forests. But we are often helpless as the trespassers are powerful and dangerous."²⁰ While NGOs like Proshika have done excellent work assisting communities to organize *sal* forest protection strategies, these initiatives have not been well-integrated into government policies nor are they well represented in donor sponsored community forestry projects.

SUMMARY

Over the past twenty years, driven in part by the growing interests of development agencies, the Government of Bangladesh has invested heavily in social forestry programs. While there is a growing consensus that community participation in forest management is needed and desirable, opinions regarding how to establish collaborative management and what form it should take remain at odds. While social forestry projects have made considerable progress in engaging communities, they have encountered problems as well. One Bangladesh Forest Department report enumerates the following:²¹

- The formalization of Forest Department participants in forest management agreements are often delayed, eroding the tenure security and motivation of villagers and leading to poor participation.
- Jurisdictional disputes between government agencies has frustrated Social Forestry program access to land for strip plantations
- Current policies require Social Forestry partnership agreements to be renewed annually creating tenure uncertainty among participants and additional administrative work for the Forest Department.
- Poverty has constrained the ability of low-income people to contribute labor to social forestry activities.
- The popularity of agro-forestry models suffers from the impact of shading on agricultural crop productivity.
- Social Forestry projects create a second category of forestry professionals who feel insecure and alienated from those in the mainstream of the Forest Department.
- Human resources in the field of social forestry are limited.
- Conflict and mistrust exists between the Forest Department, NGOs, and other agencies.

Increasingly, forestry analysts point out that some of the richest, best managed forest tracts in Bangladesh are homestead forests and private forests while it is the state managed forests that are being degraded most rapidly. Critics contend that ineffective government custodianship has driven forest degradation. As forest cover has slipped from 20 percent of the land area a century ago, to less than 6 percent today, cynics joke that "What remains of the forest is the Forest Department."²² In 1994, Rowshan Ali Chowdhury, the then Chief Conservator of Forests noted:

*The unresolved legal issues, such as tenurial uncertainty and conflict between private and public titles over forest and forest land, traditional land rights issues of the forest dwellers, anomalies in land records and demarcation protracted over decades, have caused large scale destruction of sal forests as well as a loss of biodiversity. Too many litigations-civil and criminal, incongruity in ownership and actual possession, animosity and mistrust between local people and FD contributed greatly to forest degradation... ..Forest management and the implementation of social participatory forestry programs are hampered by the existing forest policies, laws and their institutional application.*²³

Failure of the formal forestry sector to sustain the natural forests of Bangladesh stem from ineffective policies, inadequate manpower, deep rooted corruption, implementation of projects and programs without firm objectives and accountabilities, and in misplaced priorities. Forest Department personnel are fundamentally reluctant to transfer meaningful rights and responsibilities to forest-dependent communities for fear of losing their control over the state forest domain. By not giving full recognition to customary rights, de facto use, and dependency patterns, the Forest Department, with development agency support, has not taken essential actions through its social forestry initiatives to addressing critical tenure issues, specially related to land and natural resources. As a result, many forestry projects failed to achieve the desired goal of sustainability.

INDIA

India is a vast, diverse country with a population that recently surpassed one billion people. While over 80 percent of India's people are Hindu, nearly every major religious group is represented. India is also home to the world's largest population of tribal communities, some 50 million people reflecting over 400 ethno-linguistic groups.²⁴ Ranking as the seventh largest country in the world in terms of land area, India possesses only one-percent of the world's forests. Broadly, the country can be divided into the Himalayan region that stretches from Burma to Pakistan along India's northern border, the Gangetic Plains, and the Deccan plateau, which makes up the peninsular region of the south. The Deccan is drained by the eastern and western Ghats, which still retain rich tropical forests. Yet, despite pockets of old growth forests, subsistence and commercial demands on forests have drawn down the productivity of India's natural forests. As a consequence, in 1997-98 India had to import US\$1.3 billion in timber, pulp, and other forest products.

HISTORY AND CONTEXT

Approximately 23 percent of India's land area, or 76 million hectares, is officially designated forest land. The area under actual forest cover, however, was estimated to be 63 million hectares in 1997, approximately 90 percent of which is under the administration of state Forest Departments.²⁵ At the present time 100 million people reside in India's forests and are heavily dependent upon the natural resource base for their subsistence and livelihood. Another 275 million people live near the forest and are also economically dependent on forest products to varying degrees.²⁶ India's large livestock population is one of the largest in the world, with 270 million domesticated animals estimated to graze in the forest. Additionally, graziers collect about 175 million tons of green fodder annually from forest lands.²⁷

India's rapid industrial expansion relied on commercial timber exploitation from state forest lands throughout the 1950s, 60s, and 70s. Between 1975 and 1981, it is estimated that India

was experiencing deforestation at a rate of 2.3 percent annually, or about 1.5 million hectares forest loss each year.²⁸ A recent study reported that 45 percent of India's land area is wasteland, representing nearly 130 million hectares, nearly half of which is located on state forest lands, reflecting 61 million hectares degraded forests (see Figure 7).²⁹

According to Government of India statistics, deforestation has slowed from 1.3 million hectares annually in the 1970s, to .34 million per year in the 1980s, declining further to .13 million between 1990 and 1995. While forest cover has begun to stabilize over the past ten to fifteen years, the type and condition of India's forest ecosystems is changing. Natural forest ecosystems continue to deteriorate in many areas. Estimates of good forest cover range from 4.5 percent to 11 percent still retaining dense forests with canopy closure of 40 percent or more.³⁰ The wood stocking levels in India's forest on average are less than half those for developing countries as a whole, 47 cubic meters per hectare versus 113 cubic meters per hectare.³¹ While natural forests have been degraded or disappeared in some areas, plantations of fast growing trees have expanded rapidly from 3 million hectares in 1980 to 13 million in 1990.³² Between 1980 and 1987, the government claims to have planted 18.9 billion trees, or nearly 20,000 trees in each of India's villages.³³

The nationalization of much of India's forest land in the later part of the nineteenth century initiated a process of alienation of forest-dependent communities from the management of designated public lands. The deterioration of natural forests has also led to a decline in environmental service functions at the local, watershed, river basin, and global level. Forest loss is linked with a decline in hydrological performance including declining rates of aquifer recharge, uneven surface water run-off, and downstream flooding. Deforested lands experience accelerated topsoil erosion and reduced ecological resilience, limiting opportunities for forest restoration.

In some areas, loss of forests has caused micro-climatic changes including a drying of the

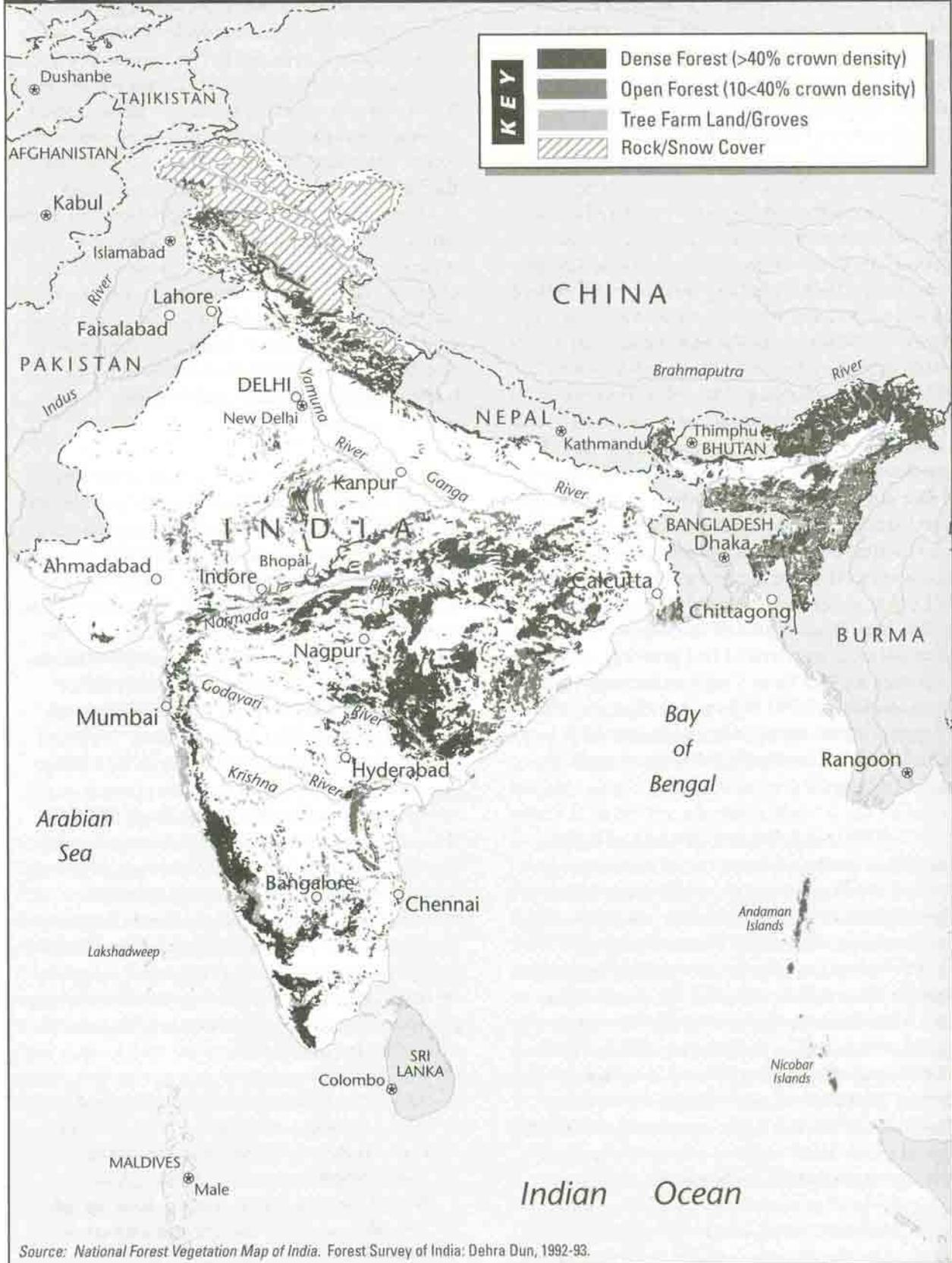
local environment after windbreaks are removed and humidity levels fall. Declining quality of forest habitat has also negatively impacted biodiversity in many rural areas. The removal of trees from the land and the loss of surface soils rich in humus has also resulted in the release of carbon into the atmosphere contributing to greenhouse gases which accelerate global warming. Finally, the loss of forest directly impacts forest-dependent peoples by upsetting linkages between these natural ecosystems and agricultural systems. A wide range of forest products that have historically met diverse subsistence needs disappear, further eroding the quality of life of forest-dependent communities while increasing their dependence on state subsidized social services for housing, livelihood, nutritional support, and medical services.

India's forest policies have undergone several important shifts over the past two decades that have gradually reoriented the national sector strategy towards greater devolution of authority to forest-dependent communities. During the first thirty years after Independence, India targeted its natural forests primarily for industrial use. The rights of forest-dependent communities were de-emphasized. The first national forestry sector declaration, issued in 1952, clearly limited the rights of communities when it stated, "The accident of a village being situated close to a forest does not prejudice the right of the country as a whole to receive benefits of a national asset"³⁴ National planners hoped to stimulate industrial growth by subsidizing the private sector's access to raw materials. This industrial orientation towards forest management continued for several decades and, in 1976, the National Commission on Agriculture (NCA) announced that "Production of industrial wood would have to be the *raison d'etre* for the existence of forests."³⁵ According to N.C. Saxena:

*The entire thrust of forestry during the first four decades after Independence was towards the production of a uniform industrial cropping system, created after clear felling and ruthless cutting back of all growth, except of the species chosen for dominance.*³⁶

Figure 7

FORESTS OF INDIA



Source: National Forest Vegetation Map of India. Forest Survey of India: Dehra Dun, 1992-93.

Emphasis was placed on investment in tree planting, rather than on the management of natural forests. At the same time, the process of expanding the public forest domain initiated during the colonial period continued with the Government bringing an increasing amount of the nation's forest land under state control. From Independence to the late 1980s, the area classified as forest reserve expanded from 26 million hectares in 1951 to 46 million hectares in 1988.

In the mid-1970s, planners began to be more responsive to rural demands for fuel wood. New social forestry strategies, however, focused on private and village lands, avoiding work on state lands. This early social forestry approach consciously attempted to divert pressure from natural forests to newly created wood lots within or near each village, allowing industry to retain the rights to utilize forests under the jurisdiction of state agencies for commercial purposes. According to the National Commission on Agriculture report of 1976:

*One of the principle objectives of social forestry is to make it possible to meet these needs in full from readily accessible areas and thereby lighten the burden on production forestry. Such needs should be met by farm forestry, extension forestry and by rehabilitating scrub forests and degraded forests.*³⁷

International development agencies quickly moved to support new social forestry initiatives in India and in neighboring countries. Between 1979 and 1990, some \$1.5 billion was invested in forestry projects in Asia, many in India. Yet, in retrospect, internal reports noted that, "The Bank's investment have had a negligible impact on borrowers' forestry sector as a whole."³⁸ Social forestry strategies, especially those that targeted *panchayats* as the loci for woodlot management, encountered problems very early on. Members of residential hamlets falling within that administrative jurisdiction of the village *panchayat* often failed to identify with social forestry activities, in part because project designs generally vested *panchayat* leaders with authority rather than user groups. Many social

forestry project were run on a "turn key" basis, and when it was time for management responsibilities for plantations to be transferred from Forest Departments to communities problems arose. Social forestry projects allowed Forest Departments to retain total control over the reserve and demarcated forest lands and, thereby, not address conflicts over use rights in the public forest domain. What success social forestry projects achieved in fostering tree planting were primarily confined to farm forestry sector where tenure was secure and conflicts over control minimal. N.C. Saxena highlights the following shortcomings of the social forestry projects of the 1970s and 80s:³⁹

- Local people were not involved leading to high (seedling and sapling) mortality.
- Village *panchayats* (local elected councils) perceived the woodlots as sources of communal income, rather than as sources of fuel wood to meet village needs. The nature of species was also such that it tempted the *panchayats* to sell in the markets rather than distribute in the village.
- *Panchayats* could not enforce the discipline required for managing plantations.
- Projects were designed around the ultimate felling of the planted trees; degradation often set in after the trees were harvested.
- Land was not available to meet project targets.
- Thousands of scattered pieces of planted village lands created enormous problems of protection.
- Projects failed to define, establish and publicize the rights to the trees and procedures for marketing and allocating benefits. Insecurity about benefits led to indifference on behalf of the people.

In summary, many analysts criticize social forestry projects for failing to address critical policy questions regarding the exclusive state control over the public forest domain and the subsidized industrial use of these resources. Instead, "Social forestry was used only as an adjective to turn on the channels of money. The

officials and contractors ran the show. Once the channels of money dried up, the plantations disintegrated." ⁴⁰

In 1988, forest policy began giving serious emphasis to the rights of forest-dependent communities. The first important change in policy was to shift the goal of forest management to the provision of environmental services and radically restrict commercial use. The 1988 Forest Policy also stressed the new mandate to respond to the needs of rural people, giving them priority over industrial requirements:

The life of tribals and other poor living within and near forests revolves around forests. The rights and concession enjoyed by them should be fully protected. Their domestic requirements of fuelwood, fodder, minor forest produce, and construction timber should be the first charge on forest produce...a primary task of all agencies responsible for forest management ...should be to associate the tribal people closely in the protection, regeneration and development of forests... while safeguarding the customary rights and interests of such people ⁴¹

This national shift in forest policy echoed the sentiments of a scattered, but growing grassroots environmental movement emerging in India's rural communities. Much of this local forest protection activity has been concentrated in India's tribal belt, which stretches through the forests tracts of central India, from Gujarat to West Bengal. In this region there is a conjunction of high tribal population concentrations, extensive natural forests, and poverty (see Figure 8). For over a century, local communities with long traditions of forest use and heavy forest dependencies, have attempted to protect forest patches when they were threatened with destruction by outside industries and neighboring communities.

In the 1980s, a growing number of forest villages in eastern India began organizing informal FPCs, aided only by local NGOs and forestry field staff. In southwest Bengal, southern Bihar and, in much of Orissa, small hamlets

usually comprised of ten to one hundred households began organizing protection groups to patrol degraded forest patches near their village. Each family would contribute labor to volunteer night patrols and keep watch during the day to prevent grazing and hacking of the newly regenerating stands of *sal* (*shorea robusta*) and companion species. The case study presented in Part IV from Budhikumari exemplifies the concerns and strategies used by tribal communities and other forest-dependent people to regain control over local forests and reverse deforestation trends with dramatic success.

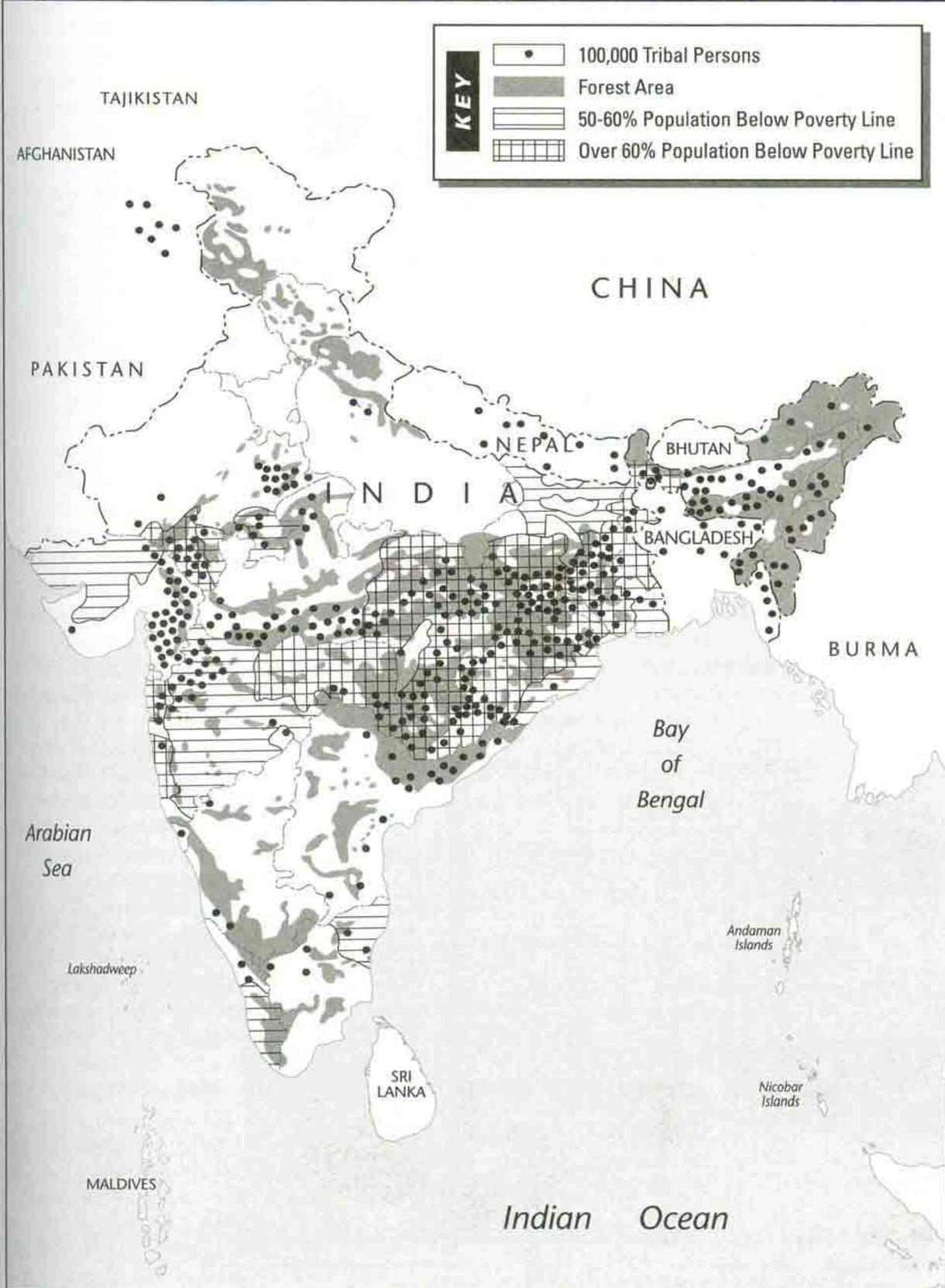
RECENT POLICY AND PROGRAM INITIATIVES

Recognizing the value of community initiatives, the Government of India passed a formal circular on 1st June 1990 directing state Forest Departments to support and encourage the work of FPCs and associated NGOs. Virtually every state in India passed Joint Forest Management (JFM) resolutions in the following five years. Reflecting the shift in national policy to allow communities an important role in public lands' management, the 1990 JFM Resolution draws on the 1988 Forest Policy when it states:

The National Forest Policy, 1988, envisages people's involvement in the development and protection of forests. The requirements of fuelwood, fodder and small timber such as house-building materials, of the tribals and other villagers living in and near the forests, are to be treated as first charge on forest produce. The Policy document envisages it as one of the essentials of forest management that the forest communities should be motivated to identify themselves with the development and protection of forests from which they derive benefits. ⁴²

With the backing of new national and state government JFM policies, community forest protection became a massive peoples' movement covering much of the natural forests in Orissa, southwest Bengal, and southern Bihar. By early 2000, the Ministry of Environment and Forests

Figure 8 FORESTS, POVERTY, and TRIBAL AREAS OF INDIA





The following three photographs from eastern India show the process of *sat* (*Shorea robusta*) forest regeneration due to community forest protection. This photo is characteristic of an unprotected *sat* forest in an advanced state of degradation due to commercial logging, uncontrolled fuelwood gathering and grazing. (photo: Poffenberger)

(MOEF) estimated that 33,000 FPCs were operating across India, controlling access to 10.2 million hectares of degraded natural forest (see Box 4). These statistics indicate the pervasive spread of FPCs in many Indian states. The reliability of the data, however, is uneven. In states



This second photo shows the results of five years of community forest protection demonstrating the vigorous regenerative power of the *sat* forest. (photo: Poffenberger)

like Andhra and Madhya Pradesh, large World Bank loans financed the rapid expansion of Forest Protection Committees (FPCs), with numbers reflecting both real achievements on the ground as well as figures inflated to meet project goals. Yet, while there are many "paper committees" on the books, there are also uncoun- ted, yet active community forest management systems operating in many parts of India.

As once degraded forest patches come under community stewardship, with self-imposed regulations for cutting and grazing, the resilient Indian forest ecosystems begin regenerating. *Sol* and teak forests on the verge of total elimination send up shoots from their

remaining rootstock at a rate of one to two meters each year. Within four or five year's time, closed canopy stands of saplings start covering the landscape. The restoration of forest cover in many districts in eastern India is clearly visible in changes apparent in satellite images for the period from 1980 to 1999. On the ground, the impact on environmental service delivery at local levels was often dramatic reflected in rising groundwater levels, improved micro-climate, and enhanced spring flows. Its rapid spread not withstanding, JFM systems currently cover only 5 to 10 percent of



After eight years of forest protection, the *sat* forest canopy has closed creating a densely vegetated ecosystem supporting a diverse range of flora and fauna. (photo: Poffenberger)

India's total forest area. Whether the program can truly become the primary form of management across India depends on how a number of pending issues are resolved.

JFM POLICIES-NATIONAL AND STATE LEVEL RESOLUTIONS

During the last decade of the twentieth century, JFM became the national strategy for halting deforestation on public forest lands. In theory, JFM is a collaborative partnership between forest departments and communities. According to one description:

*The concept of JFM represents a hybrid property rights regime; it is a combination of State property and common property with the objective that it does not degenerate into open access. While members have a right to exclude people from other villages and to a share of forest produce and its benefits, the government reserves the right of ownership and retains the authority to exclude certain land uses like cultivation and to control the disposal of certain products like timber. The bundle of property rights belongs exclusively neither to the government nor to members, but is distributed between the two.*⁴³

The skepticism, with which many Indian Forest Service officers first viewed the concept of community management partnerships in 1990, has been gradually displaced as conciliatory strategies reduced conflicts between field staff and communities and massive donor project funds provided new support. Recognizing these achievements, state level JFM resolutions have been criticized by some foresters, NGOs, and academics for being cautious, limiting

communities to small tracts of degraded lands, and only modest shares in timber harvests. In framing the new JFM resolutions, state planners had little experience structuring new participatory forest management policies. Many of the initial state level JFM guidelines were cautious and restrictively framed, with state Forest Departments retaining control over the most valuable forest resources and decision-making authority.

Frequently, JFM resolutions are critiqued for the limited degree to which they empower community managers. While there is some sharing of forest products mandated within the resolutions and JFM guidelines, the powers given to the communities are limited. Communities are expected to "assist" the Forest Department to prevent trespassing, encroachment, grazing, fire, poaching, and theft, but are often not authorized to punish or decide the punishment for transgressors. Some state resolutions have vested Forest Departments with the authority to dissolve community forest management groups. Other resolutions contain rigid guidelines dictating the structure and function of community groups, leaving spontaneous communal organization with no recognition or access to project support.

**Box 4 AREA UNDER JFM BY STATE
(as of Jan 2000)**

STATE	NO. OF JFM COMMITTEES	AREA UNDER JFM (ha.)
Andhra Pradesh	6,575	1,632,190
Arunachal Pradesh	10	5,285
Assam	101	3,060
Bihar	1,675	935,065
Gujarat	706	91,071
Himachal Pradesh	203	62,000
Haryana	350	60,733
Jammu & Kashmir	1,599	79,273
Karnataka	1,212	12,800
Kerala	21	4,000
Madhya Pradesh	12,038	5,800 000
Maharashtra	502	94,728
Mizoram	103	5,870
Nagaland	NA	NA
Orissa	3,704	419,306
Punjab	89	38,991
Rajasthan	2,705	235,634
Sikkim	98	2,191
Tamil Nadu	599	224,382
Tripura	157	16,227
Uttar Pradesh	197	34,569
West Bengal	3,431	490,582
TOTAL	36,075	10,247,959

Community forest management groups, NGO support organizations, and field level foresters have been communicating these problems to state Forest Departments since the resolutions were first issued. The underlying desire of Forest Departments to control community management groups, reflected in the language and provisions of many JFM resolutions, continues to be identified as a stumbling block to the establishment of effective local systems of forest stewardship. Within a few years after the issuance of the first generation of JFM guidelines a number of

states began revising their JFM policies to incorporate field level learning and extend greater rights and responsibilities to community managers. For example, between 1988 and 1999, the Orissa Forest Department revised its JFM resolution four times.

This process of evolving policies to respond to very new and different systems of public forest management has allowed India continue to adapt the Joint Forest Management strategy to better fit with the wide range of contexts present in the country and the needs of local people. As in Nepal, the process of devolving public forest management to communities is occurring in stages, with growing levels of authority and autonomy transferred to communities over time. The 21st February, 2000 JFM Circular and Notification of the Indian Ministry of Environment and Forests (MOEF) addresses a number of the shortcomings of earlier national and state JFM guidelines. It extends greater recognition to communities by allowing them management rights to well-stocked forests, encouraging FPCs to establish

independent legal identities, and by acknowledging their legitimacy regardless of their structure or composition.

JFM AND FOREST TYPE

JFM policies and programs were initially formulated for degraded land situations. Experience from eastern India demonstrated that community protection could result in the rapid regeneration of forests, provided rootstock and soil conditions allowed coppice growth and new

seedlings to develop. As in Nepal, initially many Forest Departments were reluctant to release "well-stocked" forests for community management arguing that communities had no right to a share in existing timber stands, only in those assets created through their protection. Protected areas were also deemed to be outside the realm of JFM areas, given their need for more intense controls to conserve biodiversity and their valuable forests. Throughout the 1990s, most states continued to manage reserve forests through sole agency custodianship.

While some community participation was encouraged, JFM was not widely pursued in protected areas. Rather, "ecodevelopment" strate-

gies were employed to fulfill community needs from sources outside the protected area. As with the social forestry projects of the 1970s and 80s, communities dependent on forests located within protected areas were generally directed away from those resources. Despite the emphasis on degraded lands, it was clear to many foresters, NGOs, researchers, and development agency staff that well-stocked forests would benefit from community protection and that protected areas could also be more securely managed through partnerships with communities residing on their fringe or within their interior.

In August 1998, the MOEF formed the JFM Standing Committee to guide the evolution

Box 5 NEW GUIDELINES FOR INDIA'S JFM STRATEGY

On February 4th, 2000, almost ten years after the original Joint Forest Management (JFM) guidelines were passed, the Ministry of Environment and Forests (MOEF) issued a new set of policy instructions that both expanded the national strategy and addressed a number of critical issues. Since the 1st June circular was issued in 1990, forest-dependent peoples rights and responsibilities for public forests have been limited to degraded ecosystems, while only registered groups have had access to government project support. The new guidelines for strengthening JFM allows the strategy to be implemented in India's dense forests with over 40 percent crown cover, as well as responding to important questions regarding legal, gender, and operational concerns. The new JFM policy was developed by a standing committee comprised of senior government officials, foresters, scientists, and NGO leaders. The approved recommendations included the following:

- **Rights to Good Forests**-Allows forest-dependent communities to co-manage productive, well-stocked forests and have a 20 percent share in timber production. Initially, forests available for JFM will be limited to those areas within 2 km. of the village boundary.
- **Recognition of Self-initiated Groups**-Acknowledges informal village-based forest protection groups that have not been recognized by the Forest Department in the past because they fail to conform to state guidelines for JFM committees (JFMCs). Under the new guidelines, non-conforming JFMCs are to be recognized and derive benefits from JFM support programs.
- **Legal Identity**-Provides a legal identity to forest protection committees. New guidelines urge state Forest Departments and NGOs to assist forest protection committees to register under the Societies Registration Act.
- **Conflict Resolution Mechanisms**-To resolve conflicts related to Joint Forest Management initiatives, state governments are directed to form working groups at the state and divisional levels to be comprised of different stakeholders participating in JFM projects.
- **Women's Involvement**-To encourage the involvement of women in JFM, women should constitute at least 50% of the JFM general body and 33% of the membership in the Executive committee.
- **Investments in Forestry**-A joint contribution of 25 percent of timber revenues from the JFMCs and the Forest Departments should be reinvested for the conservation and development needs of the forest.
- **Integrated Planning**-The creation of a new JFM working circle to facilitate the integration of village-based micro management plans with Forest Department working plans, and initiatives by other development agencies.
- **JFM Monitoring and Evaluation**-JFM progress should be monitored and evaluated at intervals of 3 years and 5 years at the state and divisional level.

of JFM in India. In February 2000, the Government of India approved a new set of JFM Guidelines, based on the recommendations of the Standing Committee, allowing villagers to access not only degraded forest, but well-stock forests as well and to begin protecting and managing these resources (see Box 5). This policy decision opens an additional 25 to 30 million hectares of state forest land for community stewardship. While the policy has been approved at the national level, it requires careful facilitation at the state, divisional, and local levels to ensure that it is rapidly and systematically implemented.

SUMMARY

India has made great strides over the past decade in altering policies and practices that have alienated tribal communities and other forest-dependent villages from the resources upon which their livelihoods are heavily dependent. In some areas of the country, the impact of forest management devolution has dramatically effected vegetative cover, transforming severely degraded forest tracts into vigorous young stands of secondary growth. Perhaps the most striking success stories are found in communities where deforestation has

Box 6

INTERVIEW WITH MR. C.P. OBERAI, INSPECTOR GENERAL OF FORESTS, MARCH 13, 2000

Q: How have Indian forest management priorities shifted over the past ten to twenty years?

A: In India, after independence the forests were seen as a source of timber and revenue for the government, but our new forest policy of 1988 has changed these priorities. The Government now views the role of forestry as a method to manage the environment and bio-diversity, and a way to meet the needs of the villagers who are staying near the forests. Forests are no longer seen as a source of supply of raw materials to wood-based industries. Industries are now being encouraged to establish linkages with the farmers who are engaging in farm forestry on their private land. The Government now realizes that it is not possible to protect and conserve the forest and meet their mandate of serving the people, without the involvement of the people. As such, the Government has issued a notification in June 1990 advising all the states to come up with Government orders to establish joint management of forestry in various districts and divisions. In India, out of 26 states, 22 have already issued notifications and Joint Forest Management (JFM) is moving fast in those states.

Q: The Ministry of Environment and Forests estimates that there are between 30,000 to 35,000 forest protection committees operating nationally. What steps are needed to extend JFM programs to new areas?

A: In India, there are about 600,000 villages of which 200,000 are situated in or near forest areas. We are trying to do our best to involve more local communities so that they start believing they are stakeholders in the entire process of sustainable forest management.

Q: What strategies is the Indian Forest Service using to build staff capacity to implement joint forest management?

A: In my Ministry, we have recently constituted a cell to look after the progress of JFM. We have also asked state Forest Departments to create special JFM cells as well, to take stock of how JFM is being implemented. We are encouraging research in areas where JFM has really taken root, as well as making documentaries to spread the news and express the views of communities on joint forest management.

Q: Recently the Ministry of Environment and Forests approved new guidelines for JFM implementation, the first major JFM policy initiative after the June 1st Circular of 1990? What do you see as the significance of the new JFM guidelines?

A: The original guidelines limited JFM to only poor quality, degraded forests. In the past, we felt rich forests should be administered by the Forest Departments. We increasingly recognize that without JFM the good forests will be progressively degraded. So the Ministry decided that good forests should be carefully extended for JFM. We are also recognizing that women are often the primary users of forests. Unless women are partners in JFM the program will not succeed, and the men are often unaware of the hardships they face. In the new guidelines we recommended that women hold 50 percent membership in forest management organizations the at least one-third representation of the leadership positions.

been halted without any outside subsidy from government or NGOs, driven only by local community commitment to preserve their natural forest environments. Yet, the impact of supportive policies at the national and state level, as well as technical assistance from NGOs and development agencies in promoting JFM as a national movement in India can not be underestimated.

India's progress in moving through this historic forest management transition is notable, yet still in an early phase. Even optimistic estimates of JFM coverage would suggest that the recognized community forest management groups only protect five to ten percent of the forest area that could benefit from local stewardship. Technical extension services for community managers are still limited. Development agency support is sporadic and not sustainable over the long term as a permanent source of financing. Forest Departments face difficulties building long term strategies when bi-lateral and multi-lateral funding is abruptly halted at the end of project cycles. External funding of forestry projects in India, of which approximately fifty percent is related to JFM support activities, current averages around \$150 million annually. This is likely to fall to around \$67 million per year by 2002-2003 given current commitments.⁴⁴ The decline is related both to the likely decision of the World Bank not to enter into a second round of forestry loans in a number of key states, as well as to the withdrawal of some bi-lateral assistance programs.

While external aid has been an important incentive for forestry agencies to move ahead with policy and programmatic reforms, it is not a long-term source for financing these new forest management strategies. Financing mechanisms based on timber sharing agreements outlined in state resolution have yet to be validated on a larger scale. Subsidizing community forest management through carbon sequestration credits is still in an early phase of development and dependent on international climate change agreements. Second generation challenges, such as the long term financing of forest management systems, await India's JFM program and will be an important test of its long term viability.

Beyond financing is the requirement to redesign national and state level planning systems, monitoring and evaluation methods, and conflict resolution mechanisms to support the national JFM program. Much of the procedural reforms, changes in training curricula, reorientation of staffing practices, and administrative structures have only begun to take place. While India has come a long way, JFM has a long way to go to reach its full potential. An interview conducted with COP. Oberai, Inspector General of Forests, in the spring of 2000 contains some of his reflections and concerns (see Box 6). Nonetheless, India's experience demonstrates that even in situations where resources are limited, community forest management systems have tremendous potential. India offers a wealth of lessons regarding how these new approaches to community management can be implemented on a national scale in an immense country with great social and ecological diversity.

NEPAL

Nepal is a world leader in the field of community forestry. By the mid-1970s, Nepal began establishing itself as one of the first nations in Asia to recognize the limitations of unilaterally managing public lands through government agencies, and the need for community involvement in forest management. With financing and technical support provided by the World Bank and a diverse group of bi-lateral donors and NGOs, the Government of Nepal was able to initiate community forestry pilot projects in many of the country's watersheds.

The 1980s were a period of extensive experimentation with operational strategies for farm forestry, reforestation, nursery establishment, extension, training, and community organizing. Donor organizations were eager to establish field projects in the scenic Himalayas, and community forestry provided an ideal approach to address both social and environmental concerns. Each project, through interactions between technical support staff, local foresters, and communities, designed unique approaches to training, subsidy and credit provision, and technical extension. Although

experience among participating Nepalese and foreigners grew, supportive forest policies were slow to emerge.

The establishment of a new democratic government in 1990 supported the devolving of management rights and responsibilities to FUGs. Over the past decade, the formal transfer of rights to hamlet-based FUGs has accelerated. By March 2000, approximately 9,000 FUGs had legally taken management responsibilities for 12 percent of Nepal's forest lands. Government planners hope to extend the Community Forest Management to cover 61 percent of Nepal's total forest area through the involvement of 40,000 FUGs in the coming decades. The following section discusses important past achievements as well as challenges that confront this progressive program.

HISTORY AND CONTEXT

Bordering India to the south and China to the north, Nepal extends for one thousand kilometers through the middle third of the Himalaya mountain range. Historically, this landlocked, mountain nation has been physically and politically isolated, while possessing a diverse mix of cultures. Moving from the south to the north, and covering only one hundred and fifty kilometers, Nepal's geology changes rapidly from the Terai of the northern Indian plain to the high elevation, arid Tibetan Plateau (see Figure 9). The dense *sal* and teak stands of the Terai are some of Nepal's richest forests, possessing a complex mix of flora and fauna. Over the past forty years, as roads have opened this once remote, region to the outside world, Terai forests have come under intense pressure from migrant families from the Nepal hills and India, while experiencing increasing commercial logging pressure.

The lower foothills of the Himalaya are comprised of the Shivalik and Mahabharat ranges with interspersed valleys. These mountain ranges are steep, with sharp gorges, preventing extensive agriculture and settlement. Next comes the Middle Hills, with the larger valleys of Kathmandu and Pokhara where much of Nepal's population resides. Most of the Middle Hills lie

between 800 and 3000 meters. The range is transected by rapidly flowing rivers cutting through some of the world's deepest gorges. The population of this region has tripled over the past fifty years, and this mountain landscape now carries one of the highest rural populations to agricultural land ratios on the planet.

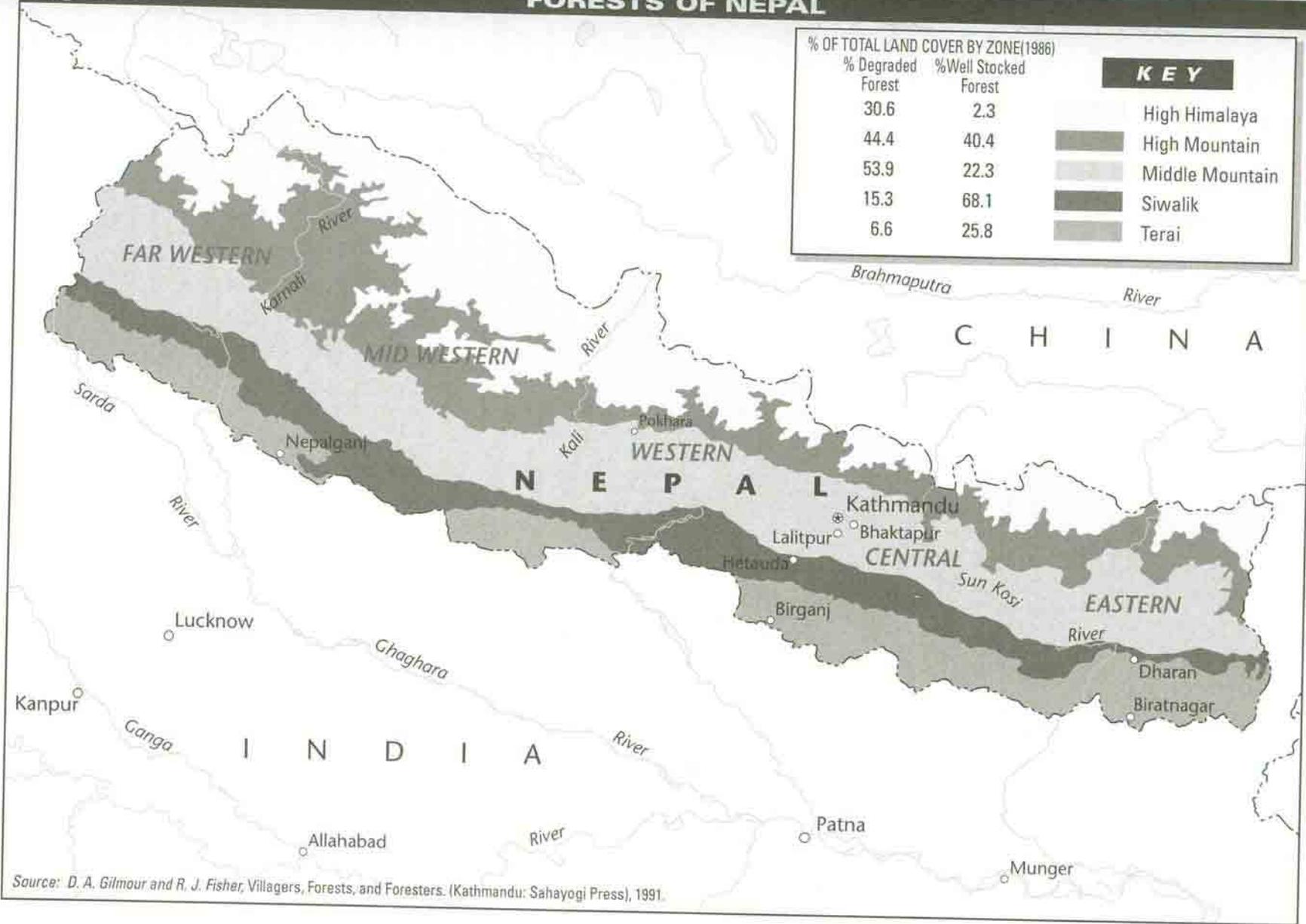
While commercial logging has been limited by the absence of road networks, heavy subsistence demands are placed on Nepal's hill forests for fuelwood, fodder, and green mulch for fertilizer. Nutrient transfers from forest to farm are an integral and essential component of Middle Hills farming systems. Alarm over high deforestation rates in the 1970s, led to successive waves of social forestry strategies during the 1980s and 90s. Rising up from the Middle Hills is the Greater or Inner Himalaya, possessing some of the highest mountains in the world, which is then transformed into the southern edge of the Tibetan plateau.⁴⁵

The history of forest management has been distinctly different in the Kathmandu Valley, the Middle Hills, and the Terai, relying on different management strategies up to the present time. Archeological evidence suggests that small kingdoms were established in the fertile Kathmandu Valley as early as the third century, however the influence of these courts was limited to the surrounding hills.⁴⁶ Nepalese view the Lichchavi Dynasty as a golden age due to the decentralized administrative policies that supported communal organizations like the *gosthi* and *panchali*. Ancient inscriptions indicate that authority in forest matters were largely a communal matter, with dictates from King Shiva Dev in the middle of the fifth century empowering village councils to oversee use. Households were allowed to fell up to 40 trees each year for home construction and charcoal making, but commercial use was banned according to the inscriptions from that period.⁴⁷

The Malla Dynasty followed the Lichchhavi in the eleventh century, and historical records indicate that one Malla queen established and expanded the temple forest network in the valley in the sixteenth century, with provisions

Figure 9

FORESTS OF NEPAL



Source: D. A. Gilmour and R. J. Fisher, Villagers, Forests, and Foresters. (Kathmandu: Sahayogi Press), 1991.

that banned all hunting, gathering, and fires. Malla rulers also gained revenues by exporting to India timber, wax, honey, birds, and elephants collected in the forest of the Terai, and were already beginning to import sal logs from the southern forests due to a growing shortage of good building timber in the Kathmandu Valley. By the early eighteenth century, forest management practices for temples, royal land, and communal holders in the Kathmandu Valley were clearly articulated and actively implemented. According to Gautam, "The regulations emphasized consolidation of forest area, recognized the users, prescribed the terms and conditions for using forest produce, and set the penalties for defaulters."⁴⁸

The history of the Middle Hills' forests followed a different course. While sophisticated cultures were developing in the Kathmandu Valley from the third century, the hills remained sparsely populated by tribal communities of Tibeto-Burman speaking people until Indian immigrants began moving into the hills of Nepal. Most of the indigenous hill tribes of Nepal held all their land under a form of *kipat* (communal control). Responding to pressure from new waves of Islamic rulers moving into the Indian plains from the Northwest, a steady stream of Hindu plains people settled in the Middle Hills from the eleventh century onwards. With superior weapons, wet rice technology, and greater literacy, high caste Hindus with their lower caste retainers, began subordinating the existing Mongoloid society, influencing their crops and cultivation practices. Indigenous systems of communal forest and land management were gradually supplanted by feudal systems of control. According to Krishna Ghirmire:

*The Hindu rulers established their control over much of the Hill areas within a relatively short stretch of time. By the end of the seventeenth century, most of the petty states (counting over 50 in total) were already under the firm control of Hindu princes.*⁴⁹

Nepal began developing a national identity in the middle of the eighteenth century, when Prithivi Narayan Shah, a king from the state of Gorkha, founded the present line of monarchs and

began uniting the country. Shah made alliances with Gurungs, Magars and other hill tribes, allowing them to retain communal *kipat* systems of land tenure. Nonetheless, over the next two hundred years, the hierarchical caste-based social structure favored the lowland Hindu migrants, while the nobility sought to extend their influence and territorial control through making and acquiring land grants (*birta*, *guthi*, and *jagir*).

By the time the Rana Government was overthrown in 1951, one-third of the country's farmland and forests were held under *birta* land grants, with 75 percent belonging to members of the Rana family. A series of land reforms were enacted, though often these were only partially or sporadically introduced. During the same period, the forest lands of the country were largely nationalized and placed under the jurisdiction of the Forest Department. An underlying objective of forest nationalization was to end the feudal system of tenure that controlled much of the country's forest lands.

The history of forest management in the Terai differs sharply from the experience of the hill forests. The dense *sal* forests of the Terai, with their substantial populations of elephants, rhinoceros, tigers, and other large mammals, resisted settlement and logging for centuries due to the prevalence of endemic malaria throughout the region. Only the *Tharu* and several other tribal communities, who had developed some resistance to the disease, resided in the area practicing hunting, gathering, and swidden farming. By the time of Nepal's unification in the late eighteenth century, the forest resources of the Terai were seen as important source of revenues for the government. As early as 1793, the Government had established administrative regulations centralizing the timber trade, with new orders in 1799 controlling the selling of wax and certain other forest products. By 1886, the Terai forests were classified as those with high commercial value (*sira*), low commercial value (*jhora*), and protected. Government officials carefully regulated the system of exports. As a British resident noted in 1876:

Under the system of monopoly now obtaining what happens is that timber is collected

*at depots near the ports at which the larger rivers leave Nepalese Territory. These depots are controlled by government officials.*⁵⁰

In 1861, the Rana Government was reported to have generated Rs. 1,000,000 on timber revenues from the Terai, and was also drawing on sallogs for construction in the Kathmandu Valley. By 1927, the British had established a timber exporting office in Nepal, with British foresters organizing logging operations to produce timber for railway sleepers. In 1942, a national Department of Forests was established to collect revenues from logging operations. In 1951, the Department of Forests was expanded and a forester's college established. Commercial forestry operations continue to be focused largely on the Terai.

The jurisdictional authority of the state over Nepal's forests was strengthened by the Private Forest Nationalization Act of 1957. With the passing of this legislation, all private forests, especially the *birta* and *jagir* land grants, became public domain and were placed under the administration of the Forest Department. A major goal of the forest nationalization policy was to end the feudal system of resource control that had evolved over a century of Rana government administration. Eliminating feudal tenure authority created opportunities for greater control by local communities, although the rights of hamlets over local forests, and their recognition as de facto managers, received little recognition under the Act. At that time, the Forest Department had limited capacity to administer the newly declared public forest lands, with only four professional staff. The private sector was not interested in investing in the development of management systems for the hill forests, given the lack of road access to transport timber to markets. As a consequence, most of the forests of the Middle Hills remained under local management.

As in India, the abolition of feudal control over forests led to accelerated deforestation in some parts of Nepal, especially the Terai, as landlords attempted to convert forest land to permanent agriculture or extract timber prior to losing control over the resource. Based on field

studies, Gilmour and Fisher argue convincingly that by eliminating feudal landlord control the Act stimulated communities to begin protecting forests.⁵¹ Acknowledging that communities were playing an important role in forest management, the Forest Act of 1961 made provisions for community forestry by providing recognition for *Panchayat* Forests, but with no operational guidelines for implementation. Yet, in 1967, the Forest Preservation Act strengthened government control by authorizing it to enforce *panchayat* protected forests and giving the district forest officer and guards the right "to shoot wrongdoers below the kneecap if they in any way imperiled the life or health of forest officials."⁵² Tensions between Forest Department staff and local communities were present in many parts of the country during this period, often culminating in legal battles and outright violence.

RECENT POLICY AND PROGRAM INITIATIVES

Community forestry strategies gained greater definition from the mid-1970s onwards. In 1975, the Food and Agriculture Organization's (FAO's) Forestry Division established a Community Forestry Development Project that was later integrated as a new division with the Department of Forests. Shortly thereafter, Australia (1978), Britain, Denmark, Finland, the United States (1980), and Switzerland also initiated CFM projects. NGOs began working on CFM projects in growing numbers after a three-day meeting sponsored by the government in 1975 turned into a 23-day marathon, with foresters participating from all over Nepal. The concept of peoples' participation in forest management was raised with greater clarity in the National Forest Plan of 1976.

In 1978, a community-based forest policy was enacted with operational by-laws (see Box 7).⁵³ The new guidelines included the *Leasehold Forestry Rules*, *Panchayat Forest Rules*, and the *Panchayat Protected Forest Rules*. This legislation clearly required the "handing-over" of forests to local user groups identified by *panchayat* leaders. This action was later supported by the Decentralization Act of 1983. The 1978 regulations included the following:

- Transfer of forests to village leaders, at that time the *Panchayat* headman (*Pradhan Panch*)
- Revenue sharing with the Forest Department
- CFM be limited to degraded lands
- *panchayat* Forests would be limited to 125 hectares in size
- 40 percent benefit share to community
- *Panchayat* forest territorial responsibilities would be determined by political boundaries

While the policies and programs initiated in 1978 began involving the Forest Department and the NGO community in participatory forestry strategies over the next decade, the process also encountered a number of problems along the way. One of the most critical was that many *panchayats*, including the leadership and the organization, were not well positioned to control forest use. Indigenous management systems typically relied on smaller user groups residing in hamlets in close proximity to the forest. *Panchayats* were often politicized and experienced rapid turnover among their leadership. *Panchayat* boundaries were arbitrarily drawn, or based on political considerations. As a result, forest territories allocated for *panchayat* management were often divided in ways that did not reflect natural boundaries, hydrological functions, or social use patterns. As A.L. Joshi, a Divisional Forest Officer at that time recalls:

*The handing-over of forest resources was to the elected village leader. There were at least 10 to 20 forest patches, needing to be managed by different groups of users. The village leaders were actual users in only one or two forest blocks. This system was strictly leader-oriented and did not work well. After a few years, when the leaders became inactive, management plans could not be prepared and members could not be activated and real users could not be identified and involved in management. When new leaders were elected the CF certificate would be lost and the management could not be continued.*⁵⁴

Local user communities lacked a sense of resource ownership as authority was vested with *Panchayat* leaders who often resided in villages far from the forest tract. The new regulations were widely criticized for increasing the authority of local political elites and providing them with inequitable access to development projects.⁵⁵ Regulations also promoted national goals and institutions rather than local needs. While *Panchayat-based* management often failed to mobilize user group action, project staff and foresters gained increased understanding regarding field conditions including the extensive existence of indigenous forest management systems. Forest rangers and other field staff's attitude and behavior also began shifting away from command and control methods to collaborative social process methods better suited for community forestry projects.

Throughout the 1980s, the difficulties in implementing CFM programs through *Panchayats*, as well as conflicting lands and operational project guidelines, were recognized by field staff, development agency technical specialists, and key individuals within the Forest Department. According to one assessment:

*The seventh Five-year plan (1985-1990 reiterated the priority of "handing over" "government forests to community, but the relationship between forestry laws and decentralization laws remained confusing.*⁵⁶

These conflicts in forest policy and decentralized governance led to a further round of forest policy reforms in 1988 and 1989. The Community Forestry By-laws, passed in 1988, recognized forest user groups irrespective of political boundaries. The District Forest Officers (DFOs) were given the authority to hand over forests to community groups without waiting for the approval of the regional director. Many of these policy shifts were incorporated in the 1989 Master Plan for the Forestry Sector (MPFS). Some key elements included in the Master Plan were:

- Meeting community needs as a first priority
- Empowering forest users as managers

Box 7

CFM POLICY EVOLUTION IN NEPAL

	1978: PANCHAYAT FOREST & PANCHAYAT PROTECTED FOREST REGULATIONS	1979: AMENDMENT	1987: AMENDMENT	1995: REGULATION
COMMUNITY FORESTRY AREA	<i>Panchayat</i> forest not more than 125 ha. <i>Panchayat</i> protected forest not more than 250 ha.	<i>Panchayat</i> forest not more than 125 ha. <i>Panchayat</i> protected forest not more than 250 ha	No limit	No limit
PERCENTAGE OF BENEFIT TO THE COMMUNITY	40%	75%	100%	100%
USE OF FUNDS BY THE COMMUNITY	50% for forestry	50% for forestry	100% for forestry	100% Surplus can be spent on village activities
PRICING OF PRODUCTS	Not less than the government royalty rates	Not less than the government royalty rates	Not less than the government royalty rates	Forest-user's Group (FUG) to decide
PLAN PREPARATION	By District Forest Officer (DFO)	By DFO	By community	By FUG
PLAN APPROVAL	Conservator	Conservator	Regional Director	DFO
FOREST BOUNDARY	Administrative	Administrative	Administrative	Not defined by administrative or political boundaries
MANAGEMENT RESPONSIBILITY	<i>Panchayat</i>	<i>Panchayat</i>	User's Committee under <i>Panchayat</i>	FUG
CHAIRPERSON	Elected leader of the <i>Panchayat</i>	Elected leader of the <i>Panchayat</i>	Nominated by the <i>Panchayat</i>	Elected by the users

Source: Community Forest Management in Nepal: Implications for Policy and Human Resource Development, ICIMOD, Kathmandu, 1998.

- Emphasizing extension as the primary role of forestry field staff
- 100 percent of benefit share to communities
 By the end of the 1980s, approximately 50 percent of all donor assistance to the forestry sector in Nepal was being invested in community-based initiatives. While community forestry in Nepal was well financed, actual achievements in turning over forests to villager user groups was slow. Government limited FUG management to degraded forests and primarily focused on engaging leaders, rather than the broad-based inclusion of all members. Concerns were also raised that community protected forests were only increasing pressures on neighboring forest territories not yet under user control. In 1989, the community forestry bi-laws were amended again, this time extended FUG management to any

forest type. The establishment of a multiparty democracy in Nepal in 1990 resulted in the abolition of the *Panchayat* structure, making it easier for the Forest Department to work directly with informal forest user groups.

The 1990 Constitution directly emphasizes the principles of community-forest management including the fundamental rights of Nepali citizens to utilize local natural resources. Under the new constitution, *Panchayats* are replaced by Village Development Committees comprised of democratically elected representatives. The intent of the Constitution was quickly acted upon, with the 1992 to 1997 Eighth-Five Year Plan calling for 5,000 user groups to be formed and 252,000 hectares of public forest land to be transferred to those groups. 58 That target was exceeded and since the end of the Eighth Development Plan, the rate of "hand-over" has further accelerated (see Box 8).

Box 8 DEVOLUTION OF FOREST TO USER GROUPS 1987-1999

YEAR	FUGs RECOGNIZED	AREA (ha.)	HOUSEHOLDS INVOLVED
1987	3	80	398
1988	34	519	2,732
1989	29	1,916	5,356
1990	54	1,950	5,189
1991	354	1,991	37,506
1992	634	3,592	73,303
1993	950	63,308	99,249
1994	1,390	98,531	141,159
1995-6	1,908	143,430	220,786
TOTAL 1996*	5,356	362,551	585,658
TOTAL 1999**	8,785	634,182	976,856
TOTAL 2000***	8,957	651,764	1,000,627

*Forest Department Figures up to May 1996
 **Forest Department Figures up to November 1999
 ***Forest Department Figures up to March 17, 2000

In keeping with the recommendations established in the Master Plan, the 1993 Forest Act clearly defined Forest User Groups as an "autonomous and corporate bodies with perpetual succession." Forest User Groups (FUGs) were defined as groups of households using or dependent on forest resources. FUGs are identified by a district forest officer (DFO) based on household surveys to assess forest dependence. Once the group membership has been established, the members develop a constitution and five-year management and protection plan, as which time the DFO formally transfers management authority to the FUG. Each PUG is supposed to create an executive committee consisting of 10 to 15 members. The committee is elected during a general body meeting and handles routine management of the forest. The role of the Forest Department is to facilitate the functioning of the FUGs and provide technical assistance if needed. The PUG is a legal entity and possesses the following rights and responsibilities:⁵⁹

- Protect and manage the forest and sell forest produce without any tax liability
- Prepare annual plans to manage the forest
- Acquire, use, sell, and transfer movable and immovable properties
- Set punishment for members who violate working plans
- Fund its own activities and receive grants from governments and outside sources
- Reinvest at least 25 percent of forest revenues on forestry development, with the remainder spent on community activities

While the Forest Master Plan of 1989 and the New 1990 Constitutions helped provide a broad strategic and legal framework for the expansion of community forestry in Nepal, the development of clear implementation guidelines in 1993 greatly accelerated the program at the field level. In preparation for a National

Community Forestry seminar in 1993, a national Forest User Group (FUG) workshop was organized involving 40 different groups from 28 districts. Only community representatives were allowed to attend and many issues surfaced regarding ways to streamline operations and address community concerns. The meeting laid the foundation for the development of the national Federation of Community Forest Users of Nepal (FECOPUN) and also provide guidance for the 1993 Forest Act (see Box 9). The 1993 Forest Act was followed by Forest Regulations in 1995 that provides procedural guidelines for implementing the Act. By 1997, the FUGs were given total authority over the use of forest produce, complete autonomy to development forest management plans, and total discretionary authority over their own fiscal allocations.

FECOFUN

As thousands of Forest User Groups (FUGs) spread through Nepal during the 1990s, a number of individuals involved in the community forest movement together with PUG leaders decided to establish an umbrella organization to link local management organizations. The Federation of Community Forestry Users (*FECOFUN-Samudaik Ban Upabhokta Mahasangh*) is an association founded by the FUGs of Nepal, established to expand and strengthen their role in the management of the country's forests. FECOFUN was created during a series of seminars conducted after the passing of the 1993 Forest Act to provide a national-level networking organization. The national Federation of PUGs was registered in 1995 and held its first national assembly in March 1996. According to Dr. Narayan Kaji Shrestha, one of FECOFUN's founders:

*Over the past twenty years, forest user groups have almost halted the degradation of the forests in their areas, including encroachment and forest forest, while better meeting the needs of local user groups. For this reason, I think we need to hand-over all forests to user groups, except in remote areas or situations where special technical approaches are required.*⁶⁰

FEDERATION OF COMMUNITY FOREST USERS OF NEPAL (FECOFUN)

FECOFUN seeks to support self-reliance and increase the independent decision-making capacity of forest-user' groups to enhance their economic and social status through proper allocation of resources flowing from community forestry activities. The activities of FECOFUN include:

- ◆ information dissemination
- ◆ training
- ◆ networking
- ◆ advocacy

FECOFUN's organizational structure includes a steering committee, national executive committee that meets three times a year, and a national council that meets annually. General assembly meetings are convened every five years, with district branches and range post-level committees operating locally.

Some of the advantages of an organization like FECOFUN are:

- ◆ providing a mechanism for government to interact with a unified organization of user groups rather than thousands of individual groups
- ◆ issues of concern to individual groups can be presented to national government
- ◆ the potential for developing field level training, technical extension and marketing services to support the Forest Department's limited capacity.

FECOFUN's national office has begun to play a stronger role as an advocate for the position and interest of their member FUGs. While the Forest Department has supported and encouraged the development of FECOFUN over the past five years, differing positions on some fundamental policy issues, especially the role of FUGs in managing the Terai forests has created some tensions in recent months. According to Dr. Shrestha, "In the past three years, as knowledge regarding FUG experiences in the hills have reached the Terai, communities have begun to organize, but the government is reluctant to hand over the Terai forest, so that has slowed the process."

There is also some concern that political interests can manipulate FECOFUN. As one report notes, "While politicization and factional infighting can occur, especially with increases in the mandate and scope, there is always a danger of elites gaining further footholds or influence through more exchanges."⁶¹ Additional concerns are the participation of women in FECOFUN, which currently requires 50 percent female representation in its membership. Due to the constraints on women's interaction in public gath-

erings, a new women's organization is emerging called the Himalayan Grassroots Women's Natural Resources Management Network (HIMAWANTI) (see Box 16). FECOFUN remains an important development in the emergence of new social organizations that support community resource management. The organization is developing the capacity to play a dual role, both as policy advocate at the national level, and purveyor or extension services locally.

SUMMARY

Nepal has made remarkable progress in devolving public forest lands to community managers during the 1990s. Learning from community forestry projects of the 1970s and 1980s, provided a great deal of information regarding ways to structure policies and field level programs to respond to rural conditions and village needs. The populist democratic structures that emerged at the beginning of the current decade also strengthened the political will of government to implement CFM policies. As G.P. Koirala, the former Prime Minister of Nepal notes: "Handing over the forest areas to the communities

was a decision taken keeping in mind the socio-economic needs of Nepal."⁶² At the same time, professional foresters in Nepal have generally been very supportive of the devolution process and have become some of the world's leading experts in community forestry. Anupam Bhatia, regional coordinator at the International Centre for Integrated Mountain Development (ICIMOD) comments: "Nepal doesn't have a colonial set-up and its Forest Department doesn't have a rigid professional hierarchy. So they were more open for change."⁶³ Another important element in the current success of Nepal's CFM strategy is that it builds upon indigenous forest management systems. Policies were continuously revised over a twenty-year period to better respond to support the de facto practices of local groups. Increasing levels of benefits were allocated to communities, while greater authority in management decision making was devolved in each successive policy.

CFM in Nepal now faces a new set of challenges. The government, in an effort to reduce foreign debt has cancelled claims on World Bank funds to support the forestry sector. The loan was earmarked to provide additional finances for subsidizing forest watchers. The Forest Department policy is to require FUGs to raise their own contributions for watchers or organize forest protection on a voluntary basis. As the case study in Part V demonstrates, this policy has changed the composition of some FUGs with those households unwilling to pay forest fees dropping out. As forests become more productive, however, revenue flows from forests to communities should increase to cover management costs as well as generate funds for community development projects. The challenge, however, is weaning community forest managers off government subsidies during the transition.

A second issue is the transition from strict conservation and limited subsistence use of forests to commercial timber management. Most FUGs in Nepal continue to be protection oriented, opening their forests for a limited period to allow members to harvest fodder, leaves, and grasses and collect limited quantities of fuelwood largely for subsistence use. Many groups are quite cautious about timber felling and uncertain how

to go about marketing lumber. The Forest Department is eager to build capacity among the FUGs to produce timber to meet national needs and to generate revenues for community projects, and some FUGs are gaining the confidence to initiate commercial activities. In the Pokhara area, for example, Gyan Bahadur Karki, a member of the Jaykot FUG committee comments:

*At present, the forest provides us with a continuous supply of grass. When we harvest the forest later, it will fetch us hard cash... The money will be used to get drinking water.*⁶⁴

Jyakot FUG members contribute Nepali Rs. 200 each (US\$3) annually to hire two forest guards to watch the forest. However, in other villages, subsistence needs rank highly especially among women who are responsible for much of the fodder, fuelwood, and leaf litter gathering, as well as water carrying. As Sita Chettri reports:

*The forest means everything to us. It gives us fodder, fuelwood and leaf litter. It's a perfect home. We are seeing wildlife in the forest after a gap of two decades.*⁶⁵

Whether communities decide to manage for subsistence use, environmental service functions, or revenue generation will be determined by each FUG, and they are fully empowered under current policies to make these decisions on their own. It is important that Nepal's community forestry policies reestablish forests as a collective resource. As Tik Karki, founder of the Jaykot forest users' group reports:

*Community management of forests has changed the concept of community life. Villagers do not think in terms of personal benefits. Rather, they think in terms of collective benefits. We spend the money earned from the forest in community development works like widening of trail roads and supplying potable water.*⁶⁶

Perhaps one of the most controversial issues facing community forestry in Nepal is its role in the commercially valuable *sal* forests of

Q: What do you feel are some of the greatest challenges Nepal faces as it further expands the Forest User Group program?

A: I think the combined challenge for the Forest Department will be to support the growing number of Forest User Groups and area under their management, while also finding ways to strengthen the capacity of FUGS to commercially manage and market their forest products.

Q: At the present time, the Forest Department has some 9,000 FUGs on record, yet it is estimated there maybe 40,000 potential groups in the country. The rate of FUG formation has slowed in recent years. Why has that occurred given the vast potential for further expansion of the program?

A: The rate of handover is running at about 1000 to 1500 FUGs a year, given our current staffing levels. At this rate it will take another thirty to forty years, unless we expand our field staff or adopt new measure such as creating private forest rangers, or gaining greater participation from NGO groups to form new FUGs.

Q: What has been the impact of FUGs on the ecology of hill forests?

A: There is clear indication that the quality of forests has improved dramatically through protection, and in some cases the quantity (area coverage) as well. Protection of hill forests has helped to regreen watersheds and reestablish seasonal streams, while biodiversity is increasing. In fact, we are getting increasing complaints from communities regarding the re-establishment of leopard populations in some hill districts.

Q: Many FUGs seem to emphasize production of fodder, fuel, and green leaf manure to meet the needs of their agricultural systems, while there appears less interest in commercial timber production. Do you see a difference between the forest management goals of the Forest Department and those of many user groups?

A: There is a clear difference between the management strategies of the hills and the Terai. In the hills, because the forest is an integral part of the farming system water, fuel, and fodder is the priority, but in the Terai, timber is the primary goal.

Q: How do development agencies working in Nepal promote and constrain the national transition to public forest management by community-based FUGs?

A: The donors are project oriented. At times, donor projects move in parallel with the government. We try to encourage collaborative or joint action.

Q: What is policy changes need to be enhance forest productivity?

A: The current policy gives all rights to FUGs to manage

and market all forest products. This policy is good, but the will to implement this policy needs to be strengthened and supported by government. And we require practical approaches to measure it.

Q: How has the role of territorial field staff changed over the past twenty years?

A: Before community forestry strategies were implemented the field staff's job was 90 percent protection oriented. With the initiation of community forestry the role has shifted from policing to working as a facilitator to assist FUGs in activities of organization building, technical advice. In the past, the villagers were afraid of the forester, viewing him as a policeman that may have come to catch somebody, but now they really love and respect them. So now you can see the change in attitudes, not only of the forestry staff, but in the village towards the forest staff. From one of hate and fear, to one of a respected person in the village. Now communities complain when the forest rangers do not visit their communities! In Gorkha district one forest guard requested a transfer, I asked him why he wanted to change his posting since it was a desirable position located near a road. He replied, "Sir, every night the women from the village come to ask me to accompany them on patrol at midnight. I haven't slept for a month!"

Q: During a recent field visit we learned that there was only one forest guard to cover an area of 10 km. sq., with 6000 people and a dozen patches of forest. It was clear that it was a complex social situation that required intensive support. Do you see the Forest Department expanding their staffing levels in future, or developing other ways to support the FUGs?

A: There is no chance of the government expanding the Forest Department staff at this point. There are many rangers who have graduated from training institutions who are currently unemployed. It may be possible for FUGs use some of their resources to hire rangers in the future to provide technical services to clusters of FUGs. Many NGOs are beginning to hire professional foresters. FUGs are expected to prepare management plans on their own, and they need technical help to do this.

Q: What do you feel about the green felling ban?

A: The FUGs require that they be allowed to utilize their forest resources, and the ban limits their ability to do so. The ban also blocks the establishment of scientific management systems. The Forest Department needs to work with FUGs to access the mean annual increment within the forest to calculate a sustainable allowable cut. We want to develop simple methods to allow communities to conduct inventories so they will know what is an acceptable harvest. Many communities are very conservative about cutting, and the inventory can help reassure them and demonstrate that some felling will not destroy

the Terai. During the early development of Nepal's CF strategy, the Forest Department and most development agencies targeted the forests of the Middle Hills. Initially, as in India, CFM was reserved for degraded forest lands, though well-stocked forests were opened for FUG management in the Middle Hills. The Terai, however, continues to be viewed differently by many government planners, policy makers, and foresters. From the government's perspective the conditions in the Terai are different and make community management more problematic. The social environment is more heterogeneous, with scattered settlements and limited indigenous forest management practices. Farming systems are less dependent on forests than in the hills, while commercial opportunities to exploit them much greater.

Historically, the Terai forests have been an important source of revenues for government, and no doubt there is some reluctance on the part of government to lose control of the resource. When reports of FUGs in the Terai felling young sal trees reached Kathmandu, the government took action and on November 2, 1999 issued a circular to stop all their forest-related activities. At present, of the 9,000 FUGS in the country, less than 200 are located in the Terai. Opinions are sharply divided. Some observers contend that elite people within the Terai will take advantage of the PUG program to capture valuable timber revenues and exploit them for their personal advantage and there are indications that this is occurring in some areas. This has been one of the strongest reasons for the government's current policy to proceed slowly. Others argue that community forestry threatens the strong linkages between politicians and the timber "mafia" that operate in the Terai. The Terai forests, which account for 35 per cent of Nepal's total forest area, remain the next test for Nepal's community forestry strategy.

PAKISTAN

With much of the state managed natural forests badly degraded, timber and fuelwood production has shifted to private farmlands where tenure rights are secure. Development agencies continue to invest heavily in social forestry

projects, but national forest policies have resisted change. This national profile describes the current state of play in Pakistan.

HISTORY AND CONTEXT

Pakistan covers 887,000 square kilometers making it approximately one-third the size of India and four times as large as the United Kingdom. Topographically, Pakistan can be broadly divided into six major regions: the northern mountains, the northern plateau, the western mountains, the Balochistan plateau, the southeastern desert, and the Indus plain. The Indus River winds its way from Tibet nearly 2,500 kilometers flowing southwest and irrigating the populous flood plain before entering the broad Karachi delta and emptying into the Arabian Sea.

Climatically, Pakistan is the most arid country in the South Asia region. Most rainfall takes place during the hot summer months when it evaporates quickly. The northern hill region receives 1000 mm. or more each year. These lands support a range of coniferous forests including fir, *deodar*, blue pine, *chin pine*, and cedar. At lower elevations in the hills, such broadleaf species as oak, maple, birch, walnut, and horse chestnut are found. The rest of the country generally gets less than 500 mm. annually. These coniferous and broadleaf hill forests cover approximately 1.93 million hectares (see Figure 10).

Due to the dry climatic conditions that prevail in the lowlands, climax vegetation is typically thorn forest. H.G.Champion describes it as "an open low forest in which thorny usually hardwooded species predominate."⁶⁷ While dry today, Pakistan's lowland forests in the past have been highly productive and supported a diverse wildlife population. According to Michael Dove:

*As recently as the seventeenth century, Moghul court records and European travelers document the presence of Asian elephant, rhinoceros and lion on the Punjab plains. Today these plains are nearly devoid of natural vegetation, and all three of the fore-mentioned animals have vanished from this part of the subcontinent.*⁶⁸

Figure 10

FORESTS OF PAKISTAN

KEY		Freshwater Swamp Forest
		Mangrove Forest
		Montane Deciduous Forest
		Montane Evergreen Forest
		Thorn and Dry Forest



Source: World Conservation Monitoring Centre.

At the present time, most of the lowland forests of Pakistan are badly degraded or entirely destroyed ranging from "scrub pre-climax" to rocky wastes. The scrub forests spread over 1.2 million hectares and are heavily grazed. In addition to the thorn forests, Pakistan also possesses along its coastline the largest tract of arid-zone mangrove forests covering 345,000 hectares. Scattered riverine forests that are found in the Punjab and Sindh produce about 300,000 hectares of rosewood (*Dalbergia sissoo*) and *babul* (*Acacia nilotica*), with an additional 220,000 hectares of irrigated timber plantations planted in mulberry (*Morus alba*), willow (*Salix spp.*), and rosewood.

The forests are broadly divided between state and private lands. State forests are administered by provincial Forest Departments, and are broadly categorized as reserve and protected, with the former possessing tighter use controls. While communities generally have no involvement in the management of reserve lands, they are used for unrestricted grazing. Illicit removal of trees and encroachment on forest land is quite common. There are two types of protected forests. There are those over which the government has ownership rights which are well demarcated and there are those which are claimed by communities. For example, in Dir or Swat, which were princely states, the government nationalized their forests when the states were merged with Pakistan, some as late as 1970. These forests are generally not demarcated. Most protected forests remain undemarcated, a process which local people resist. In some cases, local communities still claim ownership of these lands.

Most private forest lands fall into two tenure categories including *guzara* or *shamilat* (communal). *Guzara* forests were sizable patches of wooded lands close to settlements that were set aside to meet the needs of local communities in Hazara in 1872. *Guzara* are managed either by communities as communal property or are privately held. Typically, some village members hold use rights, while others do not. Management and use regulations concerning *guzara* forests vary, with those in better conditions often managed through plans prepared by the Forest Department. In Punjab, the Deputy Commissioner

manages the *guzara* forests. Twenty-five percent of the income goes to the Central *Guzara* Fund to meet operational expenses and seventy-five percent goes to the Village Development Fund. The system is different in NWFP involving a sharing of produce.

Landowners control fellings only on private lands, and cannot fell some trees like *deodar* and *chinar*, though all village residents may graze their livestock and collect firewood from communal land. Outsiders are generally not allowed these privileges. Large landowners from the mountains have generally moved to cities and towns, though they still consider this type of forest land as their private property. This presents complications for social forestry strategies that attempt to involve local communities in management, as villagers fear any investment in reforesting these lands will revert to the non-resident large landowners.⁶⁹

Private farmlands, which represent only 34 percent of all forests, produce an estimated 70 to 90 percent of all Pakistan's timber, yet private forestry production is not closely monitored by the Forest Department, nor is it routinely considered in forest policy and program planning.⁷⁰ Most timber and fuel wood comes from farmlands, as trees grown on farm boundaries. Forest productivity on state lands is low, both due to their generally poor ecological condition, as well as the fact that nearly 73 percent of the total forest area has been set aside as protected forest.⁷¹ Protected Forest is a legal category, and has little to do with the productivity or ecology of the forest.

Pakistan's forests cover 4.5 percent of the country, producing .3 million cubic meters of timber and .4 million cubic meters of firewood against an annual fuelwood demand of 1.9 million cubic meters. Most of the fuelwood deficit is met from trees growing on farmland.⁷² One estimate notes that farms provide 90 percent of Pakistan's fuelwood needs.⁷³ Pakistan also is a major importer of wood and wood products totaling Rs. 1.7 billion per annum in the mid-1980s.

Pakistan is a cultural mosaic with a diversity of Islamic belief systems, ethnic communities,

languages, literary, and cultural traditions. Its people include Pathans, Balochis, Sindhis, Punjabis, Kashmiris, and the northern tribes. The population of Pakistan grew from 83 million in 1980 to 132 million in 1998, expanding at an annual rate of 2.8 percent. During this period, the country lost approximately 2.5 to 3 percent of its forests each year.⁷⁴ The environmental consequences of rapid population growth are direct and visible, including the denudation of forested hillsides, increased demand for forest products and fuelwood, and increased migration from rural areas to urban centers.⁷⁵

According to Champion, the dry savanna of Pakistan does not occur naturally but, rather, it is created by human activity.⁷⁶ As early pastoralists moved into what is now Pakistan, they transformed the once lush forests into open savanna as the wild grassland better met the needs of their livestock and wild ungulates.⁷⁷ But, Michael Dove notes that even as the natural forests were being removed, new forests began to emerge. He points to Vedic texts which:

*Contain injunctions to plant and protect not just tree or gardens-but forests. For example, the Kautiliya of Arthasastra suggests that forests should be planted whenever a new state is established. This tradition of state forestry continued with the creation of the Indian forest service by the British in the mid-nineteenth century, which succeeded with little change to the forest service of contemporary Pakistan.*⁷⁸

Dove further suggests that this state forestry tradition parallels a folk forestry tradition, especially in the tribal areas of the north, where the state has less control. There, village resource management systems are strongest, including the *guzara* or *shamilat* forests. Community forestry in much of Pakistan exists outside the areas under state control. The public forest lands are extensively degraded and generally characterized by low productivity, loose management, and poorly controlled use. By contrast, the locus of forestry in Pakistan is around houses and farmlands, tanks, and streams. Dove notes:

*In contemporary Pakistan, trees are found in graveyards and religious shrines, where they provide shade for the pious and eternal blessings for the planter. Trees also are found within the enclosed courtyards of every rural home, for which they provide shade, fodder, and fruit. The greatest number of trees are found on the farmlands themselves, in clusters around waterholes and tanks, around wells and Persian wheels (where they shade the circling oxen and provide the motive force), and in hedge-rows along field boundaries, (where they provide protection against the wind and against livestock incursions, yield fuel and fodder, and offer the delicious satisfaction of legally stealing nutrients from the land of one's neighbor.*⁸⁰

The State's effective control over much of the natural forest land has forced communities to invest forest management labor and capital into homestead and farm forestry activities. While natural forests under state control continue to degrade, there has been a tremendous increase in the number of trees on farmlands. It is this growth that has averted the wood crises in Pakistan. Studies conducted during the mid-1980s reported that:

*The development of farm forestry at the same time that traditional forests are being degraded is not accidental. Farmers' decisions to cultivate trees is associated with the loss of forests on local village or state lands.. Farm afforestation is not a simple response to diminishing forest lands, however but to diminishing control of these lands.*⁸¹

RECENT POLICY AND PROGRAM INITIATIVES

Pakistan's forest policies are tied to its British colonial past. At the time of Independence, the policies, procedures, and structures that administered the new nation's forests were largely left intact. According to Javed Ahmed and Pawad Mahmood, two long time forestry sector analysts:

*The forestry sector in Pakistan is amongst the most distinctive of the remaining colonial artifacts. The Forest Departments and laws that were initiated in the nineteenth century continue more or less unchanged. They are centralized in management operations, focused strongly on timber harvesting from natural forests, and place government above local needs - attributes which may have been useful to objectives of imperial Britain, but are not necessarily helpful to democratic Pakistan.*⁸²

Over the past half-century, however, the population has nearly quadrupled. Today demands on the nation's forest resources are expanding rapidly, with almost 3 percent population growth and 6 percent industrial expansion. Pakistan now recognizes that there is a large group of stakeholders that need to be involved in forest policy development and management. Unfortunately, participatory strategies for managing state forest lands have been slow to evolve as well as the dialogue mechanisms that could support new management partnerships.⁸³ Ahmed and Mahmood note that:

*Most forest policies, until recently, have viewed people as the prime threat to the forest, and have attempted to exclude groups other than government from decision-making. In many ways, therefore, forestry has become a 'free-for-all', with the politically strongest being free to take almost all... highly influential decisions affecting forests and stakeholders is in the hands of politicians who are, in turn, strongly influenced by logging contractors... timber "mafia" exploits the fixed-price and net sale systems of allocating forest concessions, leading to the disenfranchisement of the local right holders, the production of large profits for concessionaires and ultimately the unsustainable harvesting of forests.*⁸⁴

For decades, the only reference point for dealing with new problems has been referring to the 1927 Forest Act. The crisis in Pakistani forestry, however, has come into sharper focus in the 1990s. According to Ahmed and Mahmood,

"Courageous individuals from Forest Departments, key NGOs and certain donor agencies have instituted a series of experimental approaches to resolving shortages of forest goods and services, and to reducing the conflicts between stakeholders."⁸⁵ While these initiatives have not yet resulted in significant shifts in national policy, they have created a more open dialogue regarding new paths to more sustainable forestry. Innovation in finding ways to engage communities in the management of public forests has primarily been located in a range of development agency sponsored projects.

For example, the success of the GTZ funded Siran Forest Development Project, encouraged the Federal government to modify the Forest Act of 1927 with what is known as the Hazara Protected Forests Rules, 1996. This modification mandates the formation of Joint Forest Management Committees, including operational guidelines and production sharing arrangements with provincial Forest Departments.⁸⁶ The Swiss, the Dutch and Germans are among the major bilateral donors in the forestry sector, while FAO's World Food Program, the Asian Development Bank, and the World Bank are the main multi-laterals active. In recent years the development agencies have formed a Forestry Donors Consultative Group and a chief Technical Advisor's Roundtable. Topics include needed reforms in Forest Departments, provincial forest policy formulation, and donor collaboration.⁸⁷

While the Federal Government of Pakistan has not yet passed any major policies that would empower communities directly as managers of public forest lands, they have taken steps over the past decade to control industrial timber exploitation. Recognizing the rapid process of forest loss, the federal government placed bans on logging in 1992, followed by an indefinite ban in 1997. Unfortunately, this put more timber extraction pressure on the forests of southeastern Afghanistan, with an estimated 300,000 cubic meters of timber smuggled into Pakistan each year.⁸⁸ The irony is that some of this illicit timber originates in Pakistan. It is then smuggled to Afghanistan before it is formally imported or smuggled elsewhere.

Forestry is a provincial subject, although the federal government has the responsibility for articulating national resource management strategies and broad goals. Provincial governments rely on timber revenues as an important source of income. Provincial Forest Departments are under pressure to increase the flow of revenues to the exchequer, sometimes compromising their role to sustainably manage the forests. In fact, foresters are trained to make earning revenue for the state a primary goal of their position. While provincial governments, especially those in the north, look to the forests for timber revenues, the federal government has become more interested in conserving forests for their environmental functions. The 1992 logging ban was, in part, catalyzed by devastating floods earlier in the year. Yet, high timber prices driven by growing scarcities and high import duties present "incentives for forest contractors and private owners to circumvent the controls of increasingly marginalized Forest Departments."⁸⁹

MAJOR COMMUNITY FORESTRY INITIATIVES

While few policy changes have emerged to support community forestry in Pakistan in terms of national law, a range of innovative projects have begun to shape thinking and create precedents for action. The following is a brief summary of these efforts.

MSFP

The Malakand and Dir District Social Forestry Project (MSFP) was started in the Northwest Frontier Province (NWFP) in 1987 and operated up to 1997. The project sought to reforest the denuded hillsides and marginal farmlands, raise the standard of living of local communities, and build the extension capacity of the local forestry agency. The activity focused primarily on private and communal property. A key part of the project was the Village Land Use Planning process, involving a step-by-step approach for preparing an action plan.

Project planners focused on participatory planning and community consensus building in the second phase of the project, methods now

being accepted by provincial foresters. The project has fostered greater capacity and confidence among the provincial Forest Department staff to implement social forestry strategies, while social forestry is gaining new prominence in provincial forestry statements. The Asian Development Bank has recently initiated a new NWFP forestry support program that draws heavily on the learning from the original MSFP.

SFDP

The Siran Forest Development Project (SFDP) evolved out of a series of collaborative activities initiated by the NWFP Forest Department and GTZ in the early 1980s to respond to deforestation. While the initial project involved road building, nursery establishment, timber harvesting, and field staff training, by 1991, the Siran Forest Development Project began to adopt a joint forest management approach. This strategic shift emphasized forest management in collaboration with local people, dealing with both state-owned reserve forest lands as well as communally managed *guzara* forests. SFDP is the first project in Pakistan to adopt joint forest management. New, legal rules at the provincial level allow local people living near state-owned forests to be involved in their management. A joint forest management committee brings landowners and tenants together to prepare a management plan, execute harvesting operations, control uses and resolve conflict. JFM Committee members maintain an agreement with the provincial Forest Department to harvest firewood, timber, fodder, and medicinal plants.

Donor groups have taken the lead in the formation of a new Forestry Commission. According to one analyst, the new commission will pursue a mandate to "develop a new forest policy and forest law in favor of sustainable forest management, especially related to questions of tree tenure and incentives to plan and manage trees on private and *Guzara* land." He concludes that the "successful replication of this pilot may modify the whole notion of forestry in Pakistan."⁹⁰ While SFDP has opened the door to joint forest management in Pakistan at the policy and operational level, most provincial Forest Departments have yet to adopt it.

AKRSP

In the far north of Pakistan, in the remote knot of mountains that forms part of the Hindu-Kush, the Aga Khan Rural Support Programme (AKRSP) implements one of the largest NGO rural support projects in Pakistan. Established in 1982, the goal of the program is to:

*Increase the capacity of local people to identify and utilize the opportunities to solve their own problems, so that they can plan and implement development programs leading to increased incomes and employment; to improve health, nutrition, education and living conditions; and to improve the sustainability and productivity of the environment.*⁹¹

This multi-sector strategy is based on developing local institutional frameworks and capacity, which currently assists over 1,500 Village Organizations (VOs) and 1,000 Womens' Organizations (WOs) in the Districts of Gilgit, Baltistan, and Chitral.

AKRSP community forest management activities focus on state lands, shamilat (communal) lands, and private property. In some parts of its operational area, the provincial Forest Department for the northern areas has conceded its authority over certain state lands, allocating them to VO management. AKRSP has a strong reputation in Pakistan as an innovator in the field of rural development. Other provinces are adopting AKRSP models. Recently the national government created the National Rural Support Program (NRSP). With federal government financing, NRSP has become the largest NGO in Pakistan, with a mission to set up local support structures for rural development programs. This reflects a broader trend in Pakistan to support rural development through the NGO community, some of them large, sophisticated organizations like AKRSP and IUCN-Pakistan.

At the community level, the AKRSP approach involves moving below the outside the administrative governance framework, to work with smaller, hamlet-based community organiza-

tions, often building on customary village institutions and leadership patterns. This orientation allows rural development projects to build on indigenous systems of resource use and control, as well as indigenous technologies. The program has found that forestry issues are clarified through community dialogues and planning processes that examine resource and watershed management as a whole.

WPMP

In the arid expanses of southeastern Pakistan in the Province of Baluchistan, the Watershed Planning and Management Project (WPMP) is attempting to rehabilitate seriously degraded lands. Funded by the UNDP and FAO, this project will cover 380 villages. Upland grazing and agricultural lands will be rehabilitated through dune stabilization, contour ridging, earthen dam construction, seeding of indigenous grasses, fodder shrubs, and trees, much of the work focusing on state land. This project is challenged by the difficult climatic conditions under which revegetation is being attempted. The project is guided by "group promoters" who work with communities to conduct participatory rural appraisals and monitor development activities. Villagers establish their own institutions, organize their resources, manage their development agenda and formulate requests for outside technical and financial assistance. The project requires that the community as a whole makes all decisions, rather than by traditional or elected leaders alone.

This project has been influential in assisting the provincial Forest Department to redefine its management units along watershed lines, rather than as forest districts and reserves. This has helped focus resource management strategies on critical grazing and watershed regulation issues. The project has also contributed in raising important issues regarding sectoral and donor agency coordination. Farm forestry in Pakistan received a major boost from the Forestry Planning and Development Project (FP& DP). FP&DP operated from 1983 through 1994 with a primary goal of helping increase Pakistan's indigenous energy supplies, while improving the condition of

the country's forests. The project largely deals with private property, either individually or communally held, rather than state land with a strong emphasis on farm forestry.

The project was careful to emphasize public participation in assessments, planning, implementation, and monitoring, however it is reported that intra-village conflicts, especially those between landowners and tenants became important issues. The project contributed to a marked development of farm forestry extension programs within provincial Forest Departments. In addition, the project reported assisting with the establishment of 5,000 private farmer nurseries, producing over 150 million seedlings, and training 20,000 farmers. This USAID project worked extensively with NGOs, funding 70 organizations involved in farm forestry and natural resource management, and reforested 5,000 hectares in Pakistan.⁹²

While FP&DP made a significant contribution in placing farm forestry and extension strategies on the agenda of many provincial Forest Departments and NGOs, the project was less successful in being proactive "in formulating and directing a farm forestry policy agenda for Pakistan."⁹³ While some policies had been revised by 1998, the new laws and administrative regulations to implement a national farm forestry strategy have not been forthcoming. Nor has there been significant progress in creating "coherent incentive structures, and associated regulations and co-ordination with the agricultural departments."⁹⁴

SUMMARY

The Pakistan experience exemplifies the influence of major development agency projects and innovative NGO strategies in helping to shift attitudes and create new capacities within conventional forestry agencies. It also illustrates the difficulties in changing the national forest management paradigm, a goal which requires the reform of archaic forest legislation, while attempting to put supportive regulations and administrative procedures into place. To date, Pakistan has made little progress with the latter. Much of the resistance to policy reform comes from those that benefit from

the status quo, including large land owners, timber merchants, politicians, and foresters involved in profitable enterprises.

The absence of broad-based tenurial policy reforms in Pakistan, changes that would place management rights and responsibilities clearly with stakeholder groups who are best positioned to manage forest resources, has frustrated efforts to restore forests on much of the designated state and communal land. While ineffective forest policies are resulting in the loss of natural forests in their traditional niches, forestry now favors private farms where tree planting is moving forward rapidly, precisely because issues of control and ownership are certain.⁹⁵

SRI LANKA

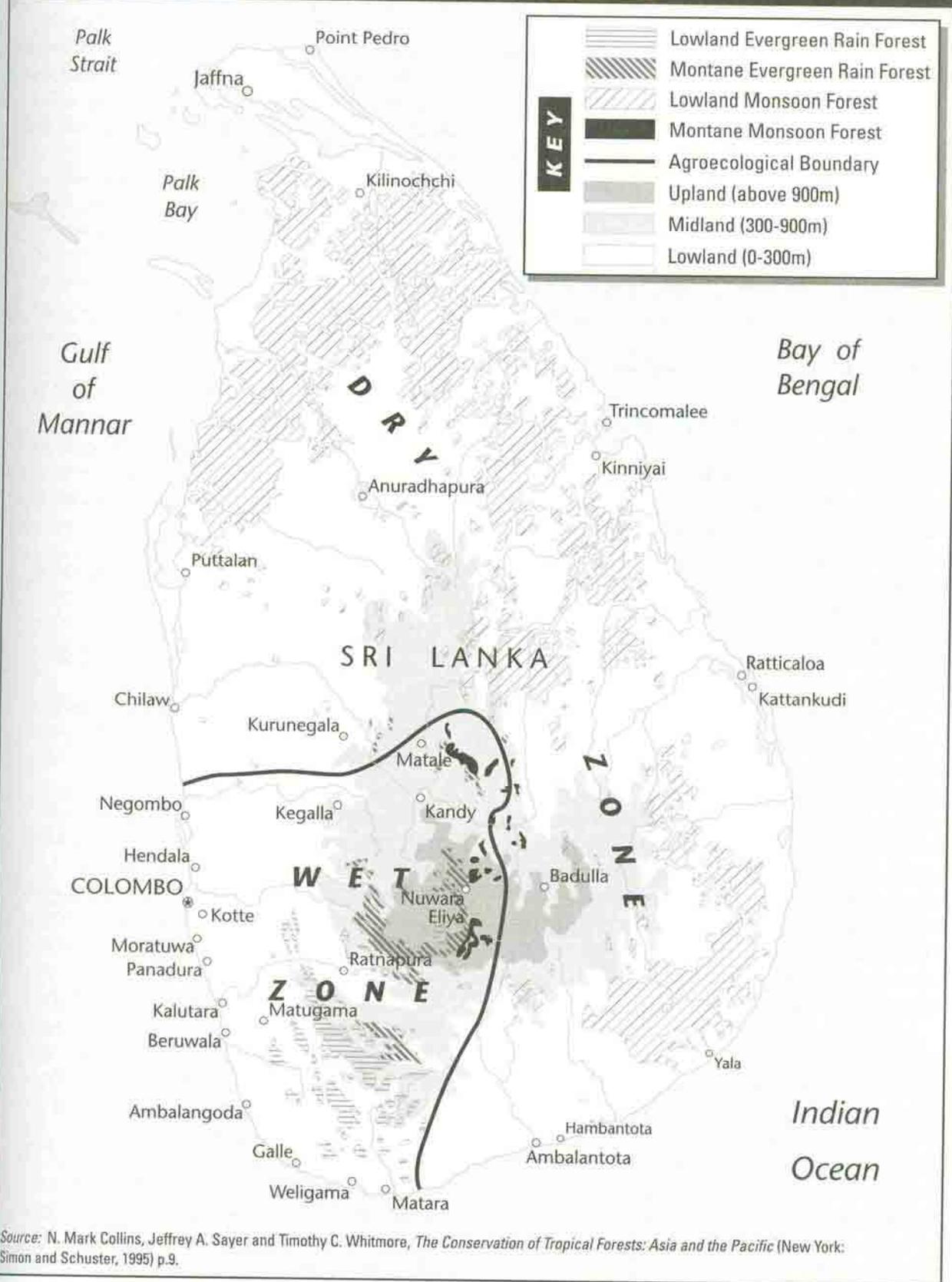
Sri Lanka is a small, island nation rich in culture and biodiversity. The inhabitants of Sri Lanka have utilized and managed the island's forest ecosystems for at least two thousand years. Sri Lanka's rich biodiversity results from the extreme variation in altitude and climate present in this small country. Rainfall ranges from 1,200 mm. per year in parts of the dry zone to over 5,000 mm. annually in the heart of the wet zone. The Central Highlands rise to over 2,500 meters (see Figure 11). The great diversity in climate, topography, soils, and geology is reflected in Sri Lanka's flora, fauna, and ecosystems, with over half of all South Asian amphibians and reptiles endemic species. Of the 3,000 species of flowering plants in Sri Lanka, 830 are endemic with the vast majority concentrated in the island's rain forests. Just north of the equator, Sri Lanka is separated from India by the 35 km wide, 10 meter deep Palk Straits. The island is 432 kilometers in length and 225 kilometers at its widest point.

HISTORY AND CONTEXT

By the year 2000, the population of Sri Lanka was estimated at 19.3 million, a ten-fold increase over the past two hundred years. Today the country's population remains heavily dependent upon natural resources for their subsistence, with 78 percent of the island's residents located in

Figure 11

FORESTS OF SRI LANKA



Source: N. Mark Collins, Jeffrey A. Sayer and Timothy C. Whitmore, *The Conservation of Tropical Forests: Asia and the Pacific* (New York: Simon and Schuster, 1995) p.9.

rural areas. Population density averages around 250 per square kilometer, with 27 percent of rural households landless, and another 42 percent owning less than 0.5 hectares.⁹⁶ Available agricultural land is limited with approximately 80 percent of Sri Lanka's total territory under the jurisdiction of the state.

Forestry has a long history in Sri Lanka reflected in the records left by Buddhist kings that ruled the island over two thousand years ago. Forest and watershed protection was a critical element in the hydraulic systems that ensured the rice harvests that supported the Sinhala kingdoms of the past, and these traditions are still evident (see the Ritigala case study in Part V). The reservation of forest preserves for the royalty, monastic institutions, public temples, and other purposes (*gabadagam, nindagam, viharagam, devalegam*) is documented in the ancient inscriptions. Forests were allocated to people for services performed for the ruler (*rajakariya*), while forest officers (*kele korala*) were appointed to regulate use. During the Kandyan period, the Sinhala kings were the nominal rulers of the forests, though communities held clear usufruct rights and supervised local use through member designated managers.

Private forest gardens are documented from the sixth century onwards, with taxes in the form of fruit and spices paid to the rulers. State regulations prohibited the felling of certain tree species and poaching in royal forest lands and gardens. The sophisticated system of sacred groves, monastery forests, royal parks, and private forest gardens that existed for centuries in Sri Lanka linked the state's political authority with communal systems of resource use. This system began to unravel with the advent of British colonial authority emerging in the nineteenth century.

While population growth has increased society's demands on the forests, the underlying causes of forest loss are far more complex. As elsewhere in South Asia, Sri Lanka's forests were nationalized in the nineteenth century at which time the rights and responsibilities of communities to manage over three-quarters of the country shifted to newly established bureaucratic agencies operated by the state. As early as 1848, timber

ordinances were passed reserving forests for the commercial requirements of the state. The British colonial government was eager to expand revenues from the island, which they encouraged by allowing the clearing of vast stretches of forest for coffee, tea, and other plantation crops. Mr. Saunders, a colonial district administrator, wrote enthusiastically in 1867:

*There are thousands of acres of forest land suitable for coffee cultivation lying in the Kukul Korale. I hope to get this district opened up shortly, and if a few lots of land are surveyed and a road roughly traced to them, I am sure they will sell well.*⁹⁷

The colonial foresters, however, did not always agree with other civil administrators regarding forest policy, with many struggling to put conservation measures in place. According to one senior British official writing in the latter half of the nineteenth century:

*The complete denudation of the forests for the purposes of coffee planting has become a serious evil.. As a result of planting (tea), large areas of virgin forests have been cleared and erosion on an immense scale has taken place, resulting in silting and consequent periodic flooding of the low country wet zone rivers.*⁹⁸

In 1873, Hooker, an English forester, advocated protecting natural forest above 5,000 feet as climatic reserves. In 1885, Forest Ordinance No. 10 provided comprehensive guidelines for the reservation of forests, establishment of village forests, and protection of wildlife sanctuaries. In 1887, the Office of Conservator of Forests was established along with the Forest Department to oversee the public forest domain.

Other important forest policies were passed in 1929 and later in 1953 when the National Forest Policy was issued.⁹⁹ According to Nanyakkara, British colonial policies of the late nineteenth and early twentieth centuries recognized community dependence on natural forests and made some provisions for village forest lands:

*Even though a National Forest Policy had not been laid down, and in spite of the fact that the British colonial rulers permitted the vast destruction of our montane catchment forests for planting coffee and subsequently tea, on their credit side they had considered the necessity, for granting free collection rights to poor rural people both of firewood and minor forest produce within a 3 mile radius of their villages if located near forest areas.*¹⁰⁰

While the government has systematically pursued a policy to nationalize much of the country's forest land over the past one hundred and fifty years, the forest department has never been able to adequately demarcate reserve boundaries, nor mobilize sufficient field staff to control access to land claimed by the state. Fuel wood gathering, expansion of both sedentary and shifting cultivation, tree plantations, mining, and other activities often went unchecked. During the Second World War and in the decades that followed commercial demands for timber rose dramatically and selective felling expanded, however logging was poorly controlled. According to one assessment:

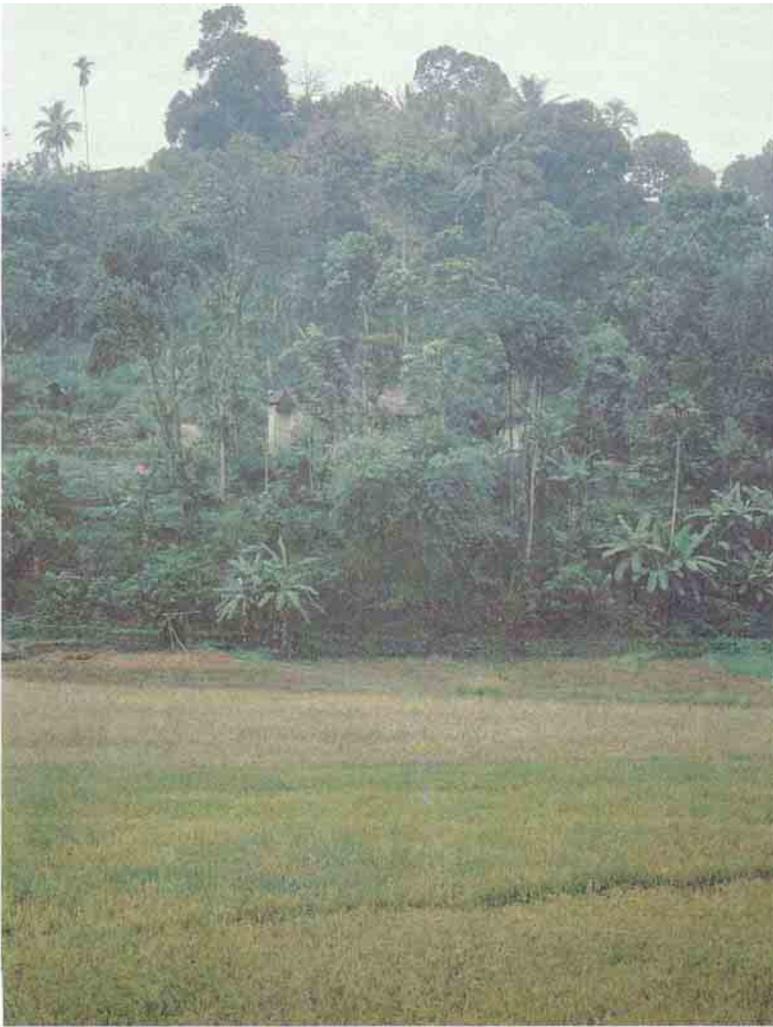
*Shortage of trained staff, creation of many state agencies for timber harvesting, absence of a central record-keeping system to support field data and poor supervision are some of the reason for the poor application of felling rules. Felling was at first by axe and saw and extraction by elephant. Since 1972 it has become mechanized, using chainsaws, skidders and lorries that have greatly increased the damage.*¹⁰¹

There is little doubt that commercial felling accelerated deforestation in Sri Lanka, with forest loss nationally averaging around 40,000 to 50,000 hectares each year from 1956-1983.¹⁰² Cut off from natural forests by nationalization policies, rural communities focused their forest management activities on forest gardens within or near their courtyards. The famous spice gardens of Kandi, as well as other diverse agroforestry systems found on the island had evolved over the centuries to meet household

needs. As access to natural forests was restricted, rural communities became even more dependent on these production systems, intensifying management while giving greater emphasis to commercial commodities.

Sri Lanka's once rich forest resources have been disappearing at an alarming rate throughout the twentieth century. In 1881, Sri Lanka's forests covered 84 percent of the island's land area, falling to 71 percent in 1902 as commercial coffee and tea plantations expanded. By 1956, forest cover had eroded further to 44 percent, falling to 30 percent in 1992. In 2000, Sri Lanka possessed forest on less than 23 percent of the island. Even more disturbing has been the deterioration in the quality of the country's forests. Much of the territory included as forests are badly degraded and take the form of open forest in the northern dryland, while closed canopy rainforests represented only 2.2 percent of the land area by the late 1980s.¹⁰³

While most Sri Lankan and foreign analysts agree that the state managed natural and plantation forests are operating at low levels of productivity, private forests are being managed intensively with impressive yields. Home gardens produce 32 percent of the country's industrial timber and as much as 80 percent of the country's wood fuel. While the tropical evergreen rainforests of the wet zone exist only as fragmented islands, at mid-elevations the landscape has been extensively converted to species diverse home gardens. Home gardens are also expanding in the dry zone, and currently cover 830,000 hectares island wide.¹⁰⁴ (see Box 11). Local knowledge, tenure security, and private capital, combined with the low productivity of public forests, drives private forestry to dominate the sector in Sri Lanka. Recent policy shifts and multilateral and bilateral forestry development projects have attempted to reintegrate communities with the public forestry sector, however it is apparent that fundamental transfers of authority to local groups have not yet taken place, nor have the legal steps been made to allow this to happen.



This multi-storied forest garden in Sri Lanka mimics natural forest ecosystems in terms of its species diversity and complex structure. Owned and managed by family members, it is intensively manipulated and highly productive. (photo: Poffenberger)

RECENT PROGRAM AND POLICY INITIATIVES

From 1982 through 1988, the first phase of an Asian Development Bank (ADB) community forestry project gave the Sri Lankan Forest Department an opportunity to experiment with participatory approaches to management. In formulating the loan, the ADB planners decided to stress block plantations to strengthen the project financial returns on the investment. Community woodlots and farm forestry were also project components. While the Forest Department

gained valuable experience in working with rural communities and the farm forestry activities worked relatively well, the forest plantations fared poorly. Of 135,000 hectares under forest plantations, only 48,000 are actively managed and of that area current yields are only 30 percent of their estimated potential. While there are many reasons given for the poor performance of the project, the cultural mismatch of monoculture, fuel wood-oriented forest production systems in an area rich in traditions of highly diverse forest gardens is striking.

In 1989, a second ADB project stressing participatory forestry dropped the emphasis on block plantations to encourage farm forestry and community-based activities. However, while the rhetoric of the project was clearly people oriented, the project was not structured to reform public, forest management systems. According to one forester, there was a tendency for past strategies to:

*Reflect the concerns and aspirations and professional views of Forest Department staff resulting in a narrow perspective and pre-occupation with the agency's function, its concerns and the territory under its control, thus leaving people far removed from the decision making process.*¹⁰⁶

ADB's initial emphasis on target setting placed immense pressure on the Forest Department to achieve quantitative results, before it had established appropriate operational strategies for community collaboration. According to Sarath Fernando, Additional Conservator of Forests, "We had limited experience dealing with people. And there was also distrust of local people, and they distrusted us. But the project gave us opportunity to gain experience. We were

Box 11**JACKFRUIT: THE RICE TREE OF THE RURAL POOR**

To a Sri Lankan household, particularly poor rural families, a Jackfruit tree is a fortune. *Artocarpus heterophyllus* or jackfruit, as it is commonly called, is the "rice tree" for rural people. Jackfruit trees bear fruit for over six months with mature trees yielding many fruit over the course of the season. Mature fruit, which produces hundreds of "flakes" remains the best substitute for rice, often preferred to cassava, yam, sweet potatoes, and other rice substitutes.

Jackfruit seeds are also boiled, fried, roasted, and cooked in a variety of ways. Many households process seeds and flakes to supplement the family diet when rice is in short supply. The thorny outer covering is collected and fed to cattle, being one of the best substitutes for grass and leaf fodder. Women are the experts on traditional technologies for Jackfruit processing and preserving the food, including sun and smoke drying. The Jackfruit also plays a ritual whole when a young Sinhalese woman comes of age, and families prefer to have at least one tree in close proximity to the kitchen.

The Jackfruit tree also produces a very high quality timber that is widely used in Sri Lanka for house construction, carving, and furniture building. Due to its food value, tight controls are placed on Jackfruit tree felling, with only mature trees felled. Jackfruit are a key element in most forest gardens in Sri Lanka, providing an important structural component for these ecosystems that mimic natural forests. The popularity of jackfruit is also due to the ease with which it can be propagated. Women encourage seeds to sprout in compost mounds near their kitchens and tend them until they are strong enough to be transplanted in the homegarden. It is also planted along hedges, in field margins, as well as in the middle of farmlands.

The Jackfruit tree also provides a wide variety of medicinal ingredients to traditional physicians. Leaves are widely used to treat diabetes. The roots are used to treat influenza, skin problems, and diarrhea. Young, processed fruits are also often eaten to treat bowel disorders and diabetes. Tender leaves are cooked as a vegetable and are believed to relieve constipation. The multiple uses of the "rice tree" for rural Sri Lankan households ensure its enduring popularity.

able to train some 250 community organizers who are now experienced in participatory rural appraisal and social organizing."¹⁰⁷ The new ADB forestry project has reduced the emphasis on targets and, in future, will place greater stress on project quality and capacity building. Special attention will be given to engaging communities in the management of state forest land in the dry zone, including home garden development.

Aside from the larger ADB projects, USAID, AUSAID, and DAD have also sponsored a range of participatory projects through the Forest Department and other agencies. An estimated 400 non-governmental organizations have also been engaged in various forestry related activities at the community level, with a growing body of experience individuals emerging in the process. While professionals within and outside the forest department are gaining familiarity with community-based forestry project strategies, human resources remain limited in addressing CFM issues on a national scale.

In 1999, there were 1,510 foresters employed by the Forest Department, holding responsibility for 1,064,000 hectares of natural forests. In addition, Sri Lanka possesses another 782,000 hectares under the Department of Wildlife Conservation, and 196,000 of other state forest lands, much of it under plantations. At the field level, there is approximately one forester for every 4,000 hectares of land, while time allowed for community coordination is limited. According to a recent report field staff spent 70 percent of their total work hours on enforcement and court appearances, largely related to cases of illegal timber transport. Range Forest Officers are reported to spend three to five days every week preparing cases or in court prosecuting them.¹⁰⁸ At the field level, in-service training programs for staff are limited and local staff capacity poorly developed. As a result, a highly centralized management system has emerged with the head office providing prescriptions for local and regional staff to implement. This tends to result

in management plans and strategies being developed without the benefit of local knowledge, and with limited response to local resources, perceived needs and priorities.

State custodial control is complicated by the extreme and growing fragmentation of the country's forests. As a consequence, existing forest areas have a high boundary to total area ratio, amplifying the complexity and costs of protection and management. It is estimated that a total 15,800 kilometers of forest boundaries exist.¹⁰⁹ To further complicate matters, much of the existing boundary lines have never been demarcated. Under the upcoming ADB forestry sector loan, funds will be allocated to legally define forest boundaries through surveying, with the active participation of local communities. It remains uncertain, however, whether new tenure mechanisms will be developed to give local communities greater management authority over state forests upon which their livelihood depends. Inadequate field staff, unclear boundaries, and vague tenure and land titles all contribute to a situation where conflict over forest resources becomes a chronic problem. According to one consultant's evaluation report:

*Uncertain land tenure within the forest estate and the lack of presence enables encroachment into the forest estate by those without land and in some cases conversion of forests to agricultural land uses. Chena farming systems often do not have formal tenurial arrangements but have a recognized use right to the land.*¹¹⁰

The absence of authorized community institutions to arbitrate the allocation of forest land for agriculture, as they have done in the past, combined with the limited capacity of government field staff to mediate use has resulted in poorly controlled conversion of forest lands to agriculture in many parts of Sri Lanka. As in Pakistan and Bangladesh, the role of communities remains limited to involvement in the development of private woodlots and forestry farms through social forestry projects, and tends to focus on village men.

While the state has generally left rural communities out of forestry sector decision making, the record concerning the involvement of women is even more dismal. Dr. Wickramasinghe notes that:

*In seeking partnerships and also in empowering people and communities in forest management the state authority remains as a power block that has excluded women's silent role in the forestry sector development of the country.*¹¹¹

Women play a critical role in the management of the country's private forest gardens. Their tasks include the selection of planting materials, germination, gestation, thinning, harvesting, processing, and marketing. They handle much of the work related to the commercial, perennial tree-based systems including rubber tapping, weeding, and harvesting such crops as cocoa, pepper, coffee, cloves, nutmeg, and cardamom. They are also the primary source of labor for intensive tree nursery management for most government and private sector projects. Despite playing a major role in sustaining the forestry sector, however, rural women have virtually no voice in strategic planning or management policy making.

Local governance structures, established by national planners, have been vested with responsibilities for village administration and overseeing resource management decision making. However they often lack the capacity to do so as well as lacking the endorsement of local people. Village government administrators, protected area managers, and other civil servants are frequently outsiders, who typically possess limited local knowledge regarding traditional use systems, rights, and practices.

*In Sri Lanka, the accomplishment of state policies has been placed on the institutions which act as state arms. No inquiry has been made to see whether or not local institutions can undertake the responsibilities.... State institutions have succeeded in funneling the development assets while strengthening their own institutional roles rather than strengthening the role of the people, especially women.*¹¹²

In 1995, the Government of Sri Lanka issued a new Forestry Sector Master Plan (FSMP) that was intended to provide clear direction for future management and halt deforestation. The FSMP recognized that forest cover was deteriorating and that attention must be given to the continuous conflict between forestry and agricultural expansion. It acknowledged that conservation efforts had often failed, that state-owned plantations were not managed efficiently, that forest resources benefits were not equitably distributed, and that future domestic demand for forest products was exceeding the productive capacity of the natural resource base.¹¹³

The authors of the FSMP acknowledged that it was a "wish list" and to be effective it would need to be supported by operational strategies and programs. Its fundamental elements included conservation of biodiversity, soils, water, and cultural, historic, and religious values. The plan proposed to increase forest cover and productivity to meet the needs of current and future generations and to strengthen the welfare and economy of local communities and the nation. It dictated that all state forest resources be sustainably managed on ecological principles. Excerpts of the FSMP are:

Article 2.2: The traditional rights, cultural values, and religious beliefs of people living within or adjacent to forest areas will be recognized and respected.

*Article 2.4: For the management and protection of the natural forests and forest plantations, the state will, where appropriate, form partnerships with local people, rural communities, and other stakeholders, and introduce appropriate tenurial arrangements.*¹¹⁴

SUMMARY

The irony of existing forest policy in Sri Lanka is that while it calls for the public to protect and conserve forest resources, and states that management goals should be driven by the needs of the people, all management authority to administer forests is retained by government

agencies. The introduction of new tenurial arrangements to extend secure rights and responsibilities to local community managers over public forest lands are yet to be formalized. As Dr. Wickramasinghe notes, "The domineering role of the state can be seen in policy statements."¹¹⁵ For example, the 1995 Forestry Sector Master Plan stresses that "What should drive policy is what people want from forestry: it must reflect the desires of all interested parties."

At the same time, the document proclaims that "the State shall protect, preserve and improve the environment for the benefit of the country."¹¹⁶ According to Wickramasinghe, what has happened has been that "efforts made to enhance people's contributions are to satisfy the state itself, rather than to satisfy the people. The 'people' in the broad sense include the domain of knowledge, culture, livelihood strategies, local initiatives and innovations."¹¹⁷ She concludes that while the rhetoric of participatory forestry has emerged in the 1995 Master Plan, what the state has not yet done is to "accept people as capable managers," but instead the "top-down flow of decisions has not been lessened."

While it is premature to predict the outcome of the new round of ADB forestry projects or to anticipate how the government will move to implement the intent of the Forestry Sector Master Plan, it is apparent that change is occurring. On March 6th, 2000 the English language paper the Daily News announced that 1,200 assistant field forest officers will be recruited, potentially doubling the size of the Forest Departments territorial staff. Sri Lanka's political leadership is clearly concerned that forest cover already depleted to 22 percent of the country may fall to 17 percent by 2010 unless access is more tightly controlled.¹¹⁸ New schemes are being designed to involve 4.3 million students in the ADB financed National Participatory Afforestation Program. Economic incentives include student bank accounts for participants to receive tree planting payments and a 30 percent share in timber harvests. While such strategies are innovative and hold promise, forestry projects alone will not be able to transform the "wish list" of the Forest Sector Master Plan into reality.

**INTERVIEW WITH MR. SARATH FERNANDO
ADDITIONAL CONSERVATOR OF FORESTS
FOREST DEPARTMENT OF SRI LANKA, MARCH 6, 2000**

Q: How have Sri Lanka's forest policies changed since Independence?

A: The main shift has been from a command and control structure, where foresters were largely involved in policing work, reacting to increasing population pressure, to our new approach where we are functioning more as facilitators. We now recognize the important of involving people in the forest area. In addition, Master Plan studies have shown that most of our timber comes from forest gardens on private lands, outside state forest areas, so we are attempting to develop that sector also.

Q: What do you see as the greatest challenges facing the Sri Lankan Forest Department as you move into the 21st Century?

A: I think the biggest problem will be conserving the remaining natural forests, while meeting the needs of people in the adjacent areas. Secondly, we must find ways of increasing the productivity of the state forest land. Thirdly, I think in Sri Lanka we must develop the political will to emphasize the importance of forestry, and develop a comprehensive land use policy. And fourthly, the Forest Department must learn how to better support private home gardens, which are so jflportallt in our country.

Q: What are the most valuable contributions that communities can make to sustaining the forests of Sri Lanka?

A: We need the people at the grassroots level to gain greater voice, for they are aware of the forest management problems. Together, as a joint force we would have much greater capacity. In conservation efforts, local people have much to contribute. Unless, we have some sort of protection committees, as in India, our foresters alone, even with guns, will have limited effectiveness. For example, a major problem we face is the illicit cutting of trees. While this is done by very few people, it is very well organized, with powerful people behind them. Illegal loggers can not operate if local people organize and protest their actions, so we need village forums to halt these activities.

Q: In India and Nepal, the strategy moved from conventional social forest projects in the 1970s and 80s, to transferring management rights and responsibilities over some of the reserve and protected forests to local groups, based on significant policy changes made at the national level. Do you see these types of policy changes happening in Sri Lanka?

A: If you look at the 1995 Forest Policy, this intention is clearly there, but we are still trying to develop the operational strategies to devolve authority, and unfortunately still lack experience in this area. We need to find ways to involve those people who are most dependent on the forest and who are concerned about conserving and sustainably managing these resources. We need flexible strategies that allow us to change our approach to always get people involved and respond to their needs. We need to build the groups around communities with shared interests, rather than diverse interests.

FSMP proposed a new forest management paradigm based on meaningful partnerships with local communities. This in turn requires significant shifts in thinking, procedures, and attitudes of foresters, sectoral agencies, politicians, and development organizations. According to Dr. Wickramasinghe, "Success of new policy directions will depend on the attitudes, interest, willingness of state institutions to accept people as partners and distribute power of decisions and control of assets."¹¹⁹

Formal forestry sector planning has historically been centralized and hierarchical, but new processes required decentralized, participatory decision making. Bureaucratic managers will need to transfer their authority downwards, while politicians will need to formulate policies and laws that allow for public forestry sector reform. Tragically, Sri Lanka's traditional community-based resource management institutions, sophisticated indigenous agro-forestry technologies, and environmentally grounded spiritual and cultural

values, have not been well-integrated with contemporary strategies to sustain the country's forests. Policy makers, forest administrators, and development agency staff need to find new ways to mobilize the forest traditions and conservation values carried by rural Sinhala and Tamil communities, empowering them to once again play a formal role in management.

SUMMARY

This section has illuminated many of the shared historical roots of forestry in the South Asia region, as well as the common challenges the countries of the region face in sustaining natural forests in the face of expanding population and industrial growth. The scientific and industrial paradigm for forest management established during the colonial period brought with it benefits and problems. The exclusion of rural users from participating in formal management systems created conflict and forest tenure insecurity throughout much of South Asia, as Dietrich Brandis, a founding father of South Asian forestry predicted over one hundred years ago. As a consequence, rural people have invested their labor and capital in managing trees on private lands, leading to the rapid expansion of farm forestry, forest gardens, and other off-forest production systems. While the productivity of private forestry activities has grown rapidly and now supplies much of the timber and fuel wood in countries like Sri Lanka, Pakistan, and Bangladesh, natural forests remain under intense pressure.

Throughout the region, forestry agencies lack the capacity to control resource access

alone. Recognizing this situation, Nepal and India have established new policies under the banner of community forest management (CFM) and joint forest management (JFM), vesting villagers with greater rights and responsibilities for public forest lands. While these initiatives have largely focused on degraded state forest lands, in recent years government forest administrators have realized that without community support, well-stocked forests and protected areas will be depleted as well.

Given the direction of policy reform in the forestry sector, it is likely that South Asian governments will continue the process of extending additional authority to communities to manage the public forest domain. While India and Nepal have taken the lead in pioneering new modes of collaboration in the forestry sector, it is likely that Pakistan, Sri Lanka, and Bangladesh will follow in the coming decades. The shift from exclusive state control is a gradual process, as vested interests within government and the private sector are often reluctant to lose control over valuable commercial forests and land resources. The colonial forestry tradition also resists change, though much of this reform movement is being led by professional foresters that see the inevitability and operational necessity of encompassing communities in management. In the future, a new generation of management problems will need to be confronted, including ways to engage women users formally in new forest governance arrangements and in establishing sustainable mechanisms to finance the restoration of the region's badly degraded and overexploited natural forests.

Notes

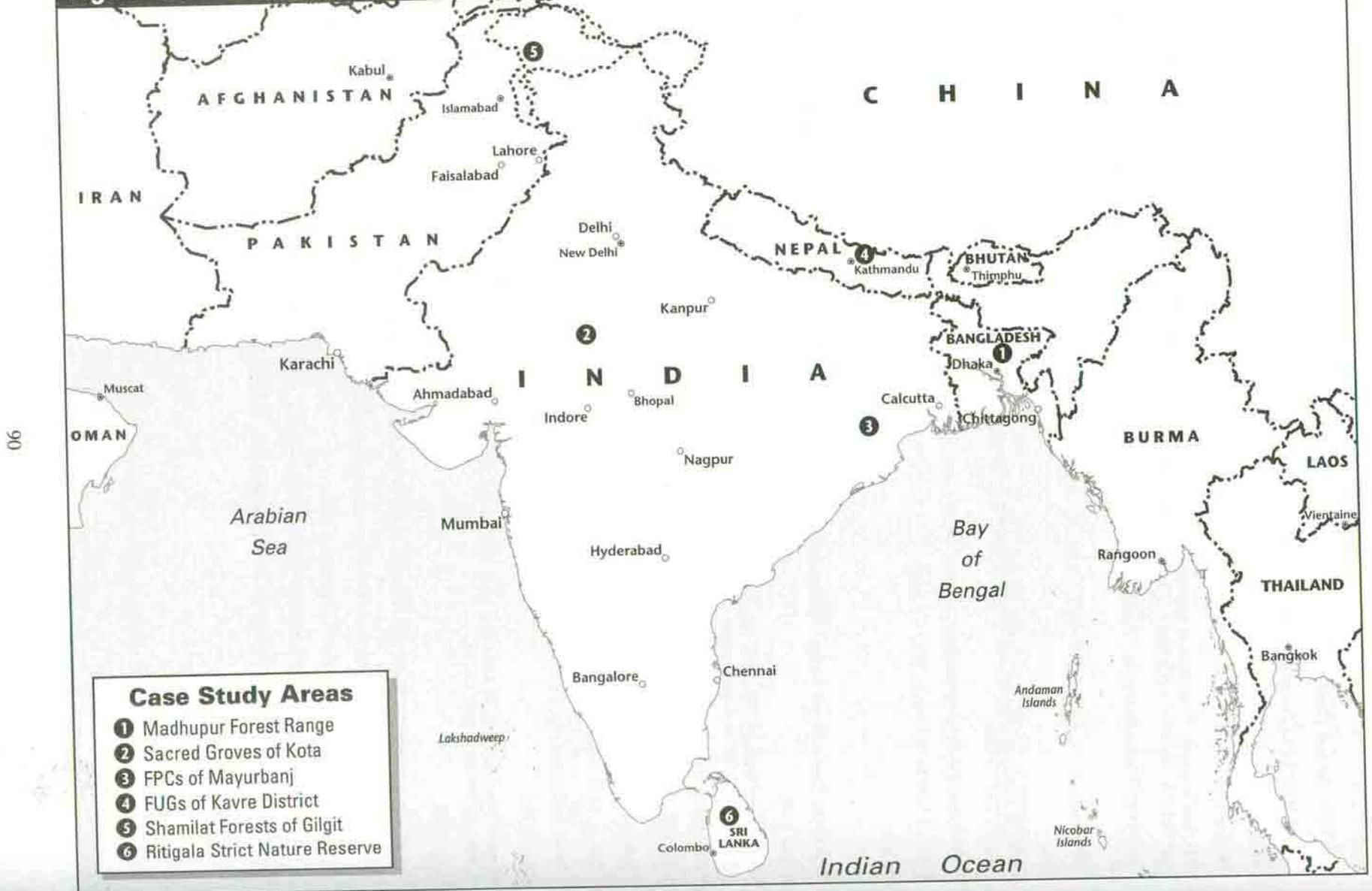
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- ² N. Mark Collins, Jeffrey A. Sayer and Timothy C. Whitmore, *The Conservation of Tropical Forests: Asia and the Pacific* (New York: Simon and Schuster, 1995) p. 216.
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- ¹¹ Mohammad Osman Gani and A.K.M. Shamsuddin (eds.) "Proceedings of the National Seminar on Participatory Watershed Management for Policy Makers," (Bana Bhavan, Dhaka: Bangladesh Forest Department, 1998).
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- ¹⁵ Raja Devasish Roy, "Land Rights, Land Use and Indigenous Peoples in the Chittagong Hill Tracts," in Philip Gain (ed.) *Bangladesh: Land, Forest, and Forest People* (Dhaka: SEHD, 1995).
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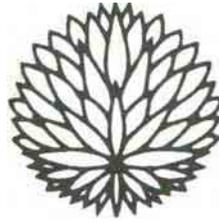
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Figure 12 CASE STUDY AREAS OF COMMUNITY INVOLVEMENT IN FOREST MANAGEMENT



- Case Study Areas**
- ① Madhupur Forest Range
 - ② Sacred Groves of Kota
 - ③ FPCs of Mayurbanj
 - ④ FUGs of Kavre District
 - ⑤ Shamilat Forests of Gilgit
 - ⑥ Ritigala Strict Nature Reserve

PART V



CASE STUDIES OF COMMUNITY INVOLVEMENT IN FOREST MANAGEMENT

INTRODUCTION

This section provides readers with community forestry case studies from six locations in South Asia (see Figure 12). While it is impossible to represent the great diversity of community-based forest management systems found in the region, these cases reflect a small number of the many contexts in which village resource stewardship occurs. Each case provides a brief background on the local human-environmental resource interaction patterns that have evolved over time and the cultural communities that guide them. The authors also analyze the role outside agencies and projects have played in each location to identify supportive policy and operational activities that have enabled community forest management, as well as external interventions that have proven to be less supportive, or even counter-productive.

The stories from Madhupur Forest Range in Bangladesh and Ritigala Strict Nature Reserve in Sri Lanka illustrate the challenges forest dependent communities face as government and donor sponsored projects and protected area programs move into regions claimed as ancestral domains. The case from Kavre, Nepal documents the establishment of a Forest User Group in one micro-watershed reflecting features of that country's successful national strategy, as well as ongoing challenges. From the Gilgit region of mountainous northern Pakistan, the efforts of hill settlements to stabilize upland forests through village organizations is presented. The progress of

Forest Protection Committees in Mayurbanj District of Orissa, India in facilitating the restoration of the *sat* forests of that region is described, presenting a case of eastern India's grassroots forest protection movement and the new federations that are emerging as it expands. At the same time, the work of the Rajasthan Forest Department in building on the spiritual values and indigenous forestry systems of the semi-arid environment of Kota, India is innovative and promising.

MADHUPUR GARH, BANGLADESH

Madhupur Garh refers to the forests that are situated along the banks of the Banar River, 150 kilometers north of Dhaka. Madhupur is part of a southern forest belt in Mymensing District that stretches for 60 miles from north to south, with a width of five to fifteen miles. The area is designated Reserve Forest and has been declared part of Madhupur National Park.

This case study describes events transpiring over the past half-century between communities and forestry agencies in Madhupur Range of Mymensingh Forest Division, which covers about 60,000 acres (see Figure 13).¹ In the past, the dense *sal* or *gajari* (*Shorea robusta*) stands of Madhupur were famous for their diverse wildlife. Unfortunately, the once rich forests of the area have diminished sharply. In Tangail District as a whole, *sal* forest coverage declined from 20,000 hectares in 1970 to 1,000 in 1990.² Despite a variety of Forest Department efforts,

including controversial tree plantation projects financed by the Asian Development Bank, forests continued to degrade while conflict with local communities grew. This case will describe how the customary forest rights of local tribal Garo communities have eroded as Forest Department projects and commercial forestry operations, financed by development assistance projects, have moved into the area. Reflecting this situation, Atul Sangma, a Garo man from Madhupur forest tract noted:

*We, the forest people are so accustomed to forest life that we cannot survive without natural forest stands and we will be gradually evicted from the forestland as woodlot plantations replace the natural forests.*³

HISTORY AND CONTEXT

The *Garo* (or *Mandis* as they refer to themselves) of Madhupur Garh are the descendants of swidden cultivators who migrated from the interior Garo Hills in Assam in northeastern India. While some anthropologists speculate that the Garo entered the area in the later part of the nineteenth century,⁴ the Garo view Madhupur and its forests as their ancestral lands. The Garo are unique from the surrounding population in many ways. They speak a language that belongs to the Tibeto-Burman family, while most Bangladeshi speak Bengali, an Indo-European language. While most Bangladeshi are patrilineal the Garo are matrilineal. After marriage the husbands move into the homes of their wives and Garo women hold equal status within the society. Most of the Garo have converted to Christianity though animism (*songsarek*) remains a prominent feature in the belief systems of the Garo community. While the Garo have gradually adopted agricultural practices similar to that of their Bengali neighbors and have borrowed from that culture in a variety of ways, they retain their uniqueness. Anthropologists have noted that the Garo are far more similar to Southeast Asian hill tribes, than to lowland Bangladeshi communities.⁵

In the mid-1980s, the forests of Madhupur Garh were inhabited by 21,500 Garo. In addition, 2,000 members of the Koch tribe

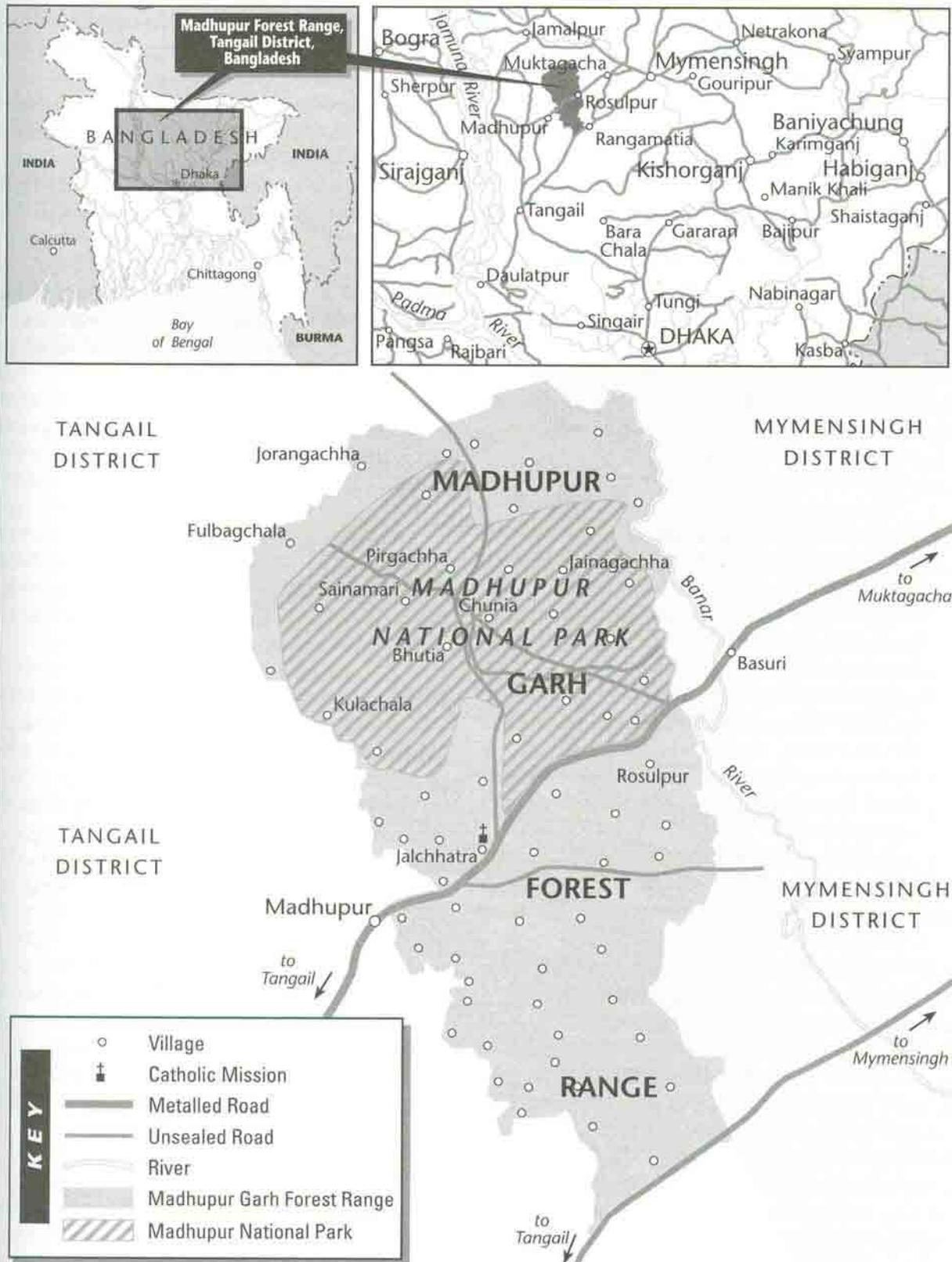
resided in the area as well as 6,000 Bengalis. Bengali migration into the Garh has largely taken place after the independence of Pakistan in 1947.⁶ Bengali families migrated into the forest area purchasing the rainfed rice (*baid*) land from the Koch or Garo or encroaching on unoccupied forest. Since the Garo had no legal claim to the forestlands that they used for long rotation swidden farming, they were not in a position to constrain the expropriation of the resource by migrants.

The 66 Garo villages in the area are scattered in small settlements throughout the forest tract. Most communities have developed rainfed rice fields in the lowland valley depressions that are inundated in the rainy season. The surrounding slopes and ridgetops support *sal* forests, which have been cleared on a long rotation basis for swidden cultivation. Settlement size varies from 20 to several hundred households. Most families own between .5 and 5 acres of farmland, while landless families make up less than 10 percent of all households.

The Garo traditionally practiced *jhum* (a form of shifting agriculture) and found Madhupur Garh well suited to these practices due to its hilly and undulating terrain. As population pressures increased, the Garo of Madhupur began adopting wet rice cultivation in addition to *jhum*. Soon after, much of the country's forestland was nationalized and, in 1951, the government banned the practice of shifting cultivation. Because claims to forestlands used for shifting cultivation were rarely recognized, many Garo became landless. According to Dr. Kibriaul Khaleque, an anthropologist who studied the Garo of Madhupur in the 1970s and 80s:

The poor and landless people...do not blame the rich people for their impoverishment, rather they generally say that they are poor because the Forest Department made them poor. Almost every Garo I met related to me that they used to lead a happy life in the past when the management of forests was vested in the Zamindar, because the latter allowed them to practice swidden cultivation on the forestland as well as wet cultivation on the

Figure 13 MADHUPUR FOREST RANGE and GARO COMMUNITIES, BANGLADESH



Source: Kibriaul Khaleque "Prospectus of Social Forestry in the Gara Villages of Madhupur Garh." Dhaka, 1984 (unpublished report).

*low-lying patches of land within the forest. This enabled the poor people to produce what they needed to support their families. Landlessness was unknown at that time. The people told me that they were also allowed by the Zamindar to have timber, fuel, fodder and other forest resources free of cost.*⁷

The Forest Department had their own perspective regarding their management problems and priorities. With the nationalization of the forests and the breakdown of the *Zamindari* systems of control and management, the Forest Department had little capacity to establish alternative systems of access control. The forests of Madhupur were under heavy pressure from migrants encroaching on forestland and illegal logging was on the upsurge. According to Dr. Khaleque:

*In the view of the Forest Department the forest dwellers, particularly the Garo, are the enemy of the forest as they destroyed the forest in the past by practicing shifting cultivation and subsequently they have been causing damage by encroaching upon forestland for cultivation as well as by illegal felling of trees. But the Garo, on the other hand, say that the employees of this department receive bribes from the illegal loggers who generally come from outside areas.*⁸

FOREST PRODUCTION AND MANAGEMENT

Formerly, the Garo typically opened a forest plot by cutting down and burning the trees and shrubs between December and February. Agricultural labor was shared by the community on a reciprocal basis, as it was for house building and well digging. Field burning was carried out by the community and monitored jointly. Planting was done with a dibble stick, with seeds sown with the first rains in April. Harvesting was carried out from September to October. During the first year rice, millet, cotton, chili, cassava and other plants were grown, while in the second year only rice and one to two vegetables were planted. The

land was usually left fallow in the third year and allowed to regenerate for seven or eight years, until it was opened again in the tenth year.

Over the past century, some Garo communities began adopting wet rice cultivation techniques used by neighboring Bengali communities. The methods required the bun ding of low lying areas and the use of a pair of bullock or buffaloes to pull a wooden plow. The introduction of wet rice agriculture also brought with it the concept of private agricultural land and wage labor. In the mid-1980s, an adult farm laborer was provided with three meals, rice-beer, and about one kilogram of rice for twelve hours of work.⁹ Initially, only those households experiencing food and land shortages were interested in wet rice farming, however, with the prohibition of *jhum* cultivation in the early 1950s padi cultivation became more attractive.

After the cessation of *jhum*, many communities were able to retain the upland fields they were cultivating near their hamlets. Some of the Christian Garo began growing pineapples, spices, oil seeds and fruit trees in their plots. Pineapple gardens proved to be the most profitable, and families that invested in these activities, as well as wet rice farming early on, became quite wealthy in contrast to other households. A farmer could plant about 12,000 pineapple suckers on one acre of land and have them start producing in the third year, usually providing a steady yield for at least twelve years. Farmers often protect their seedlings by covering them with fallen leaves or planting shade trees like *gajari*, jackfruit and others. By the early 1960s, the Forest Department no longer permitted the clearing of forestland for pineapple plantations. While the existing pineapple gardens enrich a small number of Garo families, they provide much needed income to many households that work as laborers. In the 1980's, the wage rate was 15 to 20 Taka.

As markets for fuel wood developed around the Madhupur area, some individuals began headloading firewood as a source of income. Fuelwood marketing is a difficult and low return occupation. Gathering 40 kgs. of dried

twigs and branches takes a full day and requires a second day for carrying the produce to market, selling it, and returning home. Strong and energetic villagers may perform this task two or three times each week. Gross income rarely exceeds 45 Taka for the week, of which 10 must be paid to the forest guards as a bribe.

TRADITIONAL TENURE: THE ZAMINDARI SYSTEM

Historical records of Madhupur Garh indicate that as early as the late thirteenth century the land was under the administration of a Garo king. In the early sixteenth century, during the Moghul period, forest tenure was governed by the *Zamindari* system that formally recognized tenure rights through a form of taxation. This system continued under the colonial period and was empowered by the British Raj. Dr. Khaleque has documented written notifications and formalized agreements between the *Zamindar*, the revenue collector, and the Garo, vesting them with rights to live in and cultivate forestlands under the following conditions:¹⁰

- The Garo would pay the *Zamindar* rent for using forestland for homestead and cultivation.
- The Garo would be allowed to practice *jhum* farming, but must keep the *Zamindar's* representatives informed of locations and areas involved.
- The Garo would only be allowed to clear underbrush for cultivation, leaving *gajari (sal)* and any medium or large timber tree.
- The Garo would be required to fallow their *jhum* fields after a maximum period of three years.
- Upon fallowing the fields, the Garo are required to plant and care for *gajari* trees.

The Garo say that they fulfilled the terms of the *Zamindar's* rules, paying rents required of two Rupees per acre and in return their rights to forest use were respected and empowered by the *Zamindar*. The *Zamindar* also granted *patta* (special usufructs) to *biad* (wetlands) that were

used for rice cultivation, allowing the cultivator to pass it to their successors. After several years of cultivation the farmer could obtain *patton* (full ownership rights) upon payment, bringing selling rights as well.

During the *Zamindari* period, the forests were opened for felling one month during the year. Upon payment to the *Zamindar*, logging operations could be carried-out. Usually the first ten days was used for felling operations, followed by twenty days for processing and transport.¹¹ Garos were selected to supervise logging activities. Loggers were responsible for hand stacking their timber and fuel wood, with each stack hammer-marked, numbered, measured, and an amount of royalty fixed by the *Nayeb*, or the *Zamindar's* representative.¹²

Reforestation was supported through the *Jhum* system, as the management agreement required Garo farmers to replant their abandoned fields with *gajari* seedlings, a valuable timber species. *Gajari* seedlings often sprouted naturally in *abandonedjhum* fields or regenerated by coppice growth. In the 1930s, as populations in the area grew, the *Zamindar* prohibited the opening of old growth forests and restricted *jhum* to regenerating sites.

FOREST NATIONALIZATION & THE NATIONAL PARK

After the abolition of the *Zamindari* system in 1951, the management of the forest lands was transferred to the Regional Forest Officer, Mymensingh District. In 1955, much of the land was demarcated and declared a Reserve Forest, with most of the remainder classified as *khas* (non-classed forestland) under the Revenue Department. During this period *jhum* cultivation was abolished, while only the rights of cultivators to *patton* (fully owned rice land) were recognized. Initially, the Garo continued to practice *jhum* even though it was officially forbidden. The Forest Department could do little to stop the operations until Garo leaders, who were convinced government assistance would be forthcoming, urged the Garo community to cease *jhum* activities permanently.

With the cessation of shifting cultivation in the early 1950's, Garo, Koch and Bengalis attempted to establish permanent pineapple plantations and other cash crop gardens on the sites of earlier *jhum* fields. The Forest Department, however, claimed that the horticultural fields and homesteads used by the Garo belonged to the Department. During the time of Dr. Khalique's research in the mid-1980s, the Garo disputed the claims of the Forest Department contending that they should be entitled to 20 percent of the land and that the remaining *khas* land should be made available for use. Since that time no revenue or tax has been collected from the Garo since their right to use such land is not recognized. The Garo contend, "We are eager to pay revenue but the Government does not accept it. Perhaps the Government thinks that if revenue is collected from us for using the forestland then, in principle, our right to such land would have to be recognized."¹³ One Garo leader stated, "According to the law the forestlands are ours as these were in our possession.. .Our rights of possession were recognized by the and this is the reason why the *Zamindar* used to collect revenue from us."¹⁴

It is clear that the Garo have a strong case under the East Bengal State Acquisition and Tenancy Act of 1950 (Provisions of Rule 20-23A). The Forest Department, however, has rejected these claims because the rules of the Reserve Forest Notification requires that any claims on proposed Reserve Forestland must be submitted with supporting documents within six months. According to the Forest Department, since the Garo made no claims during that period, their rights have been lost. The Garo contend that they were never notified of the decision to reserve their forestlands. Dr. Khalique reports that, "The Garo say that due to their lack of knowledge about the outside world they could not make any claim to their land, either in order to have it registered in their name or even for compensation. They think that the Government took advantage of their simplicity and lack of consciousness and cheated them."¹⁵

In 1961, the forest tenure conflict with the Garo was further complicated by the establishment of a National Park in Madhupur Garh.

The Forest Department adopted the position that people living within the proposed National Park should be evicted. At that time, 483 of the 542 families living within the proposed park were Garo. The Forest Department began developing a plan to resettle the scattered Garo communities to a consolidated area outside the Park that the government had selected for their rehabilitation. The Garo, however, discovered that the proposed resettlement area was already occupied by Bengalis. The Garo also found the Forest Department unwilling to compensate them in cash or kind for their lands within the forest. Garo leaders responded with a formal statement to the Minister of Forests:

*We have no objection to the establishment of the proposed National Park; rather we are proud of it. But we would be very happy and grateful if just compensation is given and rehabilitation would be taken up with impartial judgement and benevolent consideration.*¹⁶

No further action was taken during the liberation struggle with Pakistan, and the Garo thought that their rights as citizens of Bangladesh would receive greater attention. Indeed, Awami League leader Sheikh Mujibur Rahman promised the Garo in January 1971 that they would not be ejected from their forest homes. Yet, by the mid-1970s the resettlement plans were being discussed once again. A proposal was made to the Garo, but was promptly rejected due to the extremely limited amounts provided for land compensation. Dr. Khalique estimated that the value of the pineapple and vegetable gardens that would have been abandoned was twenty times more than the fixed compensation levels. The Forest Department blamed the Garo for frustrating the development of the National Park. The Garo claimed:

The Forest Department has been trying to evict us because the employees of this Department consider us to be an obstacle to their illegal means of earning money by receiving bribes from the illegal loggers... We live in the forest, so their illegal activities do not escape our notice. Thus, they think that it would be a great advan-

*tage to them if they could remove us,
because then there will be none to see
what they do in the forest.*¹⁷

Since the dispute with the Garo began in the 1960s the population of households in the National Park has expanded from 542 to approximately 2000 in the mid-1980s.¹⁸ Population growth in surrounding areas has vastly reduced land available for resettlement basically eliminating this option. Now it is more essential than ever before to find ways to allow resident peoples to co-exist with the protected area.

SOCIAL FORESTRY

The Forest Department has attempted to work with communities in forestry activities for nearly fifty years. Each encounter seems to create more obstacles as the tenure conflicts go unaddressed, while continuing disagreement over species, rotation strategies, and other important implementation issues remain at odds.

EARLY FOREST DEPARTMENT TAUNGYA SYSTEMS: 1950-1970

In the 1950s, after the acquisition of the forest by the Forest Department, an effort was made to bring the area under "systematic scientific management" The Department desired to gradually convert the "irregular forest" into a series of age gradations of *sat* and other commercially valuable timber species, and in the process remove less desirable species. A system of clear-felling and artificial regeneration was adopted. Initially, the Department attempted to accommodate the Garo by combining swidden agriculture with this procedure under the *Taungya* system (a system that combines swidden cultivation with tree plantation) involving the Garo. Instead of operating on the 10-year *jhum* rotation cycle, however, the Forest Department planned a 70 to 80 year rotation. As a consequence, the *Taungya* system could not accommodate the land needs of the Garo farmers.

Under the *Taungya* system, the entire forest was divided into a felling series of 19 blocks. To ensure that adequate labor was available, the larger Garo villages were designated as

"Forest Villages." After clearfelling, these areas were handed over to the Garo for burning and field preparation. *Gajari* seedlings were planted among field crops under the supervision of forest guards and supervising officers. As a consequence the whole *Jhum* system was converted into a *Taungya Gajari* plantation, while the rights of the Garo were no longer recognized. With their tenure rights eroded, the Garo attempted to establish permanent fields and had no motive to encourage the growth of timber trees on the land.

At the time of his research in the mid-1980s, Dr. Khaleque concluded that "illegal logging has always been the single most important reason for rapid deforestation in Madhupur Garh. The shrewd illegal loggers, most of whom are outsiders, take advantage of the antagonistic relations between the Forest Department and the Garo. They generally make scapegoats of the forest-dwellers. Clandestine logging is carried out by concessionaires in adjacent forest areas using the forest concession area as a front for illegal operations. Dr. Khaleque writes:

*Although the Garo and the other forest-dwellers know the facts about illegal logging, they generally keep silent because they do not like to enrage the influential illegal loggers and perhaps because they do not consider the protection of the forest to be their responsibility as it does not belong to them. A sense of alienation has resulted among the Garo from their loss of rights to use forestlands and this is clearly manifest in their unwillingness to cooperate with the Forest Department in its tasks of protecting the forests.*¹⁹

Fifteen years ago, Dr. Khaleque urged the Garo to be formally involved in protecting and reforesting the Madhupur Garh forests. He concluded that "the Garo should be seen as co-workers (by the Forest Department) rather than as criminals."²⁰ In the early 1990s, Dr. Mohiuddin Farooque reviewed the situation of the Garo people in Madhupur. He concluded that, "the FD should realize that the tenurial-anarchy has been largely caused by its own ignorance, negligence, and institutional inertness or impractical policies.

The Department should focus on regaining the trust and confidence of the local people.. .Special consideration must be given to the land rights issues of the Garo."²¹

RUBBER PLANTATION PROJECT: 1986-1989

In retrospect, the advice of Dr. Khaleque and Dr. Farooque was prophetic as the situation in Madhupur deteriorated over the next decade with a new series of social forestry projects that failed to address the fundamental tenure issue. In the mid-1980s, with funding from the Asia Development Bank, thousands of hectares of land in the area were converted to monoculture rubber plantations. The Forest Department used its authority to transfer lands to the rubber plantation authority, including lands occupied by the Garo and other Bengali families. The Rubber Plantation project started in 1987 with a first phase target of 15,000 acres. Problems soon erupted in Madhupur. In May 1989 the local community in Bharati, a village within Madhupur forest, protested after 20 acres of land, including some cropland and homestead, was forcibly planted with rubber. The Garo claimed that the plantation violated promises that they had from government to consult on forestry projects. Local communities believed the project threatened not only their land rights, but the natural habitat of the Garo and other ethnic minorities. According to investigative environmental reporter Philip Gain, the residents did not receive any compensation in the case of confiscation of their land.²²

The community proceeded to uproot the rubber plants. According to one Garo leader, "We have been occupying these lands from time immemorial and we have prepared our rice fields for decades with hard labor. Now the Forest Department and the rubber plantation authorities are making clear attempts to snatch our lands in defiance of customary rights. We are not going to sacrifice any piece of land in our possession and we will protect our land at the expenses of our own lives."²³

THANA AFFORESTATION AND NURSERY DEVELOPMENT PROJECT: 1990-1997

In August 1990, the Asian Development Bank, increasingly aware of the land conflicts

arising around its rubber project, suspended funding for the second phase of the project. Nonetheless, the Asian Development Bank proceeded to finance an agroforestry and woodlot project, in part to reforest 14,207 hectares of wasteland in the Madhupur forest area. The Thana Afforestation and Nursery Development Project sought to address many of the problems involved in the earlier social forestry projects, including demonstrating greater responsiveness to community needs and gender issues. Although the situation began to improve, according to one Garo resident, "the agroforestry and woodlot projects appear to be posing a fresh threat to traditionalland."²⁴

The new agroforestry project financed another round of natural growth clearing to establish fast growing fuelwood species, especially *Eucalyptus camaldunesis* and *Acacia mangium*. According to one analyst at the time, "As the cutting down of coppices and burning of the forest continue, many believe that foreign funds, of the ADB for example, have worked as an incentive to hasten the degradation of natural forests. The funds were in the pipeline for fresh plantations which encouraged the illegal loggers in connivance with the corrupt Forest Department officials to completely denude the last standing trees."²⁵

It is estimated that many sections of the degraded forests of Madhupur could have been regenerated naturally, through coppice growth at a cost of less than 10 percent that was needed to establish woodlot plantations. In addition, natural regeneration could have benefited the bio-diversity. Some Forest Department planners contend that fast growing plantations will produce more benefits quickly, in contrast to the native *sal*. The program offered participants a three acre plot to be protected through the 7 year rotation, with projected revenues of Taka 200,000 (\$4,000). While the project offered valuable financial returns to forest dependent families, participant enthusiasm waned as the lack of trust of the Forest Department could not be overcome. According to one participant, "On paper the woodlot and agroforestry projects looked good and people hoped that this would be a way to replant the forest. The people gladly

took part in the project at first but corruption of the Forest Department officials and now the attempt to take away ethnic people's land and land cultivated by local Bengali farmers has changed the attitude of the people."²⁶

Local families are concerned when the Forest Department hires migrant laborers who begin planting trees on local lands, without consulting community members or heeding their protests. One villager said, "In woodlot plots around, alien trees have been planted which we have never seen before." Paresh Cannra Mree, a Garo chief in Chunia village deeply regretted that Madhupur Forest was being destroyed in the name of social forestry. He said that in many other places-Beduria, Chunia, Amlitola, Gachhabari, Jangalia, Gaira, etc. coppices of *sal* trees were being cut for the preparation of woodlot plantations. "Replacement of natural forest with exotic species massively changed the traditional *sal* forest in the Madhupur tract."²⁷

Mohamed Hatem Ali states that "We cultivate the 80 acres of land for rice, pineapples, peanuts, and cassava that the FD wants to take for woodlot plantations. We oppose woodlot plantations on these croplands, because we have settled here for many years now and we have no other place to go." Bhadur Ali, a 60 year old from Agrakuri adds that, "we do not want a woodlot. But we do not know how to protest and in the remote areas we remain unheard. Nobody comes to our assistance. It is only the government that can decide our fate." Finally, Brojendra Barman, a 70 year old Garo woman complained after being forced to move with thirteen neighbor families, "Now we are asked by the FD to move from this village once again. We are forest people. Where shall we go now? We have no other place to go."²⁸

Over the past decade, the tenure problem has surfaced many times as social forestry initiatives were implemented in Madhupur and other parts of Bangladesh. During the 1980s, Asia Development Bank social forestry projects that attempted to plant eucalyptus, rubber, and other plantation trees in Madhupur drew sharp criticism from local

communities, in part because they comprise exotic species, silvicultural strategies, and ecological frames with which local communities do not identify. At the same time, the history of conflict between local forest dwellers and the Forest Department made this partnership problematic, often exacerbated by disputes over the distribution of project benefits. The UNDP mid-term evaluation conducted in 1992 that examined the Asian Development Bank Social Forestry Project in the area took notice of the conflicts in Madhupur Garh. The Asia Development Bank and the UNDP decided to halt funding of any further planting activities in Madhupur forest until the problems were resolved.

*The mission found the land tenure situation to be contested and highly complex in many of the places designated for woodlot and agroforestry components. There are in many cases longstanding community and individual claims to such sites, and a number of often conflicting land laws, regulations, and policies apply to this situation. The mission urges that the land tenure issues be appropriately resolved within the context of community-based participation.*²⁹

LESSONS LEARNED

This case study draws from the careful research of the late anthropologist, Dr. Khaleque who assessed the position of the Garo of Madhupur Garh as they abandoned their traditional swidden (*Jhum*) farming systems after the nationalization of their ancestral forestlands. In the early 1980s, Dr. Khaleque began documenting the tenure crisis confronting local forest communities in the area. According to Dr. Khaleque, after struggling since the 1950s to adapt to a shrinking forest base, deal with government threats to resettle them, and comply with the requirements to convert their agricultural systems from long rotation cycles to sedentary horticulture, the Garo and other ethnic minorities were forced to suffer through a decade of flawed "social forestry projects." By the early 1990s, Dr. Mohiuddin Farooque echoed the conclusions of

Dr. Khaleque stressing the critical need to deal with the tenure conflict.

The Madhupur case represents common issues facing many ethnic minority groups in the Chittagong Hill Tracts and other border areas of Bangladesh. While it can be argued that the circumstances of other parts of the country are substantially different, it is still evident that fundamental policies to empower communities to act as stewards of public forestlands have not been forthcoming. It is also clear that little headway has been made in engaging communities as real partners in the social forestry projects of the past two decades. There is a sincere commitment among some donor agencies and Forest Department staff to enhance the effectiveness of future social forestry projects. But this has not yet led to a major shift in project resource control down to the community level. The following recommendations flow from the work of Philip Gain and his colleagues at the Society for Environment and Human Development (SEHD) (see Box 13).

- Multilateral and bi-lateral donors need to be more sensitive to local needs.
- Investment strategies need to support the emergence of meaningful community management systems
- Forest management strategies need to be diverse to reflect the wide range of ecological and social conditions

- Community-based management strategies relying on natural regeneration require priority as an approach to restoring degraded forestlands

- Customary systems of land and forest tenure urgently require recognition. Communal rights over common property need to be acknowledged with practical measures established to protect community rights against encroachment by government and other outside actors.

- Industrial plantations should be restricted to truly degraded lands with highly limited potential for natural regeneration.

- Forestry projects should engage local people in monitoring activities, ensuring greater transparency in decision making, planning, and implementation, including the disbursement of project funds and benefits.

MAYURBANJ, ORISSA, INDIA

With an estimated 1,000 village-based forest protection committees, Mayurbanj District in northern Orissa, India, provides a striking example of a successful, grassroots environmental movement. Over the past twenty years, with the assistance of NGOs and some forest officers, communities have established tight controls over virtually all of the patches of natural *sal* forests, turning them from rapidly degrading wastelands, to vibrantly regenerating stands of secondary coppice growth. The recovering *sal*

Box 13

THE SOCIETY FOR ENVIRONMENT AND HUMAN DEVELOPMENT (SEHD)

The Society for Environment and Human Development (SEHD) is a non-profit organization dedicated to increasing public understanding of the environment, development, multilateral development banks (MDB) and human rights issues. Founded in 1993, the organization has extensively researched and reported on forests, forest communities, human rights, and several other contemporary environmental issues. SEHD is committed to provide information on the above issues to the public by promoting investigative journalism, training, and undertaking action research.

The SEHD publications lists includes *The Last Forests of Bangladesh* (1998), a review of the national forestry sector with special examination of the experiences of the Garo of Madhupur Garh. Another important SEHD book is *Bangladesh: Land, Forest, and Forest People* (1995). This edited volume covers human forest topics such as indigenous stewardship and biodiversity, land rights, and tradition in conflict.

forest fragments are beginning to restore the biological productivity of many state owned reserve and protected forests, providing an increasing stream of products and revenues to communities, while reestablishing critical environmental services the forests once provided. The results are extremely impressive with between 100,000 to 150,000 hectares under active village protection (see Figure 14). Support to village groups, both from NGOs and the Forest Department, remains sporadic and limited. This in part results from constrained finances, unclear policies, and staff limitations regarding mediation techniques, community organizing abilities, and knowledge of JFM programs and policies.

HISTORY AND CONTEXT

Mayurbanj is the northern-most district in the state of Orissa in eastern India, bordering Bihar and West Bengal to the north. With a total area of 10,418 square kilometers, forests covered 39 percent of the land area in 1989. The condition of the forests of Mayurbanj is considerably better than in other districts, with 82 percent of forestland possessing a canopy density above 40 percent. In the center of the district is Simlipal Tiger Reserve, which was declared a Sanctuary in 1979, and made a National Park in 1986. The Park has an area of approximately 2,750 square kilometers including both the core and buffer area. Large mammals include 98 tigers, 432 elephants, 12,500 deer, and 10,500 wild boar. The rugged terrain has isolated the forests of Simlipal helping protect them from commercial exploitation. Nonetheless, organized timber smuggling operations based in southern Bihar and Calcutta

Outside Simlipal National Park, smaller patches of *sal* forests and mixed deciduous forests are found on the plains and hills. These forests were heavily logged during the 1950s, 60s, and 70s, according to the Forest Department's working plans. Contractors leased forest lands and clear felled the compartments according to the coppice with standard working plan guidelines. After Forest Department supervised logging operations were completed, local people used the

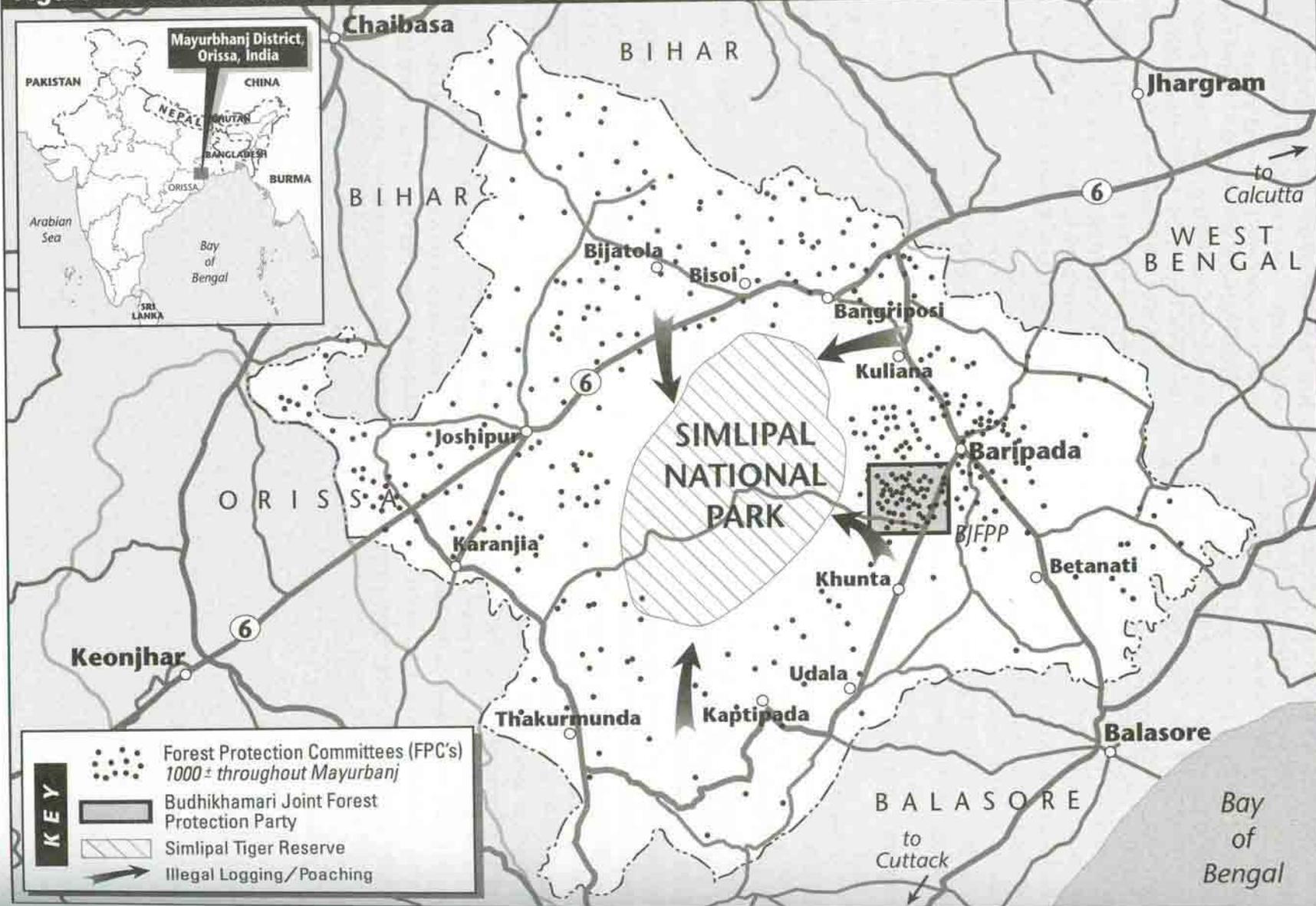
land for fuelwood collecting and grazing. In some cases, people from low-income families, often women, would collect fuelwood for sale. Conflicts between groups of women fuelwood headloaders and forest guards grew in frequency. The Forest Department had limited ability to control access, while communities had no tenure authority and few incentives to manage the resources sustainably. By the early 1980s, much of the reserve and protected forests were degrading rapidly, reduced to shrub growth or completely denuded.

Mayurbanj District is heavily tribal, with scheduled tribes comprising 70 to 80 percent of the population in many subdistricts. Tribal communities are dependent on forests for subsistence food sources for up to eight months during the dry season, as well as for raw materials used to generate cash. A World Food Program study of four tribal communities on the periphery of Simlipal Sanctuary found that forest products represented between 58 percent and 67 percent of total household income.³⁰

In the early 1980s, hamlet level forest protection groups began forming and spreading in the area. The groups emerged from the vacuum of forest management authority existing in parts of rural Orissa. Village *panchayat*, often comprised of ten to twenty member hamlets, were far removed from daily resource use decision making, while the Forest Department staff had few incentives to invest in the protection or rehabilitation of the degraded forests. While higher caste people from larger settlements often dominated the village *panchayat*, the smaller hamlets closer to the forest were often comprised of tribals, low caste, or landless people. During the 1980s, these groups developed stronger political identities and were beginning to articulate their desire for greater control over local forests.

Forest-dependent communities felt a growing urgency to ensure their traditional food supplements, fodder supplies, and fuel wood sources are available on a sustained basis. Due to the low-income levels of these communities, they were not in a position to buy these materials from market sources if forests lost their productive

Figure 14 COMMUNITY FOREST PROTECTION GROUPS OF MAYURBANJ DISTRICT, ORISSA, INDIA



capacity. The history of many forest protection committees (FPCs) began with community leaders appealing to village members regarding the need to protect the forest to restore water levels and microclimates, as well as encourage the return of species of birds, animals, insects, and plants that were disappearing from the local environment. In some cases, communities saw opportunities for sustained timber yields after twenty years that could provide supplemental income for household and community development projects.

Sometimes inspired by government sponsored environmental messages, village elders, youth club leaders, teachers, and other individuals began mobilizing to address growing community concerns over environmental degradation and scarcities of important forest products, urging the formation of FPCs. By the early 1990s, local NGOs and some Forest Department field officers began encouraging communities to form FPCs and close neighboring forestlands to cutting. Once protected by local villagers, the coppicing sal regenerated rapidly, encouraging other communities to participate. The movement spread gradually and the number of FPCs eventually expanded.

In 1988, the state Government of Orissa issued a resolution legally authorizing the formation of FPCs referring to them as Village Forest Protection Committees (VFPC) allowing the Orissa Forest Department to formally endorse local efforts. By 1998, it was estimated that approximately 1,050 villages, out of a total of 4,000 in the Mayurbanj district, were actively involved in some form of forest protection. In 1993, another government resolution was passed mandating the formation of Van Samakshan Samiti (VSS) requiring VFPC registration and micro-plan preparation. Since that time, a total of 164 VSS have been formed or converted from VFPCs. The question of the status of unregistered VSS conforming to the more rigid structural guidelines of the VFPC program has raised problems.

As villages began to take control of small plots of forest and place bans on cutting and grazing, conflicts arose among some dependent, low-income families who were sustaining their

livelihood through firewood collection. Initially, their extraction activities often shifted to neighboring forests that were still open access. As these forests, too, were closed, some women headloaders faced considerable hardships, while others found new occupations. The exclusion of neighboring villages, some of which had traditional usufruct right, also led to disputes. In many cases, these conflicts were resolved through government, Forest Department, and NGO mediation, while, in other cases, "mass loots" took place. During these episodes, scores or even hundreds of villagers would come and cut down a regenerating forest, often at night. Yet, as FPCs gained prominence in the area support from the Forest Department increased, such incidents dropped sharply.

More typically, the initial forest closure often catalyzed other villages to establish FPCs to protect the forests neighboring their own villages. As the number of FPCs has increased, much of the degraded forest with good roots stock, came under some form of community control. This process often required inter-village discussions to reduce conflicts over the distribution of forest land rights and responsibilities. By the early 1990s, some village clusters sharing patches of forest began coordinating their activities, holding joint meetings and appointing representatives to deal with the Forest Department. In some cases, like that of the Budhikumari Joint Forest Protection Committee in Pithabata Range, multi-village federations were established.

BUDHIKHAMARI JOINT PROTECTION PARTY

In 1986, with the forests badly degrading from rapid exploitation by commercial loggers and timber smugglers, five neighboring communities formed the Budhikhamari Joint Protection Party (BJPP). Since that time, the BJPP has grown to include 95 villages in 1998 and eventually extend its protection to cover 3,247 hectares (32.5 km²). The BJPP's concern for the environment, localized community action, and gradual alliance building and network establishment is evident, not only in Budhikhamari, but in over 1,000 villages in Mayurbanj District, Orissa (see Figure 14). This case study illustrates the social

strategies rural people are developing to regain control over their immediate resource base in order to ensure that soil, water, and forest products will be available for their livelihood needs. There are few places in the world where the density of community-based environmental organizations is found or where they are as functional. Budhikhamari's experience provides relevant lessons for a general application throughout the South Asia region.

From 1952 to 1972, Budhikhamari's reserve forests were managed under a working plan system prescribing clear felling. The Forest Department leased the land to local loggers. According to the working plan, regeneration was to occur through coppice growth from the dominant *sal* with a few mother trees (standards) left to act as seed sources. Commercial exploitation combined with continued fuelwood hacking and grazing, however, constrained restoration, and by the early 1980s, the forest was badly degraded. The emergence of timber mills around Baripada town in the early 1960s created much of the pressure on the local forests. A network of timber smugglers emerged to meet local industry's needs, resulting in over-exploitation and the steady depletion of the forest resources throughout the area. Due to its proximity to Baripada town, people using bicycles would also come to the area to cut fuelwood and make charcoal for the growing urban market. The growth of tile factories around Baripada also created further demands for industrial fuelwood. By the late 1970s, virtually all *sal* forests around Budhikhamari village and its neighboring communities were decimated.

Although the BJPP was formed in 1986, the actual initiative to create an alliance of villages to restore the forests dates back to 1983. At that time, Mr. K.C. Mishra was the Range Officer for the larger area known as Pithabata. Mishra recognized that any successful effort to protect the forests south of Baripada town would require the involvement and leadership of local villages. As Mishra began to approach community leaders and encourage them to take action, villagers were experiencing severe shortages of many materials that they had previously collected

in the forest. Fuelwood, fodder, and timber for tools and house repair had to be collected from greater and greater distances. The flow of non-timber forest products, like the oil seeds from *sal* and *karanj* and the leaves of the *sal* and *kendu* plants, that could be sold for extra household income were scarce. Gorachand Mahanta, an elder from Budhikhamari village, agreed with Mishra that the villagers must begin protecting their forests. He convinced four neighboring villages to join his own community in founding a FPC.

During the first years of protection, not all the villagers participated in patrolling. Some said that the Forest Department would fell all their new coppice growth and the villagers would receive no benefits from their action. Mishra met frequently with the communities to reassure them that the Forest Department was sincere in its effort to collaborate, however, at that time there was no formal state or national JFM policy. Perhaps more threatening to the nascent forest protection effort was the pressure from the hundreds of fuelwood collectors who poured into the nearby forests each day. Since many of the headloader families came from neighboring villages, tension was high as they were turned away by FPC patrols. Each participating community formed its own patrol band, based on a rotation schedule. A *tenggapali* (staff) was placed at the door of the person who held responsibility for mobilizing the patrol on a given day. The early patrols were often outnumbered by headloading groups and illegal timber loggers, but they continued to retain the support of Mr. Mishra. On several occasions, when they brought offenders to the Forest Department, Mishra agreed to book the case, levy fines, and take actions in support of the FPC.

While the five villages were making some progress in asserting control over the degraded forest lands on the peripheries of their communities, Mahanta and other leaders realized that long term protection of the forest would require the involvement of more of their neighbors. They sensed that while Range Officer Mishra had been most supportive, without any formal policies, his successor may not lend the same level of Forest Department assistance. In 1986, an association of

FPCs was created and named the Joint Forest Protection Party (JFPP). In January 1987, a massive assembly was organized in Hatikot with 70 villages invited to discuss forest protection issues. While some leaders were not convinced, many agreed to begin protecting 50-hectare plots neighboring their villages on a trial basis. Each community agreed to select four young people each day to participate in the volunteer patrols. Within a few months, six additional villages formed FPCs.

With finances from rural development funds, Mishra was able to provide jobs for forest and community activities that strengthened the confidence of the villages and their new JFPP apex organization. The JFPP successfully mediated several inter-village disputes by organizing and facilitating discussions among the stakeholders. By the end of the 1987 monsoon, rapid growth was taking place in the protected *sal* forests, in some cases two meters or more in a single season. Lush regenerating stands stood out in sharp contrast to the unprotected forest lands that were continuing to degrade. In 1988, 15 additional villages began closing their degraded forests to cutters and grazers after witnessing the tremendous results of their neighbors. In the same year, under the leadership of Mr. Mahanta, a new multi-village mobile force was formed, patrolling the larger area on bicycles. This reduced the time each community had to spend on patrolling and further supported the evolving role of the JFPP.

THE JFPP ORGANIZATION

The executive committee of the JFPP is comprised of a president (currently Gorachand Mahanta) and a secretary (Bishnu Purty), as well as the presidents and secretaries of each member FPC, with all positions elected by the members. Last year a female extension worker was hired by the JFPP and joined the executive committee. The JFPP also acts as a liaison with the Forest Department and outside NGOs.

The JFPP oversees the operation of the Mobile Unit, which moves around the 100-village federation on bicycles, responding to calls for advice and conflict mediation. The mobile squad

draws on a pool of five young persons from each member village. The community selects volunteers based on their energy and commitment to the task. Aside from rushing to trouble-areas and informing community leaders about offenses, the multi-village mobile unit also facilitates communication among member villagers. Prior to the formation of the JFPP, communities faced difficulties acting alone to curb the behavior of headloaders. Smaller villages could not mobilize large enough patrols to deter even larger groups of fuelwood collectors or organized timber smugglers. Offenders could cross village boundaries and flee across another community's land, escaping the jurisdiction of the single village patrol. The jointly run mobile unit resolved a number of these problems by including members from all villages, traveling in greater numbers, often with one or more of the four foresters posted in the area. Individuals were appointed in each village to communicate problems to the mobile unit. The result was a stronger, faster response capacity that also was perceived to hold greater authority. Once established, the simple existence of the mobile unit discouraged headloaders and smugglers from operating in the area.

The JFPP executive committee meets weekly, however emergency meetings may be held at any time. The minutes of JFPP meetings are kept in record books maintained by the secretary with signatures of all members present. Financial records and membership registers are also maintained. Membership records also include the addresses and photographs of all members of the mobile party, who have also been issued identity cards.

Individual village FPCs that make up the 95 groups in the JFPP derive finances for their committees from a number of sources. Non-FPC members from outside the village are charged a fee of Rs. 2 per person for each day that they collect *sal leaves* in the forest. Before collection begins, a payment is made and a permit issued to the collector. Local villagers can collect *sal leaves* free of charge. Committee members are also asked to make voluntary contributions as needed. Finally, if members are unable to contribute labor when it is their turn to patrol, they must pay a fee

of Rs. 5 per person, which is also added to the FPC fund.

The JFPP has limited sources of income, though member FPCs make contributions. The JFPP was also given a Rs. 5,000 grant when it was awarded the state environmental prize (Prakrutimitra) in 1992. The JFPP incurs a number of costs in carrying out its administrative duties, conducting meetings, maintaining records, responding to the requests of interested villages, and fighting counter cases lodged against them by illegal forest users. Efforts to expand the JFPP, including the sponsoring of *mela* (environmental fairs) and *padyatras* (marches) have also resulted in significant costs. The hiring of a female extension worker to respond to the needs of women forest users has also increased costs of the JFPP program. Financing the JFPP remains a significant concern of the executive committee. By 1998, the JFPP had a monthly income of approximately Rs. 5000 per month, including a stipend from MASS, a local NGO support group, of Rs. 400 per month.

INCOME GENERATION & FOREST PRODUCTIVITY

While income to the JFPP and the FPCs remain minimal, the economic benefits accruing to village members are already substantial and gaining in significance each year. In the first few years of protection, the availability of *sal* and *tendu* leaves rose markedly. As the *sal* trees have matured, seed production has started to rise. In 1992, 78 metric tons of *sal* seeds were collected from the 3,250 hectares under protection generating an income of Rs.97,500 (Rs.1250 per ton) for seed collecting families. The productivity of *karanj* seed, *mahua* flowers and fruit are also raising steadily. The shift to forest protection was not without economic cost. Many villagers in the area were engaged in fuelwood collection and charcoal making at the time the forests were closed. To replace lost income, a large number of families began collecting *sabai* grass (fibrous grass) and using it for *ban* (rope) making. There is some concern that the planting of *sabai* grass is causing encroachment of forest lands, though it appears

limited to barren areas with limited regenerative potential.

The closure of forests in the area also cut off a major source of subsistence fuelwood. For the first years after forest protection began, villagers were forced to rely on twigs and straw from their agricultural land, as well as dung cakes. Fuel was more carefully conserved, and wealthier families began using electricity and kerosene stoves. Within three or four years, however, the regenerating forests began to provide an increasing supply of fallen branches and dried twigs. Since the closure of the forests took place in a gradual way as communities joined, the decline in fuel supplies was somewhat gradual, while the restoration of productivity has also taken place sequentially. Today, much of the productivity of the forests has been restored, generating a steady supply of fuel. There has been very little transfer of pressure to other forests outside the Budhikhamari area by local people. At the same time, there has been a shift in the activities of commercial headloaders and loggers from Baripada town. The individuals that once exploited the forests of Budhikhamari are now extracting their timber from the buffer area of Simlipal National Park, often with the collusion of forest dependent villages on the periphery of the conservation area.

Prior to the protection movement, the forests of Budhikhamari had been felled and hacked so heavily that most were no higher than one meter, resembling a landscape dotted with scattered coppicing stumps. As roots were removed for fuel, surface erosion carried away precious topsoil with each rain. Yet, with protection, the many coppicing species of the Orissa coastal plains began sending up healthy new growth. *Sal*, *mahua*, and *kendu* all are vigorous coppicers capable of rapid shoot production, even when badly degraded. Over 41 tree species have been identified in the regenerating forests of Budhikhamari, including species from the genera: *Terminalia*, *Gemelina*, *Anogeissus*, *Ficus*, *Lannea*, *Butea*, *Sizygium*, *Disopyros*, *Aegle*, *Lagerstromea*, and *Dalbergia*. According to a village survey, the following species were considered most valuable in order of importance:

- 1) *kusum (Schleichera oleosa)*
- 2) *sal (Shorea robusta)*
- 3) *mohula (Madhuca indica)*
- 4) *neem (Azadirachta indica)*
- 5) *bahada (Terminalia belerica)*
- 6) *kendu (Diospyros melanoxylon)*
- 7) *asan (Terminalia alata)*
- 8) *chara (Buchanania lanzan)*
- 9) *piasal (Pterocarpus marsupium)*
- 10) *sissoo (Dalbergia sisoo)*

The five favorite trees were given high rankings due to their multiple uses. These included: small timber for house construction, furniture, agricultural implements, fuelwoods, cash, and medicines.

Inequities in the area of forest controlled by each village are a source of tension. Forest area per household varies from .15 hectares per capita in Ohansole village to a high of 5.6 hectares per person in Khadisole village. As the villages took control over forests, proximity and prior informal use patterns took prominence over equity in the division of management authority. In some cases, communities were left with no forest to manage, even when they were interested in doing so. The JFPP has negotiated some changes in the allocation of forest land allowing villages like Tasarda to gain patches of their own for management, however, not all villages have been able to obtain forest land. There are some inequities in patrolling duties. Small, landless families who depend on day wage labor for income must sacrifice much of their revenues during the time they are on patrol. Wealthier families can send non-productive members to carry out these duties. Forest use conflicts are first taken to the village committee or discussed between several committees. The committees work with the relevant individuals to try and reach a consensus. If no agreement emerges, the problem is brought before the JFPP. All committees agree to abide by the JFPP decision, though if there is a disagreement, it may be further taken to the Forest Department or the police.

SUSTAINABILITY OF FOREST PROTECTION

Much of the success of the JFPP can be attributed to the work of Range Officer K.C. Mishra and village leader Gorachand Mahanta. The formalization of JFM in the state of Orissa has strengthened the authority of villager forest managers, however these groups still rely heavily on their personal relationships with the individual forest officers working in the area. Support from Forest Department field staff varies widely depending on the individual officer's interest and ability to respond to community needs. A more stable, institutionalized interaction with the Forest Department would help stabilize interaction and coordination. Recently, Mr. Mahanta and the Budhikumari JFPP was asked to formally register as a VSS as part of the new Orissa Government JFM program. The JFPP executive committee has rejected this offer, as it requires that their president and secretary be replaced by the *panchayat vice-sarpach* and a forester from the Forest Department.

They note that other committees in the area that have converted to VSS have collapsed since they were forced to displace village leaders on their executive committees. There are only four foresters covering the 95 villages in the JFPP. That would mean each forester would have to act as secretary for over 20 committees, something the JFPP does not feel is realistic. The JFPP would like the Forest Department to play an advisory role, supporting the development of the mobile team. Mr. Mahanta notes that the mobile unit requires flashlights for night patrols, in addition, whistles, badges, and batons received from the DFO in 1992 have been extremely helpful in providing visible signs of authority. In addition, the JFPP would like to acquire uniforms for its staff. Over the past few years, the addition of women to the mobile patrol has been very helpful in dealing with women headloaders. Patrols now include 25 persons, including five women. The JFPP has already established boundaries for each FPC, but still wants to proceed with mapping each territory.

The JFPP is also exploring ways to make the forest more productive. The committee is currently carrying out its own experiments to raise the harvest of *khamba alu* (pole potatoes). These climbers, which produce yam-like tubers, are an important supplemental food, providing staple food for up to six to eight months of the year for many low-income, tribal families. If natural productivity can be enhanced through enrichment planting, food availability could increase, as well as income as the current market price for these pole potatoes is Rs. 8/kg.

There is also concern that the JFPP may be endangered after the retirement of Gorachand Mahanta, now in his 70's. While the mobile team has reduced patrolling tasks by local villages, it has also taken away some of the routine work that kept the individual FPCs active. There is some concern that new leadership should be developed and local groups made more active. Currently, the JFPP is establishing ties with the *Sweehha Sewa Samanya Samiti* of Orissa, an NGO network with 700 members.

LESSONS LEARNED

During a workshop with tribal and other FPC leaders in the late 1990s, a number of recommendations were presented to strengthen the network of FPCs operating in Mayurbanj District and more generally across the state. Briefly, these are:

- Communities need legal authority to enforce forest use rules in their area. This includes documents and symbols of authority including certificates, badges, identity cards, as well as the right to levy fines against offenders from within and outside the village.
- Communities request the assistance of the Forest Department in demarcating forest lands under their management responsibility.
- The Forest Department and NGOs need to work collaboratively to help establish FPC Networks and Federations that can hold regular meetings, mediate disputes, help provide technical support, and strengthen forest protection activities, especially in areas where commercial felling is ongoing.

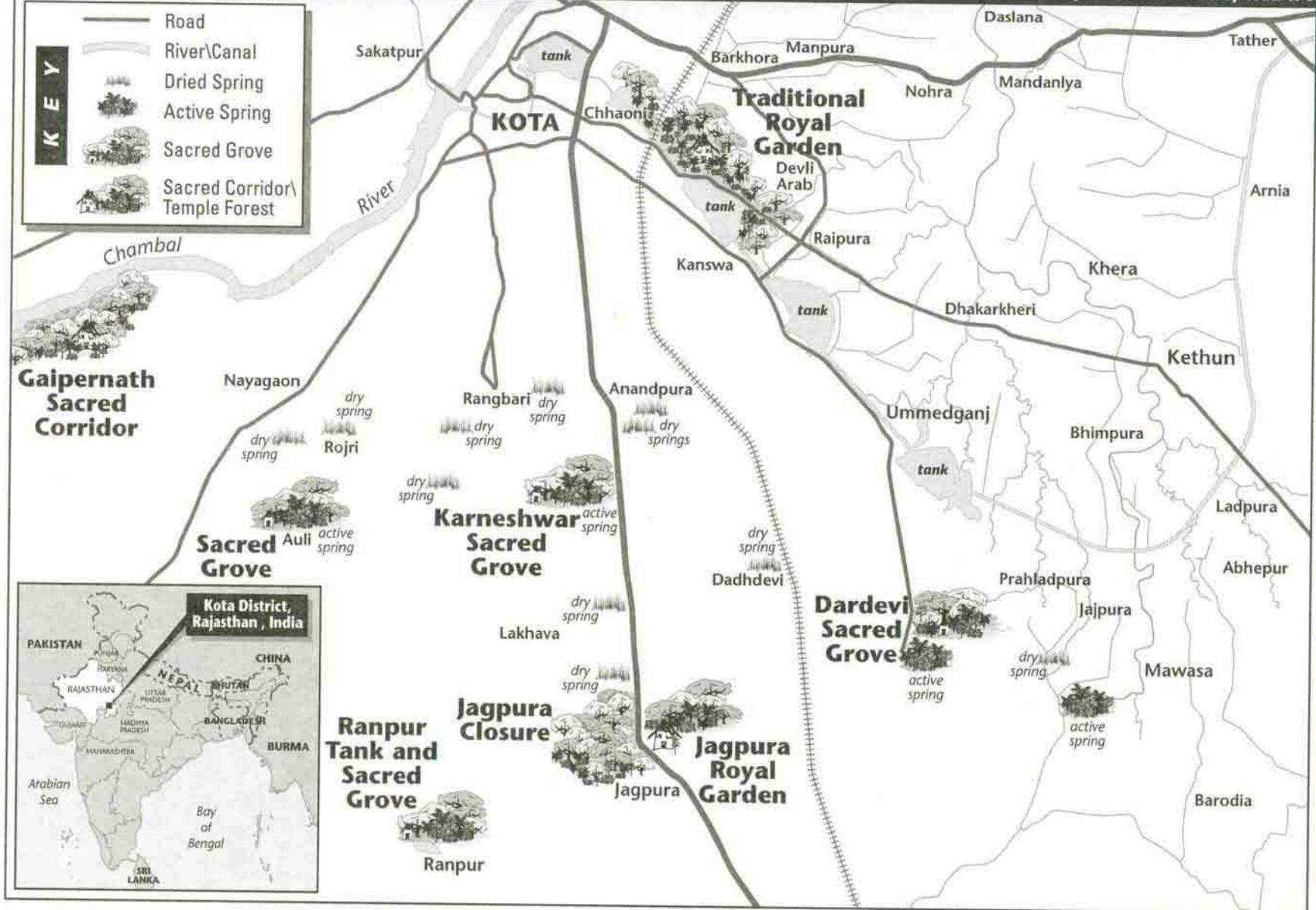
KOTA DISTRICT, RAJASTHAN, INDIA

In Kota District of northeastern Rajasthan, for centuries an elaborate system of sacred groves, temple forests, forest gardens, and protected woodlands serviced a network of springs under the management of communities and local rulers (see Figure 15). Social and political change, population expansion, and urbanization occurring over the past fifty years has undermined local resource controls, with much forest lost in the process. Currently, the state Forest Department is working to re-engage local communities in resource management by drawing on their forest knowledge, institutional traditions, and spiritual values. The goal is to revitalize indigenous practices of forest conservation and use, recognize the importance of sacred groves and temple forests as a *refugia* for biodiversity, and strengthen village forestry practices by developing viable partnerships with tribal and other forest dependent peoples in the area.

HISTORY AND CONTEXT

One hundred years ago, much of southern and eastern Rajasthan possessed dense forest cover. The southern Aravali mountain range maintained old growth forests with mixed species including *Terminelia*, *Anogeisuss*, *Lannea*, *Dyospyros*, *Teetona grandis*, *Butea monosperma*, and other dry forest trees. The vegetated landscape helped ensure that water run-off was slowed, facilitating the recharge of subterranean aquifers. Commercial logging, population pressure, and increased use accelerated during the early twentieth century, with heavy felling occurring in the 1960s and 1970s to supply the needs of rapidly expanding urban centers and industries located within the state and outside. The breakdown of traditional modes of forest resource use and control, both feudal and communal systems, resulted in the loosening of the enforcement of customary use restrictions and sharing arrangements, and the weakening, abandonment, or displacement of other regulations, both by local communities and migrant workers.

Figure 15 SACRED GROVES, TEMPLE FORESTS, and WATER RESOURCES OF KOTA DISTRICT, RAJASTHAN, INDIA





Rajasthani village women work to reforest a denuded hillside in Udaipur District. The replanted area falls under the management of the women's hamlet-based forest protection committee. (photo: Poffenberger)

Traditional systems of water harvesting and watershed management have historically been key elements in the agroecology of Kota district, where the climate is one of hot dry summers and cool winters, with the average rainfall of 87 cm. annually (35 inches). Ancient water harvesting and reservoir catchment systems, so important in this arid state, fell into disrepair during the twentieth century, while their watersheds experienced extensive deforestation.³¹ Of Rajasthan's 3.2 million hectares of forestlands, only 11 percent are in good condition with a canopy closure of 40 percent or more. Landscape devegetation has contributed to a sharp decline in aquifer levels and spring flows. In Kota District, for example, it is estimated that in 1947 some 60 perennial springs existed, while currently only 5 produce any substantial water flow throughout the year. Over the same period the ground water level has fallen from 3 to 5 meters in the 1940s, to 10 meters in 1988, and 20 meters in 1998. The population of Kota increased from 60,000 in 1947 to over one

million in 1998, representing a doubling of inhabitants every 12.5 years. More powerful pumps and deeper tube wells have maintained water supplies, but many underground water reservoirs are being exploited at highly unsustainable rates.

Kota district was originally inhabited and ruled by forest dwelling Bhil tribals until the twelfth century when the Rajput Warrior aristocracy grew in power. Bhil tribal peoples still inhabit much of the central and southern Aravali Mountains extending into southern Gujarat. Living in the remote, forested hill tracks of Rajasthan and Gujarat, the Bhils have maintained their culture for centuries, and only in recent decades have begun rapidly assimilating the cultural norms and religious beliefs of Hindu society. The Bhils have traditionally been forest dwellers and their knowledge of hunting, traditional forest management, and forest farming is extensive. Animistic spiritualism provides the basis for religious and healing practices. Bhil culture gives special importance to

forests. They have sanctified many forests around springs and on hilltops as sacred groves, protecting these forests from felling.

The five to six million Bhil tribals living in Rajasthan are an important element in recent strategies to protect the rapidly disappearing forest ecosystems. Because the homelands of the Bhil people are located around and inside the best remaining forests in the state, they are logistically well positioned to supervise conservation and sustainable use on a local level. Also, given the sacred nature of forest resources in Bhil culture, conservation oriented management can be rein

forced through the emphasis on the spiritual significance of these ecosystems. Non-government organizations in Rajasthan and Gujarat have assisted Bhil and other forest-dependent communities to sanctify remaining forest areas through the sprinkling of saffron and by conducting other religious rituals in order to establish protection norms in the community that support forest conservation (see Box 14). In some parts of Rajasthan, Bhil communities have established volunteer patrols and formed inter-village networks to control the activities of timber smugglers. In the Kota area, a fundamental strategy of the Forest Department to reestablish health forest ecosystems

Box 14 DEVOTIONAL SONGFESTS IN PRAISE OF THE FOREST

In Gujarat, Forest Department officers are organizing popular night meetings of tribal communities, religious leaders, and other forest dependent peoples where devotional songs (bhajan) are sung in local dialects. Forest administrators are finding that while JFM planners originally assumed that the sharing of economic benefits would be the key incentive for involving local people in management, it is often the commitment of local leaders and field staff, the strength of village institutions, and community values that sustains forest ecosystems. Mr. A.K. Verma, Deputy Conservator of the Working Plans Division in Surat, Gujarat and his staff began developing a strategy to give greater recognition to community leaders and field staff, while also linking the JFM strategy to local spiritual values regarding the sanctity of the forest.

While Vyara District had been one of the pioneers in establishing JFM strategies in Gujarat, by the mid-1990s local Forest Department staff were concerned that community enthusiasm was losing ground. There were indications that the important contributions of some community members had received little recognition. In December 1996, a special ceremony was held to honor 15 community members from the district who had made outstanding contributions to the forestry programs in the area. The state Minister of Forests presented a shawl and certificate to each of them. Local dignitaries expressed their appreciation and stressed the need to strengthen the JFM effort in the area. The public recognition did a great deal to boost local enthusiasm and commitment to the program.

The senior officers in Vyara Forest Division also decided that it would be important to acknowledge the work of field staff. Beat officers are the lowest level employee in most Forest Departments and are the only regular contact many communities have with the Forest Department, yet they often receive little recognition for their work. In many cases, they may be placed in the same posting for years with little or no in-service training. To encourage their field staff, the forest administrators sought out the most effective beat guards and foresters in the division and helped to organize awards ceremonies to honor their contributions to the program. These actions were important morale boosters

The Gujarat Forest Department has also been instrumental in organizing night meetings for tribal communities in the area that draw on tribal festival traditions. In this Bhil area, folklore, festivals, and religion are intricately related to forests, trees, rivers, and other features of the natural environment. Many of the religious songs (bhajan) reflect these environmental sentiments. For that reason, the local forest rangers began organizing night gatherings (8:30pm to 12:00am) to hold discussions on the value of the forests and sing devotional prayers. Invitations were sent to local villages, refreshments readied, microphones secured, with commitments made by local religious leaders and talented singers to attend. These meetings were extremely popular, often drawing in crowds of nearly 1500 people. The night proved to be an ideal time for the gatherings, as villagers were freed from their daily routines. Singing in local tribal dialects ensured that all could participate. The cost of each meeting was less than Rs. 2000 (US \$45), but the impact in bringing the Forest Department and forest user communities together was invaluable. (Abstracted from Mr. A.K. Verma, "Mass Mobilization and Local Innovations," *Wasteland News*. August-October 1999)

is to work with communities and build on indigenous organizational and technical approaches to natural resource use and conservation.

According to R.C.L. Meena, Conservator of Forests, Eastern Circle Kota,

Peoples' forests manifest in the form of sacred groves, sacred gardens and raris are a dominant expression of the knowledge and capability of the communities that they can achieve without external intervention.

The following discussion describes some of the local systems of forestry found in the Kota area, including those oriented towards production as well as conservation.

TRADITIONAL PRODUCTION FORESTS: RARI, BAGH AND FARM

Three traditional types of production forests in the Kota area include *rari* forests, *bagh* mixed tree gardens, and farm forests located along field boundaries or house courtyards. Under the feudal (*Jagiridari*) tenure system of old Rajasthan, rulers and landlords generally held title to the *rari* and *bagh* forests, however local villagers maintained a wide range of use rights.

RARI

Rari are typically comprised of *babul* thorn trees (*Acacia nilotica*), which form a canopy of about 10 to 15 meters high, however, *neem* (*Azadirachta indica*) and mangoes (*Mangifera indica*) are sometimes scattered through the *rari* increasing the height of the canopy to 20 meters. *Rari* are often located in low-lying areas with clay soils in eastern Rajasthan, and are not found in neighboring Madhya Pradesh. The canopy is often partially open, with heavy pressure from goats and other grazing animals. Until the dissolution of the princely state of Kota after India's independence, *rari* were commonly owned by landlords or the Maharaja as hunting estates, and managed by local tax collectors (*patels*). Communities held collecting rights to dead and fallen fuelwood and grazing.

Important products from the *rari* included small timber, fodder from leaves and pods, and

gum arabic. Some *rari* also possessed spiritual significance with shrines placed nearby and associated with sacred groves. Management included restrictions on green felling and protection from fire through the construction of fire breaks. Special care was given to fire prevention during the dry season. *Rari* varied in size from 5 to thousands of hectares, though currently most remaining *rari* possess no more than 100 hectares. *Rari* supported sizeable populations of leopards, tigers, deer, wild boar, monkeys, and other mammals, as well as a wide variety of birds.

Prior to 1900, the *rari* of the princely state of Kota were held under the maharaja's Department of Hunts (*Shikarkhana*). In 1902, a professional forester was engaged to develop a forest management plan for the Kingdom's *rari*, with plans to extract *catechu* from the *khair* (*Acacia catechu*) trees for dyeing and tanning. Between 1947 and 1950, the larger *rari* of Kota were transferred to the Rajasthan Forest Department and many were designated Reserve Forests. Smaller *rari* were turned over to village *panchayats* for management as village forests. Many *rari* were degraded during the commercial exploitation of forests that occurred in between 1960 and 1980. Due to the breakdown of traditional management systems, exposure of the *rari* to uncontrolled local pressures as well as the rapidly growing markets driven by the private sector. Recently, however, village forest protection committees are beginning to re-establish control over old *rari*.

BAGH

A second type of production forest found in eastern Rajasthan is the *bagh* or forest garden. D.N. Pandey refers to these as ethno-silvi-horticultural plantations. He notes that, "They are the backbone of indigenous methods of drought proofing and food security. Probably no other landscape in Rajasthan is as productive and valuable as the *bagh*"³² These groves are often located around perennial springs and water sources. Their purpose was multiple including the protection of the water source, the production of timber and fuel wood, and fruits, seeds, ornamental, and medicinal plants. *Bagh* typically range from 0.5 to 20 hectares in size, and were held under the control

of the maharaja or local *jagirdar* until their transfer to *panchayats* after 1947.

Across the road from the Jagpura *rari* is the mixed tree garden of the Royal Jagpura Bagh. With its octagonal tower, the forest garden is located on 13 hectares around a perennial spring. The garden was claimed and the tower built by Maharao Umed Singh I in the late eighteenth century. Since the early 1950s, forest clearing for agriculture and timber removed most of the trees in the Jagpura area, leaving the forest garden an important *refugia* for birds, aquatic organisms, and small mammals. It is also one of the few old growth forests in the area and consequently an important seed source. Over seventy-two tree species have been identified in the garden including *Tamarindus indica*, *Ficus benghalensis*, *F. glomerata*, *F. religiosa*, *Phoenix sylvestris*, *Syzygium cuminii*, and *Madhuca indica*.

The Forest Department took control of this old garden in 1950. In 1996, realizing the need for better protection of this rare habitat, Forest Department staff encouraged the Jagpura Forest Protection Committee to formally take responsibility for its management. The community was eager to gain a clear role in the formal management of the forest garden, as it provided an important oasis in the middle of an arid landscape. According to one village leader:

We will be dead if the Baug is dead! The water stream sustains our livestock, trees provide us cool places in the summer and by burning their limbs trees also give us warmth in the winter.

Last year the Forest Department began contributing funding for a fence to keep free range goats out of the forest. The Forest Department is also working with local FPC members in operating a nursery to produce seedlings for projects throughout the division.

FARM FORESTS

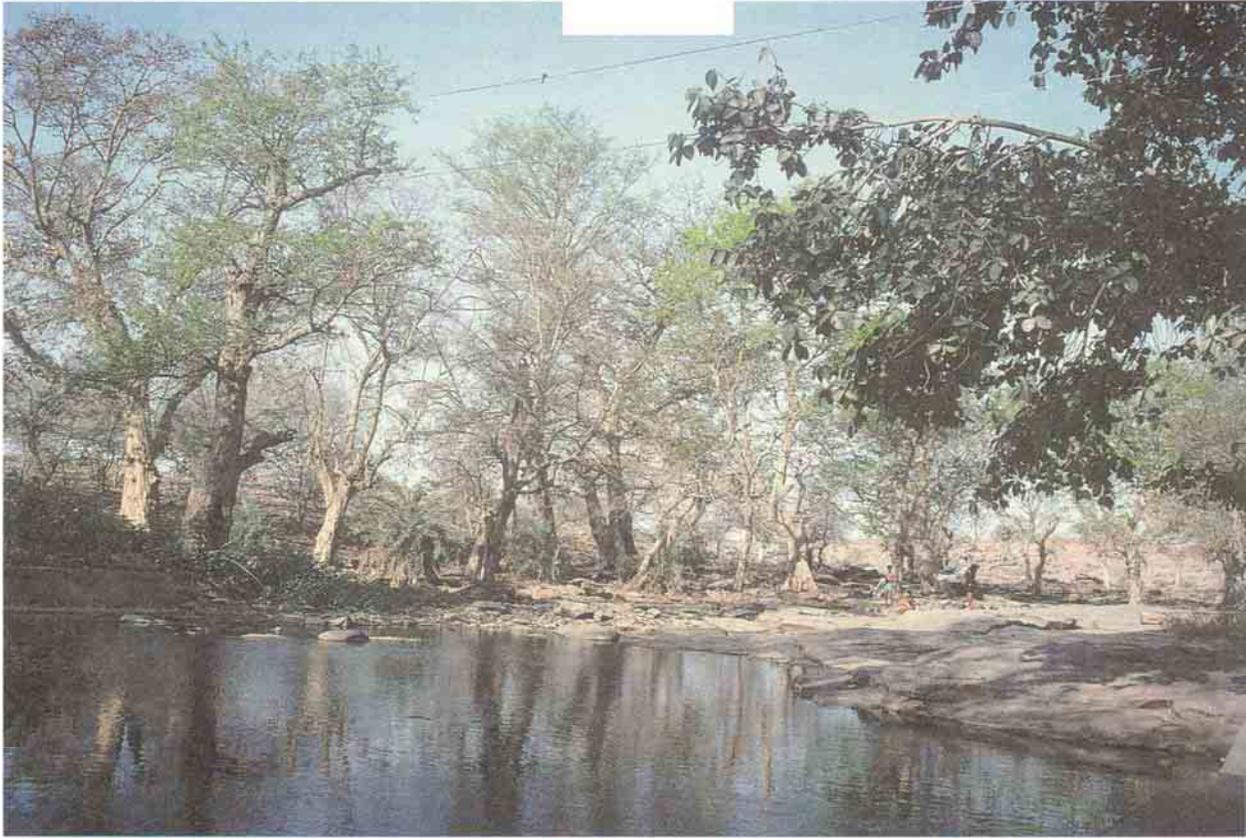
Farm forests are an important part of rural resource use in eastern Rajasthan. Farmers plant a variety of species along their field borders and in the courtyards of their homes. Traditional Gujjar

people planted *neem* (*Azadirachta indica*) trees in their houseyards for shade, and to supply them with sticks for brushing their teeth, oil seeds, medicine, insecticide for agricultural use and grain protection, and for fuelwood. Along fence lines, the favorite trees of farmers include mango (*Magnifera indica*), bamboo (*Dendrocalamus strictus*), bel (*Aegle marmelos*), *neem*, *sandesada* (*Delonix alata*), and *khajjur* palm (*Phoenix sylvestris*). These trees provide a wide variety of fruits and flowers, seeds, gums, construction wood and poles for tools and housing, and finally thatch and fodder.

TRADITIONAL CONSERVATION FORESTS: SACRED GROVES AND TEMPLE FORESTS

In Rajasthan, in the Districts of Kota, Udaipur, Banswara, Dungapur, Jaisalmer, Bikaner, and Jodhpur, there exists a tradition of maintaining wooded tracts as sacred groves (*Deva Van*) and temple forests. The Bhil and other tribal communities originally established many of these groves. Sacred groves vary widely in size, from a fraction of a hectare to 50 hectares or more. They were sanctified due to the perceived presence of spirits and natural powers. Consideration may also have been given to their function in protecting a water source, such as a spring or section of a river, or because of the location on a prominent hilltop. Special stones were often erected at the base of an ancient tree, where offerings to the spirit could be made. A number of these tribal sacred groves remain, especially in more isolated and primarily tribal areas.

When Brahmins, Gujjars, Patidars, Kumhars, and other Hindu caste groups moved into the Bhil tribal forests they began to worship in the sacred groves and vest these woods with their own spiritual beliefs and symbols. As Bhils assimilated Hindu symbols into their own religious practices they, too, incorporated them around the sacred groves. Hill forests were dedicated to Durga, otherwise referred to as *Mataji*, while sacred forests situated around low-lying springs were associated with Shiva, or *Maha Deo*. Most sacred groves have no formal system of protection. But, according to the norms of society,



Karneshwar sacred grove surrounds one of the only remaining perennial springs in this region of Kota, Rajasthan. Some of the trees are of immense size and age, providing a *refugia* for a variety of threatened species of birds and animals. (photo: Poffenberger)

no green cutting should occur in a sacred grove. However, observing such prohibitions is voluntary. Local community members who would fell a tree may be punished by the spirits or gods of the place, and may also be criticized by their fellow villagers. Care is taken by local villagers to protect the grove from fire and from any other outside threat. Grazing and the collection of non-wood forest products is allowed, though hunting is not approved by the community.

In some cases, temples have been constructed inside or on the periphery of sacred groves. Where temples are built, caretakers may also be present. These temple forests may also fall under some management committee. To accommodate pilgrims, rest houses may also be built. During festivals like *Shiva Ratri*, tens of thousands of visitors may come to the forest. Some temple forests like Ghasiar, about 15 kilometers to the north of Udaipur, is harvested on a sustainable basis to meet the needs of the temple

for fuelwood. Temple firewood requirements can increase dramatically during ceremonies, as large quantities of fuel are required for cooking the meals of pilgrims. In this way, some temple forests are managed for production goals, distinguishing them from sacred groves that are managed to protect old growth trees and the spirits that inhabit them. For example, only 10 kilometers to the west of Ghasiar Temple Forest is the Bhil spirit forest of Amarakji. Located around one of the only perennial springs in the area, the Amarakji temple forest covers approximately 50 hectares. It is a primary habitat for 4 spotted leopards as well as possessing the largest individual *kanju* (*Holoptelia integrifolia*) tree in India, measuring some 8 meters in girth. While Amarakji is not regularly protected, it continues to be widely respected by local villagers. Local people are proud of the sacred groves of Kota district. According to the Temple Priest of Dar Devi, the abode of the family goddess of the earlier rulers of Kota:

Dar Devi Sacred grove is the only place in Kota where we have keora (screw pine) and this place also has the largest living arjun (Terminalia arjuna). If you attempt to see the top, your hat will fall from the head.

FOREST DEPARTMENT PROJECTS & INDIGENOUS MANAGEMENT

In 1995, the Rajasthan Forest Department began expanding its Joint Forest Management (JFM) strategy with financing from the Japanese development agency, OECF. The five-year project stressed community participation as a major theme. Fifty-five thousand hectares were targeted for treatment under the program, much of it in Kota District. The project required the reorientation of field staff to build capacity to engage and collaborate with forest dependent communities and draw on local knowledge and institutions.

The project began with a strong management staff that was headed by Mr. RK. Kapoor, Chief Conservator of Forests, who had previously been assigned to the Ministry of Environment and Forests in New Delhi. When asked to take on the leadership of the program by the state's Chief Minister, Mr. Kapoor said he would accept on the condition that he be given control over the placement and rotation of staff. While senior forest administrators had held this authority in the past, in recent years it had been taken over by political appointees in the state government. D.N. Pandey, an innovative Divisional Forest Officer who had pioneered participatory and natural regeneration strategies in southern Rajasthan, was asked to join the new staff.

Mr. Kapoor and Pandey, along with the Conservator of Forests Mr. R.C.L. Meena, realized that they needed to hold a series of discussions with their field staff in order to institute the new participatory approach. According to Mr. Kapoor "Issuing orders to the staff does not work, so we initiated a consultative process." Meetings brought forest guards and section officers (foresters) together to discuss their problems and needs. The senior officers told the field staff that their involvement in JFM strategies would be voluntary. Staff that did not feel comfortable with

the new strategy could request transfer to other assignments and efforts would be made to accommodate them. During the field staff meetings a number of issues emerged. Guards and foresters complained that they often felt very isolated in their work. Many reported that they had had no in-service training or promotions for as long as twenty years. Hakim Singh, for example, a deputy range officer from one of the ranges in Karauli division noted that many bandits (*dacoits*) operated in the area, often with support from local politicians. Field staff reported being threatened by illegal operators with political connections, and some had been even beaten and murdered.

While the field staff often face intense opposition from local, organized criminals, they had received very little support from their superior officers. Guards and foresters had few channels for upward communication and may not have been visited by supervising officers for months at a time. The field staff was apathetic in the face of criminals working with political backing. False charges had been filed against Hakim and, as a consequence, he had not received his salary for seven years, yet he continued to perform his duties, as he feared a loss of social prestige if he resigned from the state forest cadre. Nonetheless, he acknowledged that he and his staff were able to do little under these conditions.

As a result of program meetings and staff support programs, in some divisions like Bundi and Kota, virtually all guards, foresters, and range officers are now actively supporting JFM and spending large parts of their days working with community groups. In the 15 project districts, an estimated 50 to 60 percent of the field staff are moderately or even highly supportive of JFM initiatives. Meetings with field staff have also helped to address long-standing problems and complaints. Attention is now being given to training programs that will build staff capacity as well.

A key component in the department's new strategy is the empowerment of community forest protection groups. The revision of the first Rajasthan JFM resolution in 1991 now conveys

greater authority to village groups. State-wide, 881 village groups have now been registered, others exist and require recognition, and still other communities are showing interest in organizing forest protection activities. The Forestry Development Project of Rajasthan (FDPR) requires that a forest protection committee be formed and functioning effectively prior to any investment in forest restoration. A key element in the strategy is the practice of "advance closure." This requires the community to demonstrate that they can close areas with degraded natural forests to grazing and cutting prior to any investment in enrichment planting and soil and water conservation. This policy allows the natural ecosystem to begin to recover prior to planting and provides the community opportunities and incentives to reestablish a protection system. As a result, enrichment planting complements the natural biological capital, providing a much higher return on investment.

The JFM approach to natural restoration has considerable potential in Kota Division, where only 10 percent of the 130,000 ha. of state forest lands have good canopy closure of 40 percent or more. Much of this was *rari* that were transferred from the traditional control of the village *patels* (village headman) to the Forest Department or the local *panchayat*. The shift in tenure status away from community control, to local government and bureaucratic agency, resulted in the collapse of the existing system of rights and responsibilities. Uncontrolled use by rural people resulted in a steady depletion of the forests.

The rehabilitation of the *rari* and other degraded forests in Kota Division will first require the participation of local users in establishing active forest protection systems. Sacred groves and temple forests provide a cultural basis for Forest Department and NGO initiatives to facilitate community action. Current Forest Department strategies involve both the revitalization and expansion of existing indigenous conservation systems, as well as the creation of new community forest management groups. In Kota District, some 60 to 80 sacred groves have been identified. These and other areas can be extended through the ritual of *Kesar Chhanta* that involves the sanctifying of a forest area by sprinkling

temple-blessed saffron powder around the woods. In southern Udaipur Division, over 12,000 hectares of degraded land has become sacred forest in recent years through the extension of this old Bhil tradition.

Other indigenous systems of community forest management being considered for inclusion in the program is the ancient Vedic *Panchawati* grove, which involves the planting of five of the most useful trees. They are planted in the cardinal directions as follows: *North-bel* (*Aegle marmelos*); *South-aonla* (*Emblica officinalis*); *West-bad* (*Ficus benghalensis*); *East-pipal* (*Ficus religiosa*); and, the *center-ashok* (*Saraca askoka*).³³

One innovative aspect of the Rajasthan Forest Department's program is to turn management of planting activities, including budget management over to the FPCs as early as the second year. In some cases, communities are mobilizing voluntary labor for fence construction and pit and trench digging in order to extend the area covered. The Forest Department in Rajasthan is one of the very few forest departments in India that has transferred forest management authority to communities by extending them responsibilities for project budgets. Early experience indicates that communities have used funds well, often going beyond their planting targets in terms of area covered.

The Rajasthan Forest Department faces a number of problems as it attempts to implement JFM strategies. While bi-lateral OECF funds have made many of the activities possible, it has also brought with it targets and time frames that constrain flexibility. The strategy of maintaining at least a one-year advance closure is often bypassed in order to plant more areas and meet program schedules. The project is also directed to tackle badly degraded landscapes, which are much more costly to restore, rather than focuses on degraded forest lands that still retain some top soil and root stock. The implications are that some areas may require investments of up to Rs. 20,000 (US \$500) per hectare.

The high costs of severely degraded land restoration limits the amount of area that the

Box 15 FOREST REGENERATION IN BEHROONGUDA, ANDHRA PRADESH, INDIA

Behroonguda is one of the 77,000 hamlets and villages in the state of *Anahra Praaesh*, India. The 97 families belonging to the Gond and Naikpod tribes formed themselves into a forest protection group in 1990 when their livelihood was threatened by declining timber and firewood from the nearby forest. With the advent of joint forest management (JFM)-a partnership between the state forest department and the local population-the government, in 1993, gave recognition to the protection efforts of the villagers. Behroonguda's informal group was officially recognized as the first *vana samarakshana samithi* (VSS, or forest protection committee) in Andhra Pradesh. 500 hectares of degraded forest was allotted to the people for protection and management.

In 1998, five years after the recognition of the VSS, Behroongudans began to get their share of the benefits from protecting the forest: they received Rs 359,500 (US\$ 9,700) from the sale of 3,198 teak poles thinned from 100 hectares as part of silvicultural operations. The flow of money will continue in the years ahead as silvicultural thinnings are repeated in the remaining 400 hectares; this will provide a basis for the sustainable management of the forest resource.

D'Silva and Nagnath have estimated the financial value of the 500-hectare mixed-teak forest of Behroonguda at Rs 67 million (US\$ 1.8 million in 1998); this works out to Rs 134,257 per hectare, or Rs 692,048 per tribal family protecting the resource. By 2034, when the current stock of teak, matures, the financial value should exceed Rs 1,000 million (US\$27 million) in 1998 prices.

As a result of villager protection, the ecology of the forest has improved, the non-timber forest products (NTFPs) have begun to regenerate, and the biological diversity has begun to increase. Income from NTFPs (Rs 1,804) and wages from forest work (Rs 2,360) together constituted 43% of total family income of Rs 9,665 in 1998. The distribution of benefits has been fairly equitable. Women feel they have some say in the affairs of the VSS and the village.

To determine if VSS formation and forest protection made a difference, D'Silva and Nagnath compared Behroonguda with the neighbouring village, Chintapally, which did not have a VSS at the time of the research. The conclusion reached from the comparison is: the financial value of the "without VSS" Chintapally forest is about one-third the value of the "with VSS" Behroonguda forest (Rs 45,613/hectare vs. Rs 147,897/hectare). Thus, social fencing, brought about through VSS formation, is an effective tool to improve the growth of the forest, protect the resources, and involve local communities in natural resource management.

Several reasons account for the success of the VSS in Behroonguda: first, the culture of forest protection, exemplified by their slogan "before you protect the village, protect the forest;" second, the inspiring leadership of the VSS president Pendram Ramu; and third, the application of institutional innovations--the microplan, passbook, and village register"--which has enabled the local people to participate in the development works and enjoy the fruits of their labour. On the downside, the people of Behroonguda have not been clearly told when the forest department's financial and technical support would end. For JFM to be sustainable, it is important that forest staff be redeployed from Behroonguda to other needy communities and the financial support to silvicultural operations and soil and moisture conservation be discontinued. Only then will the Behroonguda experiment be deemed fully successful and sustainable.

(contributed by Emmanuel D' Silva)

program can cover to 55,000 hectares. Since the OECF loan is one of the largest resources available for the Forest Department for such activities, it will be difficult to cover the 2.5 million hectares of degraded Rajasthan forest. As a consequence, the program will need to consider giving greater priority to regenerating the one-million hectares of degraded land that can recover largely through enhanced protection and with much less capital investment on a per hectare basis. Efforts to mobilize grassroots community action through building on indigenous values and institutions

will be a critical element increasing the coverage of this important program.

LESSONS LEARNED

Each Indian state Forest Department engaged in establishing JFM systems is struggling with similar issues concerning internal institutional change, establishing enabling legal frameworks, and developing meaningful dialogues and partnerships between field staff, senior officers, and communities that can lead to

sustainable forest protection and management. This case study reveals both the strengths of indigenous forest management systems (ethno-forestry), as well as promising strategies being developed by the Rajasthan Forest Department to support them. The RFD is reorganizing its own operations to enhance its effectiveness in the semi-arid, eastern corner of the state. Some important lessons include the following:

- Sacred groves, temple forests, forest gardens, and other community protected groves play an important role in providing environmental services including biodiversity conservation, hydrological stabilization, and microclimate moderation. In many areas, only forest under indigenous management continue to maintain habitat characteristics that allow them to act as *refugia* for endangered species.
- Traditional values and religious beliefs provide a motivational framework for sustaining sanctified forests as well as expanding protection into other forested areas.
- Field staff reorientation through informal workshops and seminars provide opportunities for guards, foresters, and rangers to discuss problems in implementing JFM as well as generating new program strategies.
- Staff transfers have been effectively used to place field staff with strong community organizational skills in strategic JFM areas, rotating-out staff who were un supportive of JFM. Increased frequency of contact between field staff and senior officers can enhance communication and provide encouragement and improved support.
- Training materials designed and published in the local Rajasthani language are spreading awareness of JFM to 1) forest guards, 2) FPC leaders and members, and 3) *panchayat* officials and school teachers.
- Extending the control of forest restoration finances to FPC has enhanced the authority of community managers.
- Technical strategies for degraded forest restoration that blend local knowledge with scientific information can reduce costs and improve results.

- A technique called "advanced closure" allows regeneration to occur through an entire rainy season, before enrichment planting occurs.

KAVRE, NEPAL

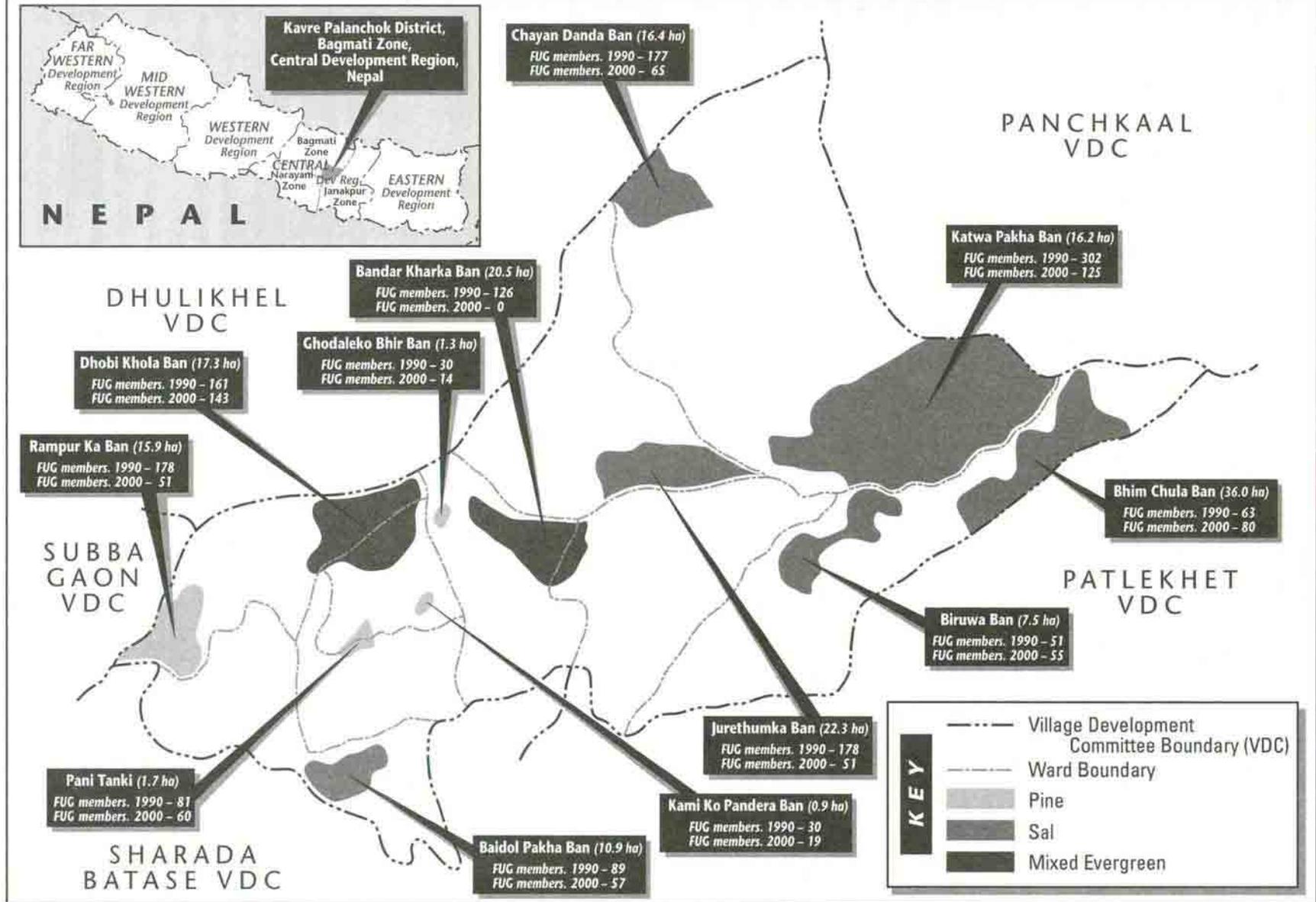
Kavre is a micro-watershed located just outside the Kathmandu Valley in the Kavre Palanchowk District. The land is typical of the middle hill region of central Nepal, with terraced, irrigated land (*khet*) and non-irrigated fields (*bad*), interspersed with mixed evergreen, sal, and pine forests that follow ridges, cover slopes too steep to farm, and provide shelter for springs and streams emanating from deep ravines. Some steep slopes are clear of forest areas and provide pasturage for livestock. The forests are found in patches. The topography is dramatic, with the western end positioned on a ridge at 1,800 meters towering above the *Panchkhal* valley floor to the east, 1,000 meters below. Houses of *Brahmin*, *Chhetri*, *Tamang*, and scheduled caste families are scattered across the dissected ridges and valleys.

Beginning in 1978, the Nepal-Australia Community Forestry Project (now the Nepal-Australia Community Resource Management Project) started financing community forestry activities that focused mainly on plantation activities in the Kavre Palanchowk District. After the Master Plan for Forestry Sector was implemented in 1988, the government shifted its strategy to recognize informal groups of forest users as the key management unit for government forests in the middle hills. Since then, the project has been mainly supporting natural forest resource management through Forest User Groups (FUGs). In the case of Kavre, the FUGs draw from members of the Kavre Village Development Committee (Kavre VDC), a territorial and administrative unit consisting of a cluster of twelve hamlets and scattered houses (see Figure 16). The following case study illustrates the challenges facing the FUGs of Kavre VDC since the new policy and strategies were initiated over a decade ago.

HISTORY AND CONTEXT

Deforestation driven by local population growth expansion and external market demands

Figure 16 FUGS and FOREST PATCHES in KAVRE VILLAGE DEVELOPMENT COMMITTEE AREA, NEPAL



has been changing the land cover of Kavre Palanchowk District for several hundred years. Due to its proximity to the Kathmandu Valley, the forests of the area were exploited at an increasing level from the mid-nineteenth century to support the growth of that urban center. The district's population, which is over 90 percent dependent on rural agro-ecosystems, has expanded from 114,000 in 1941 to an estimated 400,000 in the year 2000.

A study conducted in the 1980s indicated that Kavre District has a ratio of population to cultivated area of 8.4 persons per hectare.³⁴ In addition, much of the land is sloping and of marginal productivity in a primarily subsistence agricultural economy. Nonetheless, cropping systems are diverse, relying on a wide range of cultivated plants, supported by interlocked nutrient flows from forests and livestock. Population growth has contributed to a continuing intensification of farming practices, with a corresponding impact on forests and other non-cultivated land. Forests bordering farmlands have gradually been lost, while remaining intact forest has been degraded to shrub cover or relatively unproductive grassland.³⁵

While state claims on forestlands in the Kavre VDC have existed for several centuries, forest management by local communities is also widespread. Forests are an integral part of the farming systems in the middle hills, resupplying essential nutrients and organic materials to the continually eroding soils. Energy transfers in the form of forest leaf litter, that is composted, mixed with animal manure, and spread in the farmer's fields, are a key component in sustaining productivity levels.³⁶ Animals are also a key component in the farming systems in Kavre VDC and throughout the middle hills of Nepal.

Although the Community Forestry Policy was introduced in 1978, the government redesigned its Community Forestry Policy and Strategy to focus on PUGs in 1988. The revised strategy was to identify social groups that could cooperate more effectively in protecting and restoring forest resources to meet their own immediate needs for fuelwood, fodder, and timber. Two years after this policy was enacted, a

team from the Nepal-Australia Community Forestry Project initiated an assessment of twelve FUGs located within Kavre Village Development Committee's (VDC) jurisdiction, approximately 30 kilometers from Kathmandu.³⁷ This case examines the findings in 1990, and how the process of decentralized management has progressed over the subsequent decade.

KAVRE FUGs

Forest User Groups (FUGs) are commonly defined in Nepal as a "bounded group with specific membership... (consisting) of all people whose claims to use rights are mutually acknowledged."³⁸ The FUG is also a legalized local institution that has authority to manage the forest and utilize the products according to an operation plan prepared by the group. A major component of user group activities is having regular meetings as a committee or in the FUG assembly to make key decisions on a regular basis.

An assessment of the twelve FUGs in Kavre VDC done in 1990 identified the following important issues facing local forest user organizations:

- Changing the employment of watchers or modifying the protection system.
- Conducting afforestation activities.
- Deciding when to open the forest for harvesting.
- Making decisions regarding the sale of forest products.
- Altering the composition of the committee or of FUG membership

The 1990 study found that at the time most FUGs were responsible for young plantations and regenerating shrublands. Conflicts were common occurrences among the majority of the FUGs, with mediation usually carried-out and problems resolved internally by the FUG members and leaders. However, frequently assistance was required from District Forest Office field staff. The most common conflicts were related to the following issues:

- Illegal harvesting
- Unwillingness of some members to follow FUG decisions
- Encroachment of the forests
- Failure to contribute to forest protection or other management tasks that did not produce direct benefits
- Unwillingness to pay member levy
- Additional usufruct claims
- Livestock grazing within the forest

The 1990 study of twelve Forest User Groups in Kavre VDC found that two years after initiation, four of the FUGs operated effectively with only limited external support. Seven FUGs were partially effective, relying on the external support provided by the District Forest Office, while one was not operating (Rampur Ko Ban).³⁹

A follow-up study of the area ten years later, found the situation had changed little. While groups continued to be confronted by all of the earlier issues, in most cases protection and sustainable use systems had been maintained and the natural forests and pine plantations had experienced marked increases in biomass, timber volumes, and canopy closure. In addition, anecdotal evidence suggested major improvements in the hydrological functions of the watershed characterized by the restoration of hillside springs, increased volume, and their extended flow into the dry season. The population of leopards, rabbits, and birds in the area was also noted to have increased by villagers and local forest officers. The cessation of forest watcher subsidies forced FUGs to institute membership fees. During the 1990s, many FUGs in Kavre experienced declines in membership, as households could not afford the expense.

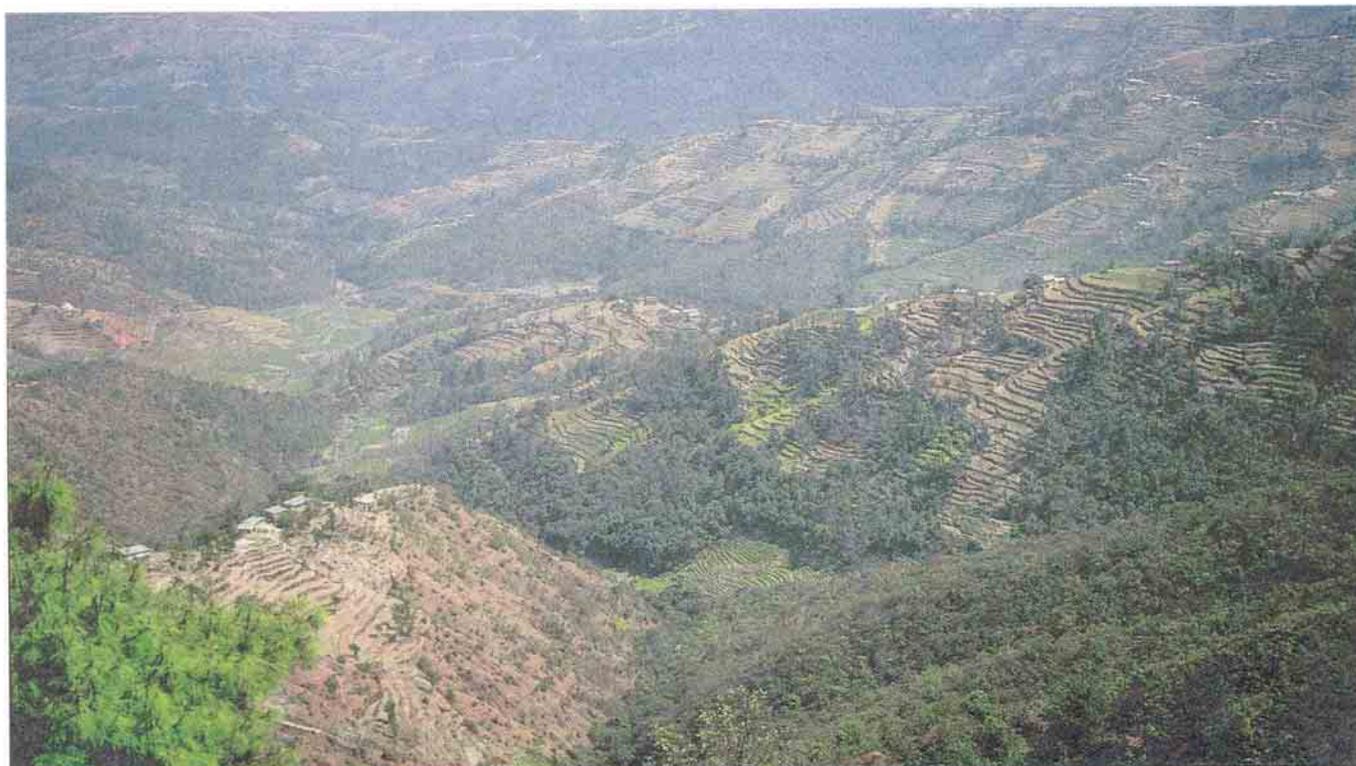
It was noted that when forests were handed over to the local people, the roles of District Forest Office field staff changed from policing of regulation into more of a facilitator. According to the new structure, one Range Post,

consisting of one ranger and four forest guards, looks after four to five VDCs. Therefore, at present, there is an average of one forest guard for each VDC. In the case of Kavre, this requires one individual to cover 12 patches of forest (10 Community Forests and two potential Community Forests), within an area of 10 square kilometers and a population of 5,000. It is hoped that the Federation of Community Forest Users Groups in Nepal (FECOFUN) can work through its district office, in tandem with the Forest Department, to provide extension and organizing support to nascent FUGs. In Kavre VDC, however, only 20 percent of the PUGS are FECOFUN members. The following cases provide updates on the activities of three of the ten PUGs and two potential FUGs in Kavre VDC.

JURE THUMKA BAN: A REGENERATING SAL FOREST

Jure Thumka Ban, handed over to a FUG in 1990, covers 22.3 hectares of regenerating sal trees with scattered pine plantings. Located on the lower end of the micro-watershed, in the eastern part of the VDC, women from nearby Brahmin families and lower caste households collect fuelwood and fodder on these lands. In the past, a local watcher (*chitadar*) controlled access to the *sal* forests. This system gradually eroded during the 1950s and 60s, and both official and illegal timber felling gradually depleted these forests. They continued to be used by the community for the collection of leaves, twigs, and branches, as well as for the lobbing of green leaves. In 1986, the District Forest Office had planted pines with NACFP assistance in Jure Thumka Ban, though most of the area remained under *sal* scrub cover. In 1989, one ranger of the District Forest Office worked to organize a FUG to protect and manage the forest. In June of that year, a group of 136 households was formed and the District Forest Officer approved the operation plan. An evaluation done in 1990 deemed that the PUG was operating very effectively in terms of protection activities, dry and green product harvesting regulations, planning, and conflict resolution.

A visit to this area in March 2000 indicated that the FUG had experienced many diffi-



The twelve forest patches of Kavre VDC are scattered from 1,800 to 800 meters across this microwatershed, each under the management of a separate Forest User Group. *Chir* pine plantations are located on the ridge tops, with evergreen forests situated on mid-slopes, and *salon* the valley bottoms. (photo: Poffenberger)

culties in sustaining its activities over the past decade. Problems within the FUG were driven by a number of management issues. When government funding of the forest watcher ended, the committee attempted to establish a system of user fees to pay the watcher, but soon difficulties emerged. One villager explained that a number of men sought PUG leadership for political reasons and to gain prestige, but once they took control they did not follow-up and the management of the forest was poor. Since women are the primary users of the forest, management responsibility was shifted to women.

While the administration of the FUG appears to have been erratic through most of the 1990s, the commitment of many households to regulating the use of Jure Thumka Ban continued, reflecting a shared desire to maintain greater control over the resource. As the first women FUG committee failed to manage the forest, in 1999, the FUG elected Shabitri Gautum, a 40-year-old Brahmin women, to take management

responsibility of the Community Forest and administer it through an exclusively female executive committee. According to Shabitri:

In the beginning, my husband said that it would be too much pressure and not to take the job, but everyone else encouraged me to do it and no one else was willing. I didn't know anything, but they said just organize the meetings. I thought for the welfare of the community and the forest that I should do something.

Shabitri is energetic and enthusiastic about her efforts to organize the FUG and get it operating effectively, but is also facing major challenges. She complained that the women's executive committee that had previously operated the FUG had failed to organize a watcher system and had not turned over the FUG records or funds to her. She has tried to reconstitute the membership. Once, she held a general assembly in the forest, but participation was limited to



Shabitri Gautum, a 40 year-old Brahmin women, and her friend are the heads of the Jure Thumka Ban Forest User Group, one of the 12 FUGs in Kavre VDC. They have printed membership cards to identify all users in their group and organize regular meetings to coordinate management activities. (photo: Poffenberger)

approximately fifty women. She tries to organize a meeting every month in the forest. Green grass and fodder harvesting and dry leaf litter collection has been set for the first and the fifteenth day of each month.

Of the twenty-nine members, nearly one-quarter are lower caste women. More striking, is the decrease in total membership from 136 in 1989 when the original FUG was formed. One villager suggested that when the FUG was originally formed everyone in the area wanted to join as many FUGs as possible to have access to multiple sources of dry and green matter. Once the FUGs set annual or monthly membership fees or voluntary labor requirements, however, families withdrew from many of the groups. Some chose to limit their membership to FUGs with forests closer to their homes, or in better stocked forests, while others deemed the cost of membership was too high given the produce which was available for free from national forests in the area.

Today, the Jure Thumka Ban has approximately two hectares of young *sal* trees, ten to fifteen years old that are now three to four inches in diameter at breast height. In addition, there are

nine hectares of about 30 year-old pine trees, with the remainder poorly stocked scrubland. The *sal* already has considerable market value as construction poles and the pine significant value as timber, but Shabitri and the other women who lead the FUG do not view the forest as a source of commercial timber. They say the primary management goals of their FUG are to produce 1) fuelwood, 2) leaf litter for mulch, fodder, and bedding, and 3) protect the two streams that run through the forest.

DHOBI KHOLA BAN: A REGENERATING MIXED EVERGREEN FOREST

By the late 1980s, the mixed evergreen forests that once covered the hillside above the small stream known locally as the Dhobi Khola had been badly degraded. According to Basanta Rana Bhat, a 60-year old Chetri man,

In the past, our forest was so degraded that people could see their cattle grazing on this hillside from across the ridge! Now, people are impressed by how green and dense the forest has become.

The reforestation of the Dhobi Khola micro-watershed, a 17 hectare stretch of wooded hillside, has required considerable effort by local households, NACFP staff, and the District Forest Office Ranger. In 1989, the forest ranger and project field workers organized a meeting with community members from Ward 3, 9, 4, and 2 in order to form a FUG that could protect and manage the scrubby hillside. According to the project report in 1990, 161 families were registered as users. The FUG prepared an operational plan and held periodic meetings for the first three years. The FUG established clear guidelines for the collection of dry litter and banned green felling. Regeneration was rapid, through the sprouting of coppice shoots and seed based germination.

Originally, the project funded the cost of the forest watcher at Rs. 200. In 1993, the project subsidy for the watcher ended. At that point, the FUG decided that it needed to implement a monthly membership fee to cover the salary of the forest watcher, though the management committee (*Samiti*) had difficulty raising funds to continue his payment. During the mid-1990s, the committee that managed the FUG was inactive, due to a lack of interest among community leaders, though forest protection rules were generally respected and the local community's sense of responsibility for the Dhobi Khola forest continued. In 1995, with encouragement from the District Forest Office and the help of a small Japanese Charity reforestation project that agreed to donate Rs. 500 a month for the watcher, the FUG was reactivated. The salary of the Dhobi Khola watcher was set at Rs. 900, so an additional Rs. 400 had to be raised from the membership. Many lower income families, particularly the Tamang and lower caste groups (Sarki, Damai, and Kami) could not afford to pay the membership fee of Rs. 120 per year.

Today, membership in the group has dwindled to 91 members, although the FUG chairman claims that 50 percent of the members are Tamang and lower castes. He notes that many households that withdrew from the FUG were able to get the leaf litter and fuelwood they required from the national forest on the other side of the hill, or simply felt the products were not worth the fee. According to the PUG chairman,

The Tamangs don't keep so many cattle, so they don't need much forest fodder. Many work as day laborers in the towns, so they have less interest in this forest and don't want to pay Rs. 10 per month. They do need fuelwood for their cremation fires, however, so we ask them to pay Rs. 5 per month so that these needs are met when needed.

The FUG meets as a group (FUG assembly) every year to set dates for the harvesting of green material for fodder and dry materials for mulch and fuelwood. The FUG's nine member executive committee meets when

needed, in response to conflicts or issues demanding immediate attention. A sub-committee of all women members was also formed and they were given responsibility to manage small areas of the forest, since they are the primary users of Dhobi Khola Ban.

The FUG has established clear use rules for the Dhobi Khola forest members and identity cards were issued to each member last year to regulate users. Each household is allowed to send two members for green leaf harvesting for two days during the rainy season. In the dry season, the committee also allows the collection of fuelwood for two days by two family members. The committee usually opens the forest before *Teej* (a women's festival that includes fasting and worshiping of the god Shiva for the welfare of their husband). These tasks are largely carried-out by women members. When cremations are required, the watcher will select deformed or dying trees for felling.

It is clear that the Dhobi Khola forest has experienced marked regeneration over the past decade and that at least some households in the community have acquired a strong sense of ownership for the resource. The Dhobi Khola forest is now a multi-storied, densely vegetated, young secondary stand varying in height from five to fifteen meters. According to the FUG leaders, the main benefits of regeneration have been the improvement in water flow, a marked increase in the availability of dry leaves, twigs, and branches, and the reappearance of animals and birds that had previously disappeared. The FUG has not allowed timber felling for extensive subsistence or commercial use. According to one FUG member, of the four springs that now flow from the forests, three had grown dry until the forest was restored. The impact of the improved water resource is substantial. One FUG member noted:

Before these springs were operating the women walked one hour each way to the valley bottom to fetch water, now it is available to them near the ridge top. The people living near the bottom of the forest are also benefiting from the better flow.

RAMPUR KO BAN: A CHIR PINE PLANTATION

Rampur Ko Ban is an 11.7 hectare forest. According to Krishna B. Karki, a 70-year old local villager, "When I was a child this ridge was barren." Much of the forest in the VDC was logged in the 1920s and 30s, for timber to build the great Rana palaces of the Kathmandu Valley. In the early 1970s, *Chir* pine was planted on the ridge as part of a government reforestation project.

In 1990, the District Forest Office Ranger and field staff of the Nepal Australia Community Forestry Project held meetings with Brahmin and Tamang community members from Wards 1 and 3 to formulate a FUG to protect and manage the ridgetop pine stand. When the range officer in charge of the area was transferred, however, his successor did not have time to work with the community. The community had little incentive to manage the forest as the *chir* pine offered minimal leaf litter, fodder, or other valuable forest products. Only a few landless Tamang families depended on the pine forests for their livelihood, collecting fuelwood for sale in the towns of Banepa and Dhulikhel. They feared that establishing community forest protection would undermine their source of income. Throughout the 1990s, despite several attempts, no FUG was sustained to manage the pine forest. Recently, one ranger from the District Forest Office came again to suggest a FUG be formed so that this plantation could be handed over as a community managed forest. Krishna Karki and several dozen other households met to discuss organizing a protection group, and providing a watcher with Rs. 500 per month payment. When asked why they would protect the forest, Karki notes:

Only that the forest office staff has requested us to do this. We have no expectations for these forests in terms of production. It is unfortunate that it is planted in chir pine as it dries out the land and gives us little litter or grass.

LESSONS LEARNED

Revisiting Kavre VDC a decade after the formation of ten FUGs and two potential FUGs provided an opportunity to assess how the process of public lands devolution was progressing in one part of the Middle Hills. The following trends are apparent among the FUGs of Kavre VDC:

- Most FUGs with effective protection and regulated use systems have paid watchers. Membership fee systems have been imposed as Forest Department and development project subsidies were phased out.
- FUG leadership is often characterized by frequent turnover, resulting in periods of disruption of management including the lack of forest watchers.
- FUG membership has declined substantially. In some FUGs, as many as 50 percent of original member households have dropped-out over the past decade. Sharp declines in membership appear related to the establishment of monthly or annual payment of dues or voluntary labor requirements. As forest resource use costs increase, households reevaluate the value of the produce, transport costs, and alternative sources. Many find other options more attractive.
- FUGs continue to emphasize managing for forest products for their agro-ecosystem including leaf mulch, fodder, animal bedding, and fuelwood. Subsistence timber needs are met from private farmland. FUGs strictly protect the timber resources of the forest and show little interest in commercial felling.
- FUGs administrated by women increased from ten to thirty percent of those operating and were among the most active. Since women are primary forest users in many areas, it would be strategic to design FUG support strategies to respond to their needs (see Box 16).
- It has been easier for the District Forest Office to hand over mixed evergreen forests than pine forest due to the perceived low value of pine in terms of their non-timber forest product and hydrological values.

• FUGs continue to require external support to help develop their management capacity as their memberships stabilize. Operational plan development should emphasize products prioritized by PUG managers. In many cases, species selection, enrichment planting, and thinning and pruning should emphasize ways to enhance hydrological function and generate greater volumes of leaf mulch, fodder, and fuelwood.

GILGIT, NORTHERN PAKISTAN

Sustained human survival in extreme environments like those prevailing in the Hindu-Kush requires careful stewardship of natural resources. Mountain tribes have inhabited the rugged terrain of the Hindu-Kush for thousands of years and are recorded in the chronicles of Alexander the Great. Settlements are scattered in the narrow, high elevation valleys formed at the conjunction of massive,

snow-capped mountains. In 1974, the region's small feudal states were dissolved, and in 1978 the all-weather Karakoran Highway was completed. These two events accelerated social and economic change throughout the region.

In the early 1980s, the Aga Khan Rural Support Programme (AKRSP) began working in Northern Pakistan. The project focuses on the three northernmost districts of Pakistan, including Gilgit, Chitral, and Baltistan, bordering India, China, and Afghanistan. The area covers nearly 70,000 square kilometers with just under one million people living in 1,000 villages scattered along the region's valleys.

HISTORY AND CONTEXT

Most Gilgit villages are situated on alluvial fans or river terraces, with mountains rising

Box 16

HIMALAYA GRASSROOTS WOMEN'S NATURAL RESOURCES MANAGEMENT NETWORK (HIMAWANTI)

In May 1995, at a regional community forestry user groups' workshop, the vital role of women's empowerment in contributing to mountain development in the Hindu Kush –Himalayas (HKH) region emerged as a critical issue. Women participants at the workshop felt the need for a separate institutional mechanism to address the specific problems and constraints faced by female forest users. During that meeting an informal working group of women from Nepal, India, and Pakistan was formed ICIMOD, who sponsored the initial gathering agreed to help facilitate follow-up meetings. . Over the past five years, during the course of these workshops, HIMAWANTI- Himalayan Grassroots 'Women's Natural Resources' Management Network was formalized, including the drafting of a constitution, the formulation of a policy platform, and the creation of a networking strategy.

HIMAWANTI is structured to support groups at the village, district, zonal/state, national and regional level. While national HIMAWANTI groups are still in an initial phase of development, in Nepal the organization has already established representatives in 15 hill districts. The organization has also recently begun publishing a periodic newsletter entitled Women and Nature. In addition to ICIMOD, HIMAWANTI has worked with the Nepal-Swiss Community Forestry Project, DANIDA, and a number of NGOs from throughout the South Asia region.

In October 1999, over 200 rural women from *forest* communities in Bangladesh, Bhutan, India, Nepal, and Pakistan gathered in Kathmandu for one of the largest regional women's forestry meetings to date. HIMAWANTI also partners with other organizations involved in supporting the role of women in rural resource management. Together with the Bhutan Ministry of Agriculture, in February 1999, one of the first national meetings for women farmers was held in Bhutan. This workshop provided a unique opportunity for the women of that mountain nation to express their aspirations to create an institutional framework to represent their role in natural resource management. In March 1999, HIMAWANTI organized a workshop in Almora in the Indian Himalaya for 80 women, many of whom had been involved in struggles to increase women's role in forest management and local governance. During the same month, the Aga Khan Rural Support Programme brought together nearly 100 women from six valleys in the Gilgit area of northern Pakistan to raise awareness regarding the need for increasing and formalizing the role of women in natural resource management decision making and development planning. For more information on HIMAWANTI, contact:

HIMAWANTI, G.P.O..Box 12811, Lalitpur, Nepal
Tel/Fax: 977-1-542717 Email: himawanti@wlink.com.np

steeply on both sides, with the exception of narrow openings or *nullahs* that provide access to communally owned alpine pastures, mountain forests, glaciers, and snow fields. Through the *nullahs* flow mountain streams that are diverted by villagers into rock walled channels that irrigate village farmland below. After watering the agricultural lands situated on the terraces, the water drains into the Gilgit or Hunza river, and then into the Indus. Each year in April and May, the men and boys drive their livestock to the summer pasturage, which reach up to 4,600 meters, for grazing yaks. Communal lodges and waterholes are located along the route, and in some level places potatoes and barley are planted. In September or October, the animals are herded back to the main village on the valley floor. After the maize harvest in the fall, livestock are allowed to graze freely on stubble in fallowed fields, though some communities are banning free grazing as tree planting expands.

The permanent village is usually dominated by houses and individual farm plots, with trees on steeper land. Trees frequently surround each farmer's field, and there are "well-defined rules that dictate the distance at which a tree can be planted from a neighbor's field. These rules are meant to ensure adequate sunlight and water to field crops."⁴⁰ Snow fields and glaciers provide a steady source of water that is often diverted several miles above the village, while the community maintains the canals and dams. Each spring the entire village works together to clean water channel, an activity known as *rajaki*. Those that do not participate are fined. Through the growing season, the canals are routinely maintained by *chowkidars* who are paid through community contributions. When water shortages occur, the community implements a rotational distribution of the irrigation water, a system known as *warabundi*. Trees are usually planted along the length of the canal and are privately owned. Wherever irrigation flows down slope, trees are also planted.

Traditionally, most villages in Gilgit possess a council (*jirga*) of seven to ten elders led by a village headman (*numberdar*). In the past, the *numberdar* was appointed by the local lord

(*mir*) and was responsible for tax collection. The *jirga* supervised local natural resource use including the maintenance and management of irrigation systems and water distribution, live-stock movements around communal pasturage, the timing of pasture closure, as well as forest use. The *mir* was the arbitrator of intervillage conflicts, though communities now look towards the court and government administrators to solve disputes between villages.⁴¹ This picture of a traditional Gilgit farming community is changing, with greater diversity occurring as each village responds to unique economic opportunities and new technologies.

FOREST TENURE

For centuries, in Gilgit and much of the northern areas, forests, pastures, and irrigation development was under the control of feudal chiefs known as *Mirs* and *Rajahs*. "They could use the authority of the State to induce or constrain their subjects (through forced labor and transfers, exile, and punishment) to construct new channels, rehabilitate old ones, develop new land, restrict the exploitation of forests, and enforce rules for summer and winter grazing."⁴² These feudal systems of resource management were effective in maintaining and expanding the society's infrastructure and controlling human interactions with the natural resource base. Feudal authority, however, began to decline with the introduction of British colonial authority into the area in 1892.⁴³ The Land Revenue Act of 1871 had presumed that ownership of all forests would rest with the government unless a written claim was submitted by the end of that year. In Gilgit, land settlements only occurred in one of the five sub-divisions. Since the independence of Pakistan in 1947, the erosion of feudal authority structures accelerated, especially after their legal abolition in 1974. In 1974, the government appropriated all land without a written record under the Land Revenue Act.

The decline in feudal control resulted in a breakdown of many resource management systems, a decline in the quality of forests and pastures, and a slowing of development throughout the region. "As feudal chiefs were replaced by government administrators, the



This high Himalayan mountain community has carefully managed the fragile forest, soil, and water resources for centuries. Government programs can be disruptive, as can roads that place additional pressures on local timber resources.
(photo: Poffenberger)

forests and pastures of the feudal states became the *de jure* property of the Pakistan government, acting through the Forest Department of the Northern Areas."⁴⁴ According to a report published in 1990, the provincial Forest Department maintains that "the region's communities have no claim whatsoever over forests, except as provided by the Department under the Forest Act of 1927."⁴⁵ The usufructs vested in the Forest Act are limited to grazing, access to fuelwood from dead or dying trees, and timber based on the payment of fees and approval from the department. Communities are totally without management authority on state forestlands and have no formal role in decision making.

Communities continue to contest the nationalization of forest lands in Gilgit. Villagers feel that procedures specified in the Forest Act requiring opportunities for communities to present their claims were not followed and that communities were not provided ample opportuni-

ties to present and establish their claims over the forestland. Nor was there any attempt by the government to hold land settlements in their area prior to assuming the forest areas. As found in the case study from Madhupur in Bangladesh, tenurial insecurity and legal ambiguity has created an uncertain environment for resource management. One analyst noted that the lack of government policy change or efforts to address forest tenure issues leaves three options in Gilgit⁴⁶:

- Continue with the status quo which will result in a continuing and rapid depletion of forest cover and degradation of pastures
- Seek to enforce the authority of the Forest Department which will lead to confrontation in a sensitive part of the country
- Offer to work with AKRSP and the Village Organizations that will be effective if the Village Organizations (VOs) can devise rules for internalizing the costs and benefits of resources use.

This case study examines how a large NGO has been able to address the region's tree growth shortages through community organization.

THE AKRSP STRATEGY

In this case study of Northern Pakistan, we examine the strategies used by the Aga Khan Rural Support Programme (AKRSP) to support local development through strengthening community management organizations. Confronted by forest tenure policies that vested administrative authority with non-resident Forest Departments, improving community-based resource management practices necessarily focused on private and communal lands. While the government assumed control of most forest and pasturelands, it transferred ownership of irrigation channels and lands neighboring the village to communities. As a consequence, when AKRSP began work in Gilgit, it discovered villagers were eager to improve their irrigation system and common lands, while they were reluctant to invest in forests under the administration of the Forest Department. At the same time, while the Forest Department held jurisdictional authority over much of the pasture and upper watershed forests, it had extremely limited staffing capacity to control use, and as a result these lands were left as open access resources with little or no investment in sustainable management.

According to a World Bank evaluation of the AKRSP program in the Northern Areas, "forestry contributes about 10 percent of the gross farm income in Gilgit and Baltistan, and 20 percent in Chitral."⁴⁷ The number of forest trees grown on farms in Gilgit increased by 300 percent from the time of the 1980 Agricultural Census up to 1992, just prior to AKRSP program initiation. Over the five years from 1989 to 1994, 13.6 million forest trees were planted. In addition, by 1994, seventy percent of the plantings were using improved materials supplied through AKRSP. According to the World Bank report, "With forest trees, as with fruit and vegetables, AKRSP has identified a growth enterprise and reinforced it with program activities."⁴⁸

AKSRP's fundamental approach to rural development has involved supporting the develop-

ment of Village Organizations (VOs). Membership in the VO is open to all households in the community. In large villages, there are a number of vassals for different hamlets. In traditional villages, it has been difficult to gain women's participation in meetings, so separate Women's Organizations (WOs) were established. AKRSP provides grants to vassals for projects such as establishing a group savings fund or to help finance a construction project. In 1987, the 370 VOs in Gilgit District had a combined savings of Rs. 24 million, with Rs. 39 million disbursed in short and medium term loans with virtually no defaults. Communities often mobilize volunteer labor groups under the traditional *rajaki* system for village projects. The AKRSP forestry support strategy involved six components:

- A low cost, "soft package" involving reforestation promotion and extension through VOs and relying on local planting material
- A moderate cost, "refined package" stressing agroforestry systems using improved planting materials and techniques
- Nursery development for improved planting materials
- Village Forestry Specialist Training
- Women's forestry package including nursery management, beekeeping, and woodlots
- Environmental education for school children

AKRSP provided support to the forestry program by subsidizing up to 70 percent of the costs for tree saplings and by making small payments to village forestry specialists. Demand for forest tree seedlings has been high, helping VOs to establish nurseries by late 1994. The creation of local sources of improved planting material has helped spread use among households in northern settlements. In 1991, 12 percent of Gilgit households were planting improved materials rising in 1993 to 28.5 percent. With the influx of further support to the AKRSP project from the Norwegian Development Assistance Organization (NORAD) and the government, it is likely that adoption of new genetic material has

spread much further, with nearly 1,000 hectares planted with the "refined package" in Chitral alone in 1994. NORAD funds spurred the development of the women's woodlot program, which received a very strong response from the WOs. Within several years, "WOs established 691 woodlots, with a total of 577,000 plants delivered through AKRSP."⁴⁹ Survival rates have been acceptable levels, generally around 70 percent.⁵⁰

By training hundreds of village forestry specialists, including women, AKRSP hoped to blanket the area with extension services. Ten-day training sessions were initiated in 1991, with follow-up courses in 1992 and 1993. While many of the trainees did not become active extension workers, a smaller proportion excelled. Of the 626 people who received the initial training, 328 had taken refresher courses by the end of 1994. AKRSP began to focus more on the highly motivated individuals, providing them with further training and designating them in 1995 as master trainers or "village foresters." "Candidates for the first course in February 1995 were selected from specialists who had performed well in different valleys. Their roles as village foresters are to assist vas define their forestry needs, help prepare village forestry plans, provide guidance to the village forestry specialists in their area, and monitor the work being carried out."⁵¹

COMMUNITY FOREST PROTECTION IN THE CHALT VALLEY

This case study is an example of how people in one valley revolted against the Forest Department and took over the control of the forests in their own hands. Located 60 kilometers from Gilgit town, the Chalt Valley is situated at an elevation of 1,800 meters. Six villages, with a total population of 4,000 people, inhabit the area, all followers of the Shia branch of Islam (see Figure 17). Over the past two decades, AKRSP has assisted the communities in forming six VOs that handle a variety of rural development activities. The vas began working together to resolve resource management issues and implement joint activities, especially concerning the use of the Chalt-Chaprote *nullah* (a narrow valley), and its associated natural forests and pasture lands.

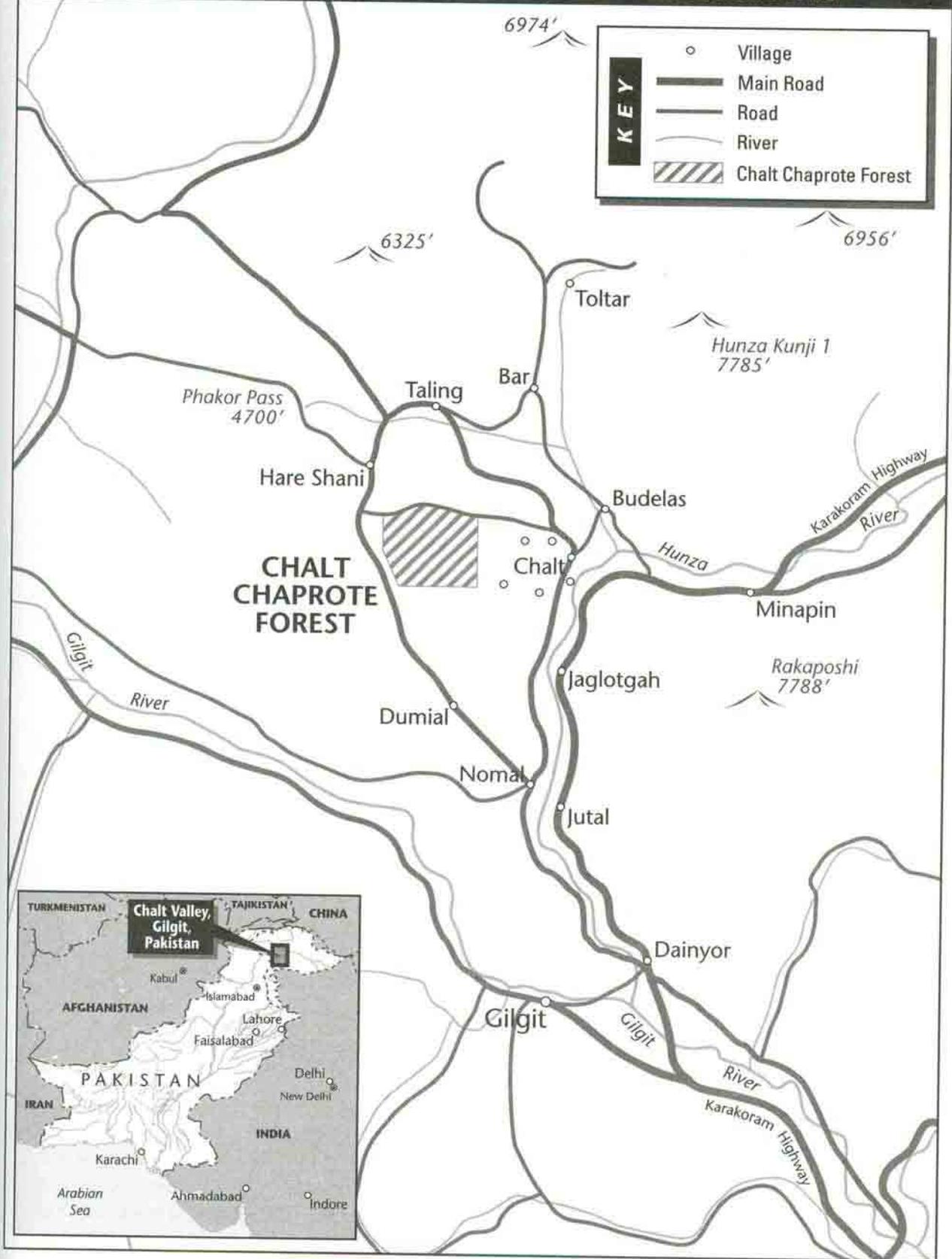
Meetings of the vas in the early 1980s generated a growing consensus that the productivity of the upper forests and pastures was deteriorating under formal state control. Interviews with villagers in the mid-1980s indicated that the Chalt-Chaprote forest was only one-quarter its size twenty years earlier. Villagers linked the destruction of the forest to changes in tenure controls and the construction of the Karakoran Highway, which provided new access to some well-stocked forests. Some communities benefited as laborers on timber concessions leased by the Forest Department. Two hundred families in the valley were estimated to have earned Rs. 1.5 to 3 million annually, the equivalent of a full annual wage for one adult male in each household. While some families were enjoying a substantial added income from participating in commercial logging, most households in the valley were not, and they could see their forest resources being rapidly degraded.

In March 1986, the six VOs of the valley held a meeting with 36 representatives and established a Reform Committee for Forest Conservation. A prominent leader among the representatives was the former *numberdar* from the village of Rahbat. The Committee announced an immediate ban on commercial logging. It also decided that subsistence use should be limited to dead trees, with each household limited to one weekly trip to the forest for fuel wood gathering. Timber would be available once the committee had verified the validity of a request and after it was approved by the Forest Department.

A checkpoint was established on the road to the forest and was manned constantly by *chowkidars* appointed by the committee. The guards were paid through equal contributions made by each household. Fines of Rs.25 per *maund* of fuelwood (35 kgs.) or Rs. 500 per log were instituted. Conflicts between livestock grazing and forest and pasture regeneration remained. In 1987, the vas proposed a new system of pasture rotation to reduce overgrazing. New access paths and water tanks were constructed to facilitate rotational use, with a five-person committee formed to oversee management operations.⁵² By 1990, the logging and fuelwood collection control system was

Figure 17

CHALT VALLEY, GILGIT, NORTHERN PAKISTAN



reportedly working effectively and widely accepted by the communities of the valley.

A Participatory Rural Appraisal (PRA) workshop held in the area in 1986 recommended that, "AKRSP could make a valuable contribution by interceding with the government to return these forests to the status of locally held commons to be managed by an organization-complete with enforceable sanctions-established by AKRSP"⁵³ AKRSP, in response to this community initiative, provided technical and financial assistance to the six VOs that comprised the Reform Committee for Forest Conservation. AKRSP also assisted the vas in negotiating with the Forest Department. By the mid-1980s, the leadership of the six vas began notifying the district government officials of the Committee's intention to take control over the Chalt-Chaprote forest and pasture lands, which legally were under the administration of the Forest Department

At that time, "the Deputy Commissioner of Gilgit, acting on application by the community, authorized the community to exercise control over the neighboring forest," which was previously vested with the Forest Department⁵⁴ However, by 1990, the Forest Department was raising the fundamental question of the Reform Committee's right to take over operational management According to one report at that time, "The head of the Forest Department maintains that the Committee is a refuge for "miscreants" bent upon the destruction of forests for their own vested interests. It is believed, however, that the Forest Department is issuing no new permits for commercial exploitation of the Chalt-Chaprote Forest"⁵⁵ The report concluded that:

The villages of Chalt have embarked on a dramatic course of institution building that may have relevance to many other villages in the region. The initiative by the community has placed both AKRSP and the government in a challenging position. Whereas the Government needs to articulate a response to an apparent conflict of authority, AKRSP needs to strengthen community institutions with the technical and financial assistance needed to capitalize upon the

*community's initiative; and community intervention needs to be extended into a strategy for sustainable resource management at a high level of productivity.*⁵⁶

A decade later, reports from Chait indicate that the Reform Committee for Forest Conservation has become defunct, in part, due to the reluctance of the Forest Department to recognize its legitimacy.

LESSONS LEARNED

According to an assessment by long time AKRSP project staff, vas can provide the key link between income generation from natural resources and their sustainable use if they can:

- internalize the costs and benefits of resource use
- guide investment in resource development
- devise appropriate rules and regulations to govern members' resource use practices
- deliver high productivity through the use of appropriate technologies and other inputs

The region is clearly in a transitional phase, moving from a traditional subsistence-based economy relying on communal and feudal authority structure, to a society that is interacting with more modern economic and governance systems. It is apparent that many of the traditional functions of the community in managing natural resources are still necessary and require strengthening. At the same time, vas and their leaders need new skills and capacities to adapt to new technologies and economic opportunities. AKRSP has found that institution-building must proceed the delivery of technology.

The AKRSP program is confronted by the immense challenges of the province in which it works. With limited government support infrastructure, AKRSP is the primary vehicle for much of the rural development work in the area. As a consequence, it is the recipient of major funding from donor sources that help finance and push its expansion. The staff carry heavy work loads

which can affect the quality of their dialogues with villagers, the level of participation in the development of management plans, and the quality of their supervision as new technologies are put into use. The World Bank's third evaluation of AKRSP in 1996 cautioned that: "In the next phase of the forestry program, it will be necessary to ensure it does not assume a supply-driven character that aspires to meet targets at the expense of quality and cost-effectiveness. The program should expand only at a rate commensurate with the capacity of trained staff to appropriately respond to community circumstances."⁵⁷

RITIGALA, SRI LANKA

Indigenous Sri Lankan systems of integrated forest and water resource management are being displaced by the imposition of new local governance structures and protected area programs and policies.⁵⁸ For centuries, communities empowered by local rulers, have sustainably managed forests like Ritigala. In recent decades, however, new forest management systems, administered by technically trained officers from the public sector, have taken control of village resource systems. Indigenous rights and responsibilities, local knowledge, and economic dependencies have received little recognition, while traditional institutions and leadership has been marginalized or entirely ignored. Disempowered communities are left to watch outsiders take control of production systems central to their livelihoods and way of life.

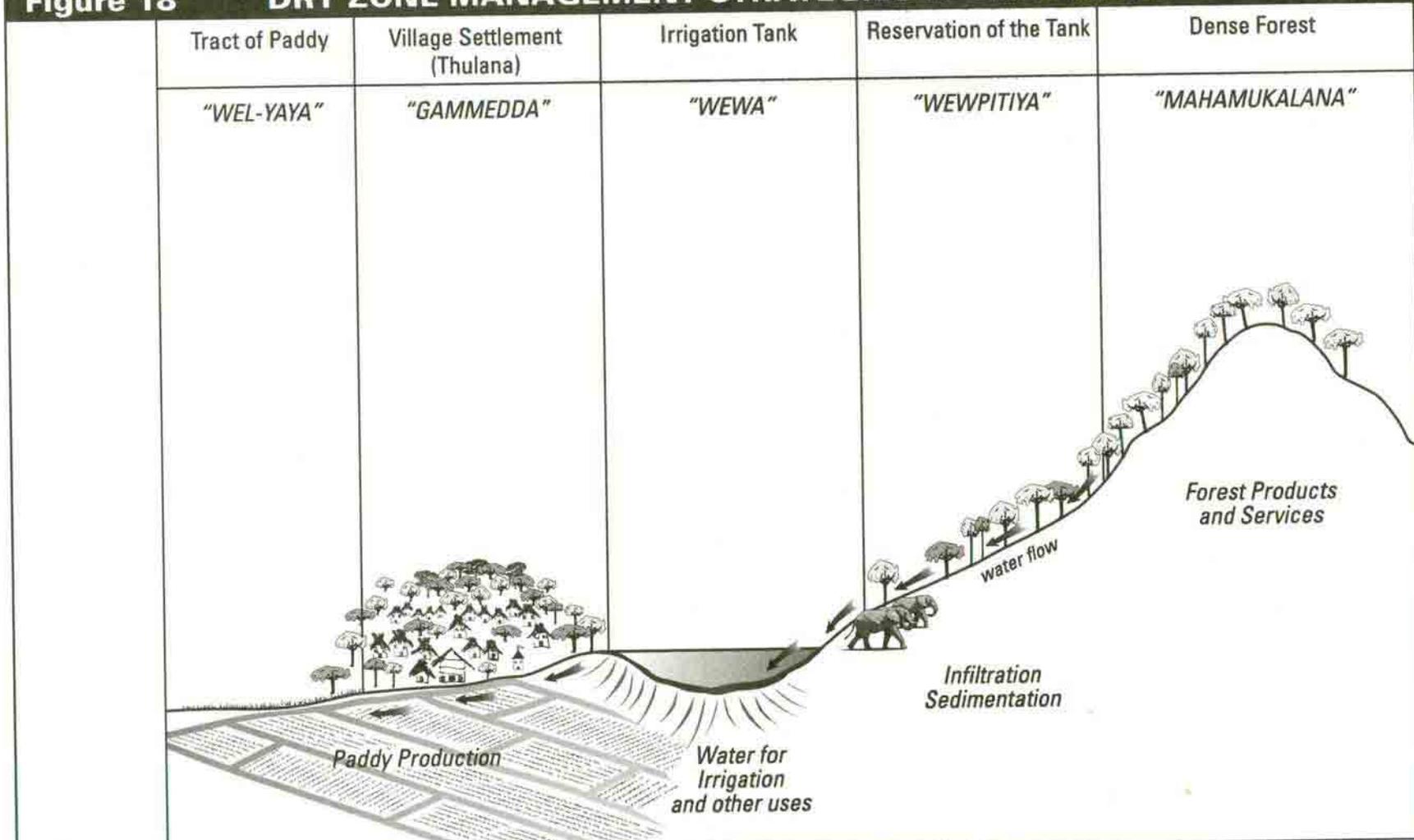
Since the 1950s, new governmental administrative structures have been imposed on the country. The top-down appointment of outsiders to newly created village offices, such as the headman (*Grama Niladari*), has both negated traditional leadership structures and institutions. In principle, technical officers from state agencies now administer irrigation tanks and forests, though their limited capacity and effectiveness to organize de silting and other management activities has resulted in the sedimentation and death of many of the tanks in Sri Lanka's dry zone.

Ritigala is one of a number of isolated islands of rich forest located on lower elevation hills in Sri Lanka, that rise above the dry plains. These forest fragments are important *refugia* for biodiversity, and as a consequence have attracted the attention of national conservation groups, government wildlife agencies, and international organizations. While Ritigala has been a nationally designated conservation area for over one-half a century, project financing has recently provided the government with resources to implement operational activities in the area, including the placement of forest guards and the construction of guardhouses.

Ritigala is one of nine nature reserves that will be funded through a \$38 million dollar Asian Development Bank loan. While the project rhetoric requires "community participation," the project strategy is to minimize the forest ties of local communities, both economically and politically. This strategy reflects the "ecodevelopment" approach being used in many protected areas of South Asia that seeks to shift the resource dependencies of communities to areas outside the conservation territory. The problem is that in the densely populated sub-continent, outside natural resources are often limited and under the control of other villages, and consequently communities have no choice but to rely on protected areas, which are a historic and integral part of their resource use strategies.

As a consequence, "ecodevelopment" projects may threaten the livelihood of many households in the area which depend on the forests for non-timber products and hydrological service functions. Since forest conservation has always been an integral component of the indigenous resource management systems of local communities, this case study questions whether current approaches to establish unilateral state control and minimize community forestry activities are advisable. The case suggests that recognizing the rights, capabilities, and responsibilities of local communities to manage local forests, even those designated for strict nature conservation, is not only socially just, but may result in better stewardship.

Figure 18 DRY ZONE MANAGEMENT STRATEGIES IN SRI LANKA



Traditional Management Institution	Well Wedana (WaterSteward)	Arachy (Headman)	Well Wedana (WaterSteward)	Kele Korala (Forest Steward)	
Current Management Institution	Dept. of Agriculture	Grama Niladari	Dept. of Agriculture	Dept. of Forestry	Dept. of Wildlife

HISTORY AND CONTEXT

Ritigala is a spiritual place in the minds of local community members. They respect the god of the forest, *Ayyanayaka*, and believe in *Mahasen*, the god of the land. A host of minor dieties and spirits are also believed to inhabit the forests. The reverence for the forests is reflected in behavior common for sanctified areas. According to one Ritigala villager "We avoid taking meat on the days that we go on harvesting trips. Even if it happened by mistake the spirits will not forgive us, spirits cover the paths and hide the products. After harvesting we offer vows." Women avoid entering the forest during menstruation, just as they would a temple. Within the forest an ancient *stupa* (*chaittiya*) and the remains of a palace embody the ancient Buddhist heritage of Ritigala, estimated to be over two thousand years old. For the local people, Ritigala is a place of worship and spiritual power, a source of water, food, medicinals, and their cultural heritage.

Ritigala provides a classic example of how the indigenous community resource management systems of Sri Lanka's northern Dry Zone are intricately intertwined. For over two thousand years, the rural communities of this region, with its long, dry season have utilized elaborate water harvesting systems to ensure agricultural yields. Hill forests are a central component, protecting both the water source and the catchment area. The forests stabilize run-off and minimize erosion, as the water cascades down towards a series of shallow tanks (*wew*). The water is parceled out to each farmer's paddy fields (*wela*) through a network of canals. Historically, management of this silvo-hydrolic process was orchestrated by leaders and institutions based in each hamlet (*thulana*). Each hamlet was named after the tank that fed its paddy fields (see Figure 18).

A holistic view of the environment is characteristic of the perceptions of the communities in the area, supported by a spiritual belief in natural function. Explaining the orographic effect of Ritigala's mountainous ridge on rainfall, one elder noted:

This excellency (pointing to the mountain forest) catches clouds and delivers the floating water to earth through the crown of the forest, producing drizzles in the dry season, keeping the parched lands alive.

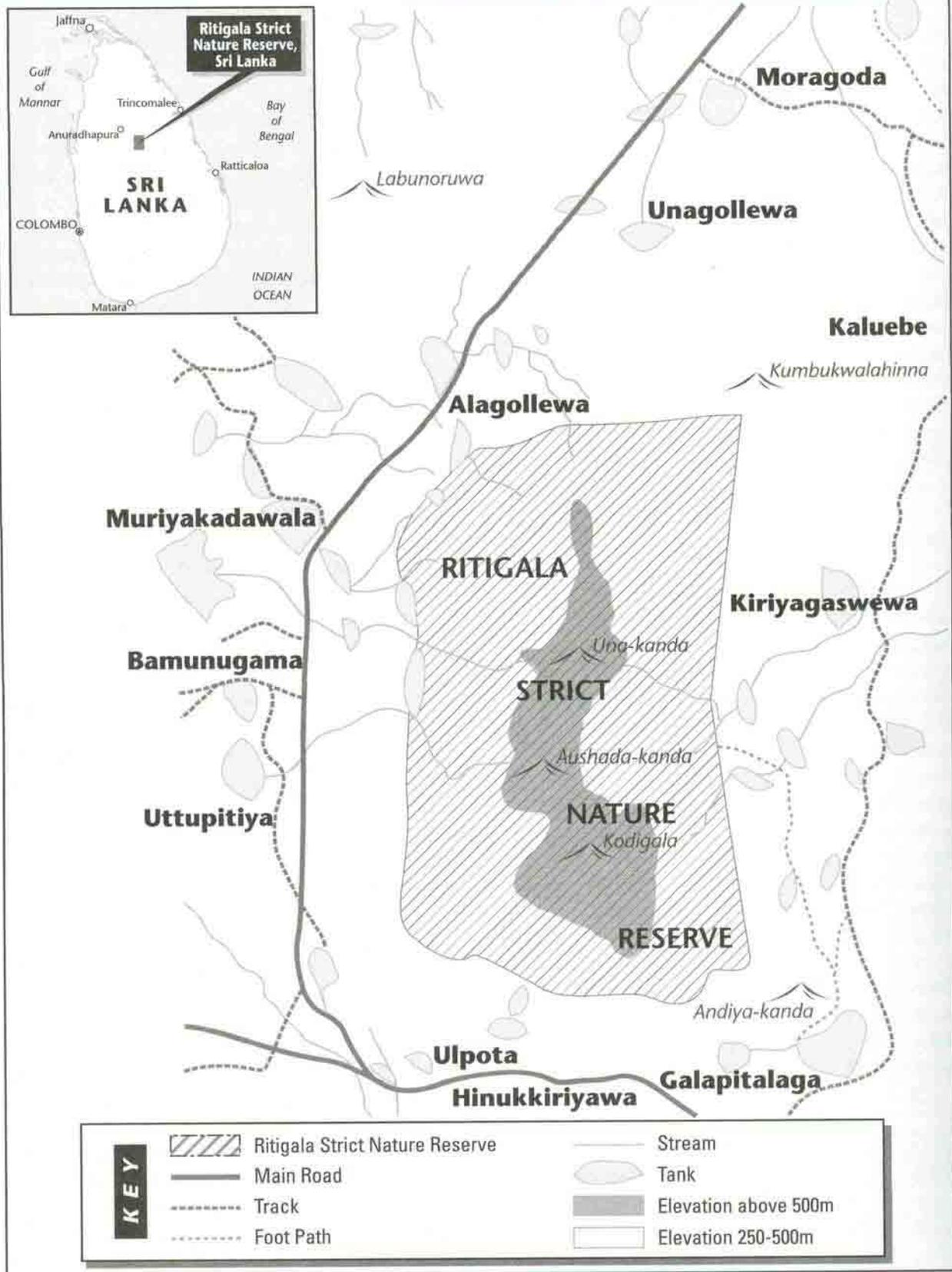
The reverence with which the forest is held is reinforced by the central role it plays in supporting the families through the dry months. These forces strengthen the motivation of community members, who, together with their ancestors, have protected the forest for centuries. As one descendent of the hunting and gathering communities on the eastern flank of the mountain notes:

We don't experience starvation. In the days that our family pots are empty and nothing is there to feed the children, I enter the forest after praying to the god-to keep us alive, help my family. I have never returned empty-handed. The stuff I gather in the forest enables me to get cash to purchase three to four measures of rice, the staple diet. When the surrounding lands turn into a burning desert from June to September, the forest supports our lives.

After functioning effectively for generations, these management practices are breaking down, reflected in the disappearance of water chiefs and forest stewards. The inability of hamlets to mobilize collective labor to desilt the tanks has resulted in their declining water storage and irrigation capacity with fewer fields able to carry a dry season rice crop.

Presently, there are 11 communities inhabiting the fringe area around Ritigala Strict Nature Reserve, with a population of 6,600 (see Figure 19). The communities are primarily comprised of Sinhala Buddhists, though several villages of Islamic people have been established over the past 30 to 40 years. Ritigala's forests cover 1,528 hectares. The upper elevation is under the formal supervision of the Department of Wildlife Conservation, while much of the dense, lower elevation, evergreen forest and surrounding hills are under the jurisdiction of the Department of Forests. In the late 1960s, the

Figure 19 RITIGALA FOREST COMMUNITIES and STRICT NATURE RESERVE, SRI LANKA



Department of Agriculture took control over the communal tanks. In the process, the local institutions and leaders that guided human interactions with the natural environment have been disempowered, replaced by new government organizations and an authority structure driven by outsiders.

FOREST PRODUCTION & MANAGEMENT

In the past, local communities worked with the natural environment to facilitate the capture and storage of water for the long dry season. Each tank was managed by a water chief (*well wedane*). Desilting the tank was an annual requirement with each farmer required to remove earth from a section of the tank specified by the water chief. The water chief also coordinated canal maintenance and water distribution. In some hamlets (*thulana*), a counterpart existed and acted as forest chief (*kele korala*). The forest chief was responsible for regulating forest use. Upper watershed forests were held under strict protection. Felling of trees for domestic timber needs was carefully controlled by the chief. He was also responsible for approving the opening of swidden fields (*chena*) in the lowland areas allocated for long rotation agriculture. Both the position of *well wedane* and *kele korala* were filled by local men who were chosen by the community for their knowledge, experience, and leadership capacity. The fundamental goal of each office holder was to ensure the sustainability of the resource use system.

While agriculture is the major source of sustenance for most of the hamlets surrounding Ritigala, the forest is an important component of most household livelihood strategies, especially during the dry season. The communities on the eastern side of Ritigala are particularly dependent on gathering and hunting in the forest, as they have less access to off farm employment due to their greater isolation. During the mid-1990s, the majority of the households had an income of less than Rs. 1,000 per month (US \$14). All households that were surveyed collected fuel wood, poles, binding materials, medicinal plants, and wild leaves as subsistence products from the forest.

In addition, many families were involved in gathering forest products for sale in local markets including bee honey (Rs. 120 per pint), wild tamarind (*gal siyambala*) (Rs. 40 per kilogram), and the medicinal grass (*bin-kohomba*) (Rs. 800-1200 per kilogram). The degree to which families were involved in gathering forest products is shaped by their location to the forest, their knowledge of the forest, their perception of their customary rights, as well as gender and age considerations. In the villages closest to the forest, Kaluebe, Moragoda, Kiriya gaswewa, and Muriyakadawala between 70 and 80 percent of all households were engaged in gathering at least one of the three commercial products mentioned above. The harvesting of commercial non-timber forest products usually commences in August and extends until February, as different products become successively available.

Commercial forest products are typically gathered by groups of individuals, with the produce shared equally among user group members. User groups are lead by older, experienced individuals. Honey gathering is done by smaller groups of five to eight individuals, while wild tamarind forays may involve up to twenty people including children. Sustainable use is an important concern of group leaders and behavior is guided by spiritual attitude as well as technique, and compliance is monitored by the collective user group. According to one elder:

When we walk into the forest to harvest bees honey and wax, we make vows. Two promises are made; one is to focus on the products that we intend to harvest and one is not to harvest the whole stock and dry out the supply. Even if we found several beehives, we harvest them to get about 5-7 pints each per day. We never touch small hives.

Another honey user group member reported:

Beehives are often found in hollows of trees. Without burning or cutting down trees, we place our hands inside and take the honeycomb from below. The bees always leave from the top of the hive, so

we can remove the honey and quickly move away without overly disturbing them. Each year the bees return to build their hives in the same hollow, and in this way we harvest the honey continuously.

Similarly, the harvesting of wild tamarind and mora fruit is done with care. User group members climb these trees during the fruiting season, often pruning the branches to enhance productivity in successive years.

RITIGALA STRICT NATURE PRESERVE

Ritigala was designated as a protected area in 1941. Due to resource limitations, the government has played an insignificant role in managing the hill forests until the past decade, when outside protected area project funding permitted the placement of forest guards in the area. Prior to that time, the village communities took the responsibility to oversee the forest, while community-based forest user groups operated freely following customary norms for protection and utilization. In 1981, the Department of Wildlife appointed one officer to the area, but without an office, transportation or financial support, management activities continued to be under the authority of local communities and carried-out by local user groups.

In 1991, an office for the Strict Nature Reserve was established on the western side of the protected area with four staff assigned to patrolling. Park boundaries were demarcated in 1994, and in 1999 a second park outpost was constructed along the eastern boundary. Ironically, much of the dense forest is located at the base of the rocky promontory and falls outside the Strict Nature Reserve and it is in this area that two elephant herds, totaling 20 to 25 individuals, usually reside. These low-lying forests are under the authority of the Department of Forests, though the nearest beat officer responsible for this territory is based 16 kilometers from the area and visits only infrequently. According to one local wildlife officer, "The Wildlife people can't take cases of illegal activity in these areas to court, as it is outside our jurisdiction, but we keep this a secret so our authority will not be questioned."

Although communities have been aware of the 1941 Gazette Notification declaring Ritigala a nature reserve, it was rarely enforced in the past, and local people continued to use the forest as common property to be shared by all forest fringe hamlets. Outsiders were only allowed into the forest with permission from local inhabitants and then only for subsistence collection of medicinal plants and other goods. According to one villager, "when an outside person wants to go to the forest, on a pleasure walk, or to see ruins and for studies, that person makes contact with us and follows us to the forest." In the past, residents were quick to inform outsiders that they required permission to enter the area. Collection was regulated by user groups, requiring that local gathering norms be strictly followed, and the equitable distribution of products among members observed. The forest leader (*kele korala*) oversaw the activities of the collector groups, helped mediate conflict, and if mal practice occurred, transgressors were turned over to the village headman (*arachchi*) for disciplinary action.

These informal control mechanisms sustained the dense forest of Ritigala with minimal incidence of illegal logging or other negative impact on the ecology. With the increased presence of Department of Wildlife Conservation guards, however, local users perceive a marked erosion of their customary rights and the growing presence of an external authority. The main change has been that the traditional forest users, who have cared for the resource for generations, must now sneak into the forest as unauthorized users.

Communities have felt the impact of the increasing presence of park staff over the past five years. Recently, Ritigala was included in a new Asian Development Bank funded project for nature reserves. With Global Environment Fund support, RITICO, an NGO, was assigned to organize village development organizations and create environmental awareness among the communities on the eastern side of the protected area. The strategy followed under the project, however, has not been one oriented towards collaborative management of the protected areas, but rather an

attempt to reorient the community away from a dependence on the forest areas. The recently initiated program involves creating a one kilometer wide buffer outside the protected areas, largely from village lands in order to allow the elephant population greater range and restrict community activities in that area. This strategy appears to provide considerable benefits for wildlife management, but offers little to the community in return. Rather, it further undermines their authority over the resources.

The villagers are eager for assistance from the outside, but have received little support to date in terms of technical, material, or capital assistance. Instead, to earn cash income, they have sent their sons to join the army and some died in the war with the Tamil Tigers of the north. Medicinal plants and home garden projects have had little impact. Field staff from the Department of Wildlife are unsure how to relate to the forest-dependent communities. One wildlife officer commented that, "There is no cooperation between the officers and the local villagers. The problem is that we have conflicting intents." When asked if he saw opportunities to open a dialogue with the community he responded, "Any cooperation has to follow a strategy that is not part of the current Department of Wildlife program. We must provide the villagers with alternative sources of livelihood to ensure their cooperation, yet we do not have this capacity."

One officer is more optimistic, perhaps because he comes from a nearby village. He has been a Wildlife Officer for the past twenty years, but has only recently been assigned to Ritigala:

It is important to have some contact with the communities in order to carry out our duties. When people come to get fuelwood and small timber, we try to take a lenient attitude towards non-destructive activities. The animals pay no attention to the boundaries and move outside into the farmlands. We are working with communities to manage the elephants. We provide them with firecrackers to scare them back into the reserve. We are currently working through the farmer's organization, though it would

be helpful to work through traditional leaders, since they can discuss these issues with other members of their community and represent their views more effectively.

Coordination is critically needed in dealing with a large elephant population in a small reserve surrounded by numerous settlements and agricultural lands. Each year in the rainy season, as the rice crop ripens, the elephants come down to the settlements. One village woman noted that the elephants see that the people are encroaching on their forests and they dismantle their houses by pulling down the walls and taking off the roofs. In response, the villagers construct tree sheds well above the ground at intervals around the periphery of their fields. Each night through the harvest months, dozens of men spend the night in the trees, often driving off elephants with fire, noisemakers, firecrackers, and other devices.

With no policy or legal basis to formalize the rights and responsibilities of the user groups, no training in social organizing methods, no budget for field projects, and little support or guidance, the local Department of Wildlife Conservation staff have limited capacity to address the alienation of local communities. Given the current policy and program orientation, there is no sign of an effective system of coordinated management evolving in Ritigala Strict Nature Reserve. The Asian Development Bank project and the Wildlife Department continue to assume that resource orientation of communities needs to be shifted away from the forest.

Most Ritigala community members disagree. When asked how the community could regain its role in forest management and work with the conservation officers, Mr. Tikiribanda, a 75-year old elder responded:

We should organize our user groups to be led by knowledgeable community members. We would ensure all participants are trained in low impact harvesting methods of forest products important to us. There are very knowledgeable, experienced local people who can contribute to this work.

The lack of community involvement in formal forest management projects is not unusual. Neither have indigenous resource management institutions and practices received support from a European Union financed tank desiltation project that was completed in 1995. The villagers of Muriyakadawala noted that:

When that project came there was corruption from the top to the bottom, but they got the job done. The new tank is beautiful, and the bulldozers did in a few days what would have taken us weeks to complete. Now that the tank is functioning, farmers can get two crops again instead of one. But they will never give us the management task, since the project was done by the government with outside funding, and our collective work is not well coordinated. Due to poverty, people can't afford to give unpaid labor, especially the landless.

While foreign assistance helped desilt one of the several dozen tanks surrounding Ritigala, the process was costly and further eroded the confidence of local communities to sustain and manage their own production system. At present, the forest-dependent hamlets of Ritigala have lost control over the land, forest, and water resources that their ancestors carefully stewarded for centuries without outside subsidy. Legal and operational control over the forests are vested in outsiders with limited technical training and no local knowledge, most of them posted in Ritigala within the past 12 months. The development officers who are assigned to administer dozens of tanks have minimal budget and no social authority to mobilize labor to carry out the critical maintenance tasks.

The fine-tuned, indigenous silvo-hydraulic system that once supported the dry zone villages, as well as the court civilizations of Sri Lanka is already in an advanced state of collapse, with little action at the policy or operational level of government to resurrect it. The inalienable rights of local people to retain authority over natural resources upon which their livelihood depends is a principle that has been acknowledged for generations. Mhinda Thera, the Buddhist monk who visited Sri

Lanka in 236 BC told King Devanampiyatissa that "This land belongs to people and animals, you are only the administrator." Ritigala's communities retain their claim as the forest people or *Vannikarayo*, but as the older people disappear, so too will these traditions. Their local knowledge, their belief in the spirits and the sanctity of the place, their maintenance of the forest paths, and their watchful eyes for strangers that might do harm to the forest, these too will disappear. It is likely the ecosystems of Ritigala will suffer from this loss of indigenous management, but it is certain that Sri Lanka's rich culture will be the lesser.

LESSONS LEARNED

This case demonstrates that forest dependent communities have extensive local knowledge of the forests, with complementary belief systems and local institutions that emphasize sustainable use and conservation values. At the same time, the Ritigala story illustrates how well-intentioned government conservation programs and externally financed protected area projects can ignore these social resources and by-pass information and organizational capital, limiting opportunities to better achieve national goals and meet local needs. The case suggests the following:

- There need not be a conflict between the achievement of national conservation goals and local forest use practices.
- Conservation policies and programs need to involve local communities in meaningful management partnerships, drawing on local knowledge and strengthening natural resource stewardship traditions.
- Local government staff require training in interactive techniques to involve communities in management decision making and joint planning exercises.
- Government agency leaders need to communicate to field staff the importance of respecting community resource management traditions, listening to the views of community members, and urge field staff support and strengthen indigenous resource management institutions and leaders to meet national conservation goals as well as local economic requirements.

The cultivation of complex forest gardens has taken place in Sri Lanka for several thousand years. From the 1880s onward, the area under forest gardens expanded rapidly, especially in the central wet zone in areas surrounding the hill town of Kandy. This was driven by the needs of growing populations for food and other forest products, as well as strong market demands for coffee, pepper, cocoa, cloves and other export commodities. At the same time, the expansion of colonial tea and coffee plantations into the natural forests displaced community users requiring them to intensify the productivity of remaining forest lands. In many areas of the central highlands, with topography too steep for tea gardens, natural forests were left to local communities who steadily transformed them into multi-storied, species diverse forest gardens. These highly manipulated ecosystems present a forest mosaic that now covers some 900,000 hectares, or almost 14 percent of Sri Lanka's land area.

Forest gardens have numerous benefits in terms of production, conservation, and aesthetics. Forest gardens share many of the functions of natural forests, though they result from careful human manipulation. Transferred from one generation to the next, the gardens are maintained as family property. Trees, shrubs, herbs, crops, and animals are all interacting components of the system. In the Kandyan forest gardens in the wet zone, common species include jak, coconut, areca nut, durian, mango, neem, tamarind, lime, guava, papaya, jambu, pepper, cinnamon, and bananas. One recent study of Kandyan forest gardens found a total of 143 species of woody perennials in the 173 gardens studied. Another study found that each forest garden had 72 to 77 tree species broadly divided into five layers including:

- ◆ The emergent layer at approximately 25 meters
- ◆ The main canopy occupying a layer between 15 and 25 meters
- ◆ The mid-canopy between 8 and 15 meters
- ◆ The shrub layer between 1.5 and 8 meters
- ◆ The ground layer rising to 1 to 1.5 meters

This complex structure creates a wide range of microhabitats, and the average number of total trees, shrubs, climbers, herbs, and other species may vary from 100 to 280. In the Kandyan gardens, the density of individuals averages 2,800 per hectare. Fruit, fibers, resins, fuelwood, fodder, vegetables, and medicinal products are harvested on a continuous basis. Timber is felled selectively, as needed by the household, with older, mature trees culled as their productivity falls, creating light and space for saplings to emerge.

Aside from those in the Kandy region, forest gardens of diverse composition are found in many parts of Sri Lanka. Forest gardens in the southwest are often grown in close association with coconut and rubber plantations, with the ground under the trees used for intensive vegetable cultivation. In the dry zone to the north, teak is often included in forest gardens. In the drier areas, the number of tree species and the density of the canopy decreases sharply. This allows more sunlight to reach the garden floor where chili peppers, cassava, and other annual crops are cultivated.

A study of forest garden coverage in Sri Lanka between 1983 and 1992 showed an increase from 701,570 to 818,394. The study excluded five districts in the north, where the fragmented and sparse canopy cover of the forest garden systems made interpretation difficult. While forest garden coverage declined in urbanizing districts like that of Colombo, in Kandy and some of the wet zone areas forest gardens increased 60 percent or more. Some of the largest increases took place in dry zone districts, where degraded scrub forest is being converted to home gardens. With the shrinkage of natural forest cover in Kandy District, now only 12 percent of the land area, forest gardens have become the major source of forest products. Among the rural poor, forest gardens are a major source of livelihood. A district study found that 42 per cent of households used jackfruit and other forest products as staple food and substitute for rice. The evolution of forest gardens are shaped by local knowledge of the environment and the physical tracts of each species, including its nutrient, spatial, and light requirements. Kandyan forest gardens share many structural similarities with the natural forests of the area and also contribute to the conservation of soil, water, nutrients, and biodiversity.

SUMMARY

There has been a tendency for community forestry to be viewed from several narrow perspectives. A commonly held view arises from the development sector and assumes that community involvement in forest management is dependent on subsidies provided by governments and external donor agencies, while a second perspective views community forestry as rather static traditions practiced by isolated peoples. The latter perspective provides a romantic, retrospective vision of a world that often no longer exists. The former paradigm has been empowered by vast sums of financial resources that build dependencies of rural people upon government and outside agencies, creating paternalistic relationships. This approach can undermine community initiative by assuming external financing is a pre-requisite to action, imposing outside structures and procedures.

The case studies presented here indicate that rural people are often the driving force behind community forestry, not outside actors. While the strategies communities are utilizing to organize may draw upon traditional leadership patterns and systems, they are also highly dynamic and innovative. Community forestry in South Asia exists in a myriad of forms, often

operating on an informal, consensual basis. As each case study indicates, communities are concerned about threats to their local forests. The stories from Gilgit, Mayurbanj, Rajasthan, Madhupur, Ritigala, and Kavre detail the anxieties of local inhabitants as they perceive new threats to their natural resources and document their strategies to sustain remaining forest habitat. These cases demonstrate that some government policies and projects have been extremely effective in supporting and enabling the conservation efforts of village residents.

The field reports also identify where governments have failed to take the legislative steps necessary to empower communities as forest stewards. Projects sponsored by development assistance agencies are clearly a mixed-bag. Some have been extremely strategic in building community capacity, as in the case of the Aga Khan Rural Support Project and Rajasthan Forest Department, while in other situations, like the examples from Ritigala and Madhupur, project strategies have led to the further marginalization of local peoples' role in forest management. As a group, these cases present a strong argument for the protection of the rights of forest dependent peoples, the creation of enable policies and programs to empower rural communities and formally engage them in management.

Notes

- ¹ A.M. Chowdhury "Working Scheme for Mymensingh Division-1960-61 to 1969-1970" (Mymensingh: Bangladesh Forest Department, 1960) p.13.
- ² Philip Gain, *The Last Forests Bangladesh* (Dhaka: SEHD, 1998) p.68.
- ³ *Ibid*, p. 41.
- ⁴ Chie Nakane, "Garo and Khasi: A Comparative Study in Matrilineal Systems," (unpublished manuscript) 1967, p. 79.
- ⁵ Dr. Robbins Burling, an anthropologist who has studied the Garo since the 1950s contributed these comments in a conversation with Philip Gain.
- ⁶ Kibriaul Khaleque, "Prospects of Social Forestry in the Garo Villages of Madhupur Garh," (Dhaka: Agricultural Development Council, 1984) p.16.
- ⁷ *Ibid*, p.7.
- ⁸ *Ibid*, p.8.
- ⁹ *Ibid*, p.33.
- ¹⁰ *Ibid*, p.36
- ¹¹ *Ibid*, pp.50-53
- ¹² *Ibid*, p.52.
- ¹³ *Ibid*, p. 39
- ¹⁴ *Ibid*, p.40.
- ¹⁵ *Ibid*, p41.
- ¹⁶ *Ibid*, p42.
- ¹⁷ *Ibid*, p45.
- ¹⁸ *Ibid*, p. 46
- ¹⁹ *Ibid*, p.76.
- ²⁰ *Ibid*, .77.
- ²¹ Mohiuddin Farooque, "Collective Management or Untenable Tenure: A Crucial Choice to Save the Madhupur *Sal* Forests in Bangladesh," (Dhaka: unpublished manuscript, 1992).
- ²² See Philip Gain, "Rape of the Madhupur Forest Continues," Dhaka Courier, November 24-30, 1989
- ²³ *Ibid*, p.89.
- ²⁴ *Ibid*, p.94.
- ²⁵ *Ibid*, p.IIO.
- ²⁶ *Ibid*, pp.112-113.
- ²⁷ *Ibid*, pp.132-133.
- ²⁸ *Ibid*, p.134.
- ²⁹ *Ibid*, pp. 41-42.
- ³⁰ see the report on the Karanjia Forest Division, "Integrated Micro Plan for Jamani, Hatimundi, Sanjhili, and Bhodusol Cluster of Villages in Simlipal Sanctuary" (World Food Programme: Karanjia, October, 1996).
- ³¹ See Deep Pandey, "Sacred Water and Sanctified Vegetation: Tanks and Trees in India," a paper presented in the IASCP Workshop, USA, May 2000.
- ³² Pandey, pp.44.
- ³³ Deep Narayan Pandey, *Ethnoforestry: Local Knowledge for Sustainable Forestry and Livelihood Security*. (New Delhi: Himanshu Publications, 1998) p.20.

- ³⁴ T.B.S. Mahat, D. M. Griffin, and KR Shepherd, "Human Impacts on Some Forests of the Middle Hills of Nepal: Part 3. Forests in the Subsistence Economy of Sindhu Plachok and Kabhre Palanchok," *Mountain Research and Development*, Vol.7, No.1, 1987, p. 67.
- ³⁵ *Ibid*, p.68.
- ³⁶ *Ibid*, pp.53-40.
- ³⁷ The findings of the 1990 assessment study are presented in AG. Bartlett, M.c. Nurse, R.B. Chhetri and S. Kharel, "Towards Sustainable Community Forestry: An Evaluation of Community through User Groups in Central Nepal," Paper presented at the conference on Sustainable and Effective Management Systems for Community Forestry, 15-17 January 1982, RECOFTC, Bangkok, Thailand.
- ³⁸ RJ. Fisher et. Al. "The Management of Forest Resources in Rural Development," *Mountain Populations and Institutions*. Discussion Paper No. I (Kathmandu: ICIMOD, 1989) p.18.
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- ⁴⁰ Tariq Husain, p. 16.
- ⁴¹ *Ibid*,p.19.
- ⁴² Tariq Husain, p. 10.
- ⁴³ *Ibid*, p.10.
- ⁴⁴ *Ibid*, p.11.
- ⁴⁵ *Ibid*, p.12.
- ⁴⁶ *Ibid*, p.B.
- ⁴⁷ The World Bank, "The Aga Khan Rural Support Program: A Third Evaluation," (Washington, D.C.: The World Bank, 1996), p.69.
- ⁴⁸ *Ibid*
- ⁴⁹ *Ibid*. p.71.
- ⁵⁰ A. Azfar and A Ali "An Evaluation of the Village Forestry Specialist Program," (Gilgit, Pakistan: AKRSP, 1993). Regional Program Office, Gilgit 1995.
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- ⁵² Tariq Husain, p.26.
- ⁵³ Anis Dani, Chris Gibbs, and Daniel Bromely, "Institutional Development for Local Management of Rural Resources," Workshop Report No.2, (Honolulu, Hawaii: East West Center, 1987).
- ⁵⁴ Tariq Husain, p.12. ⁵⁵ *Ibid*, p.26.
- ⁵⁶ *Ibid*, p. 26
- ⁵⁷ *Ibid*, p.71.
- ⁵⁸ This case study is based on the work of Dr. Anoja Wickramasinghe and her students at the University of Peradeniya, Sri Lanka. Field Investigation took place between September 1994 and April 1995 in the ritigala area, with the most recent follow-up in March 2000. For more detailed information on Ritigala, see Anoja Wickramasinghe, "Anthropogenic Factors and Forest Management in Sri Lanka," *Applied Geography*, Vol. 17, no. 2, 1997, pp.87 -110.



COMMUNITY FOREST MANAGEMENT IN THE TWENTY-FIRST CENTURY

While many of the nations of South Asia are moving forward making changes in the ways they manage their natural forests, the transition from over a century of state forest control to new forms of community-based stewardship is still in its early phases of implementation. Four broad thematic areas that are shaping the historic reorientation towards forest management include shifts in the legal and policy frameworks, the changing approach to governance, new roles for forest departments and NGOs, and the rethinking of technical approaches to resource use. This concluding section will review some of the experience and trends apparent in South Asia over the past decade.

ENABLING POLICIES

Public land reform on the scale now occurring in South Asia is an unusual event. Millions of hectares of productive resources are rarely transferred from centers of political and economic power to disenfranchised, low-income populations. Nonetheless, the process is unfolding in India and Nepal, and it is likely it will be extended to other countries in the region in the future. These changes require fundamental alterations in policies. The British Colonial administration in South Asia spent nearly a century crafting a legal framework with operational policies to shift the control of the region's natural forests to the state. Independent South Asian nations reinforced the state oriented forest management legal code through the 1950s, 60s, and 70s. In the 1980s and 1990s, India and Nepal began to reframe their policy orientation towards

communities and forests. As early as 1978, Nepal passed a series of Panchayat forest policies, while India's 1980 Forest Conservation Act indicated a clear shift, placing management priorities on the environment and local communities. This was further reinforced by India's 1988 Forest Act, while Nepal's 1990 Constitution enshrined natural resources as a fundamental right of the nation's rural communities.

Although Pakistan, Bangladesh, and Sri Lanka are yet to pass new national forest policies that transfer rights and responsibilities to communities on an extensive basis, they are beginning to experiment with new tenure arrangements on public forest lands. Forestry agencies are also considering the need for broader civil society input into public forest policy dialogue. In Pakistan, the government recognizes the importance of stakeholder participation and has begun to look beyond the traditional "scientific" forestry sector to consult with rural communities, NGOs, social scientists, and other informed groups. The Siran Forest Development Project in the Northwest Frontier Province (NWFP) is establishing joint forest management (JFM) agreements over 170,000 hectares in an effort to control deforestation in the Hazara forests with financing from GTZ. The Sri Lankan Forest Department is experimenting with new participatory paradigms, including a JFM strategy funded by the Britain's DFID. Using a project oriented approach, the Bangladesh Forest Department is implementing strategies to gain community participation in public forest management in tribal regions like Madhupur and the Chittagong Hill

Tracts, as well as in lowland agricultural areas and in the fringe regions of the Sundarbund mangrove forests with support from the Asian Development Bank. With the experience and confidence gained from community forestry projects and the increasing input from a broader group of stakeholders, it seems likely Bangladesh, Pakistan, and Sri Lanka will begin developing a legal and policy framework for empowering community stewardship on public forest lands over the coming decades.

TRANSFERRING RIGHTS & RESPONSIBILITIES

While broad legal frameworks and national policies are important in providing an overarching legitimacy for community resource managers, it is often the micro-policies that are most influential in establishing direction for the transfer of territorial control. A fundamental characteristic of new community-oriented forest policies is that they clearly articulate both the resource rights and management responsibilities of rural forest stewards. These operational guidelines for forest management transitions have taken the form of government circulars and resolutions in India, and amendments and regulations in Nepal. The passing of implementation instructions has been instrumental in allowing national policies to be enacted. The amount of state forest lands transferred or "handed-over" to communities is often determined by the existence of clear operational guidelines, with strong political backing.

For example, while the 1988 Forest Act in India acknowledged that resident communities had the first claims on forest resources, it was only after the June 1st, 1990 Circular was issued that state forest departments had clear guidelines to proceed, authorized by the Minister of Environment and Forests, with the support of the Inspector General. Further, only after states passed their own specific guidelines, as forestry is a joint policy subject in India, did the transfer of forest land to community groups accelerate. The remarkable progress India and Nepal have made in vesting management responsibilities and rights for ten to fifteen percent of their forests with local

users is indicative of the effectiveness of crafting enabling policies that reflect social adaptations ongoing within the society. These nations demonstrate that well-crafted policies and guidelines can facilitate the spread of new conservation behaviors within the society. Key elements of enabling policies include governments intent to empower communities, clear statements of rights and responsibilities, while allowing flexibility and directing implementing agencies to respect local organizational strategies and leadership patterns.

FLEXIBILITY & ADAPTATIONS

South Asia has many indigenous systems of communal resource management, yet contemporary legal and operational frameworks and procedure to empower them as formal stewards are uncertain. Policy makers are confronted by the diverse cultural and social contexts characteristic of South Asia. Many senior planners, forest administrators, private sector stakeholders, and even some environmentalists are opposed to management devolution. This combination of lack of experience in drafting CFM policies, diverse contexts for implementation, and opposition resulted in early forest devolution guidelines being formulated in a tentative manner. Rights of communities over timber and non-timber forest products were often limited, with governments retaining a majority share. The Forest Department also retained the right to dissolve forest management groups. Planning decisions were kept in the hands of Forest Departments, as was the definition of territory under community control.

In Nepal and many Indian states, however, these early guidelines have gone through repeated revisions. The state of Orissa, for example, rewrote its JFM resolution four times over a ten-year period, and most Indian states have also repeatedly reformulated their strategies as feedback from the field and the growth of political confidence in the strategy has expanded. Nepal's forest user group (FUG) strategy has similarly been guided by new amendments and regulations, many generated through national workshops that bring FUG leaders together. Policy revisions informed by field experience and stakeholder input have generally

supported greater benefit flows to communities, enhanced autonomy, and increased access to forest territory and better quality resources for local people. In Nepal and some Indian states, community-based forest managers receive 100 percent of the timber and non-timber forest products, have sole control over management decision-making, and are recognized as legal entities.

The creation of new platforms for discussing forest management policies has been important in informing and shaping their development. In India, some states have established working groups, often convened by forest departments, with assistance in organizing and mediation provided by participating NGOs. University-based researchers have also played instrumental roles in conducting research and documentation of field situations. Community group discussions are also being catalyzed by foresters and NGOs, providing important feedback regarding the strengths and weaknesses of existing policies and programs.

In Nepal and India, a series of national workshops on community forestry and JFM have brought individuals from across their countries to report on local conditions, voice critiques, and pose recommendations for change. These activities have given national public forest reform greater direction, encouraging mid-course modification. Since the pathway to devolving management authority over forest lands was unclear at the outset, with many obstacles in the way, it was important that the process of policy and program formulation has been approached with flexibility and adaptation. Working groups, national workshops, and other platforms and mechanisms for public discussions of forest policy reforms are important for informing and guiding emerging strategies to engage communities in forest stewardship. Civil society dialogue on important environmental issues needs to be encouraged and facilitated at the local, regional, and national level. It is no coincidence that new or amended resolutions, guidelines, and government orders are regularly issued not long after public dialogue and program reviews have taken place.

GOVERNANCE & DECENTRALIZATION

South Asia is one of the world's most dynamic regions in terms of the evolving state of national governance systems and India is the world's largest democracy in terms of the massive size of its electorate. Elected government administrations guide social policy formulation in India, Pakistan, Sri Lanka, Nepal, and Bangladesh. In most countries, there has been a growth in multi-party systems as well as a movement towards greater decentralization of authority. The broader shifts in political systems are reflected to varying degrees in the ways the societies view forest management. For example, the strengthening of populist political parties in eastern India corresponds with the timing of expanding grassroots environmental organizing among tribal communities and other forest-dependent peoples.¹ The emergence of a democratically elected government in Nepal and the ratification of a new constitution provided an important push for the handover of forest lands to hill communities.

Decentralization appears to be moving forward in many South Asian countries as populations expand and gain stronger, local, political representation. India's Panchayati Raj Act clearly vests greater authority with district and sub-district governments, extending more authority over financial allocations and resource management. In Nepal, Village Development Committees have been formed to oversee government projects and prepared investments plans. Pakistan, Bangladesh, and Sri Lanka are creating new processes for local formulation of village land use plans and management roles. Decentralization policies have not always resulted in empowering community-based resource managers. In some cases, these new governance strategies have strengthened the control of political centers of power based in district towns, further eroding the rights of local user groups. Provided they are legally empowered, small forest user groups can work cooperatively with decentralized government processes. This may also be facilitated by creating communication linkages, establishing fora for coordination, and clarifying the roles of

community-resource managers and local government administrations.

FPCS, FUGS, & FEDERATIONS

The social forestry projects of the 1970s and 1980s largely relied on government administrative institutions, such as the village *panchayat*, to coordinate community activities. Often comprised of 5 to 20 hamlets, the official administrative villages in many countries were socio-economically and politically complex. As the case studies presented here indicate, many indigenous systems of common property management, including forests, relied on smaller, more homogenous social units, often hamlet based. As a consequence, administrative village leaders often lacked experience and had difficulty mobilizing community engagement in resource management and development projects. Indications of these issues were frequently raised in project reports from that era, ultimately resulting in the reorientation towards hamlet or user group management in India and Nepal in the 1990s.

In refining their approach to community-based forest management, the social scientists and project planners observed how communities were mobilizing forest protection activities on their own. Forest User Groups (FUGs) and Forest Protection Committees (FPCs) presented government agencies with some difficulties as they were not legal entities and were numerous. In India, some state forest departments attempted to cluster them into larger, multi-hamlet social units. For the most part, communities wanted to follow their own leadership and remain autonomous with a clear sense of their own forest domain. Often voiced were requests for identity cards, registration letters, maps of forest territory, and other symbols of formal recognition. Many community resource management groups are painfully aware of their vulnerability from neighbors, forest departments, politicians, and private businesses due to their lack or limited legal status.

In order to work with the FUGs, governments needed them to have legal identities, to

open bank accounts, sign contractual agreements, and otherwise act as a corporate entity. Initially, the only way to provide these village organizations with legal status in India was to incorporate them under the Societies Registration Act, a process originally established during the British colonial period to legally constitute social clubs and associations, and hardly well-suited to the needs of rural community groups. Forest departments, often well endowed with development project financing, are now motivated to establish viable legal relations with community forest management organizations and assist them in opening bank accounts, in order to move their programs forward.

While many resource user groups desire to retain their specific community identity, many also realize that they need to build alliances with other groups, especially their neighbors. These alliances help to avoid conflicts, mediate disputes when they do occur, coordinate protection and management, and provide a united front to the outside world. In many countries, even without the urging of outside forest departments and NGOs, community leaders have organized joint meetings that often resulted in the formation of networks and federations. In the Indian state of Orissa, for example, FPC Federations are increasingly common, the larger ones possessing over one-hundred member villages that protect thousands of hectares of forest, typified by the Budhikhamari case study presented in Part V.

In Nepal, the national Federation of Forest User Groups (FECOFUN) represents the first national body of its type in the region. It is likely that the development of new peoples' organizations will spread in the region, at the local, state, provincial, and national levels in the future. Growth may be driven by the needs of poor, forest dependent peoples to better access to markets, and to secure stronger political representation. At the same time, FUG and FPC federations could be an important source of extension services and even capital to complement the activities of forest departments and other government agencies. It is important that such emerging institutions remain transparent and guided by fairly elected representatives.

MANAGEMENT SYSTEMS

Community forestry poses a challenge to conventional approaches to public forest management. Traditions of silviculture that evolved over a century, largely in response to industrial demands, reflect the timber production priorities of that era, while rural communities and urban dwellers alike argue that forests should be managed to meet local needs, and provide environmental and social services. Considerable investments will be required both to restore forest environments and to develop forest management strategies that encompass the complex ecological relationships in the region's diverse forest systems while responding to changing management goals and local needs.

FINANCING COMMUNITY FORESTRY

While the forests of South Asia have been utilized for millennia, these ecosystems were extensively exploited for industrial timber at increasingly unsustainable levels from 1880s to the early 1980s. During that period, investments in regeneration and management were paltry compared to the financial revenues that were generated from logging. With few exceptions, the region's forests are now badly degraded in terms of stand densities, species composition, hydrological performance, and many other important characteristics of ecological health. Financing forest restoration is a critical requirement, yet current national budgetary allocations reflect only a small percentage of the support necessary for protection, fire control, soil conservation, enrichment planting, nursery management, and other tasks. Multi-lateral banks and bi-lateral development agencies have repeatedly demonstrated an inability to be long-term partners of national governments, NGOs, and communities. Tens and even hundreds of millions of dollars may flow through a forest department during a five-year cycle, reorienting staff operations and creating new field programs, only to come to an abrupt halt at the end of the project. Often decisions to terminate community forestry assistance has nothing to do with sectoral needs or project performance, but rather is tied to unrelated political considerations regarding fiscal allocations. As a consequence, development assistance can create

a feast or famine financing environment, creating constraints to systematic transitions and the establishment of sustainable extension and outreach programs. Alternative funding systems need to be developed if national and local programs to restore forest ecosystems are to have significant and sustained impact.

While external financing for South Asia's forestry sector has been uneven and erratic, South Asia does possess important resources to restore the region's forests. As this report has demonstrated, rural communities are an important asset that possesses vast quantities of low-cost labor combined with extensive indigenous knowledge of local environments. In fact, much of the forest restoration in India and Nepal, as well as the production forestry of Pakistan, Bangladesh, and Sri Lanka is largely or exclusively financed by households and communities.

Nonetheless, communities required outside support to develop their management organizations, access technical information, and acquire capital for nurseries, enrichment planting, and other silvicultural operations. Long-term financing for community-based forest restoration and management should be contributed to by outsiders who enjoy the environmental services forest provide, whether they be rural residents in downstream watersheds, urban dwellers, or global residents. Revenues streams could be created by establishing a portion of taxes from newly emerging water markets, industrial and metropolitan authorities that draw water or hydropower from forested uplands, or through international carbon credits mechanisms to offset greenhouse gas emissions.

NATURAL REGENERATION

One of the most remarkable lessons from South Asia has been the power of the region's natural forests to regenerate. The dry, deciduous forests, in particular, have a high percentage of vigorous coppicing species that recover with striking rapidity, often growing one to two meters each year during the early phases of succession. When communities impose use controls, often in the form of a total *moratoria* on grazing and cutting, these "social fences" relieve pressure on

these degraded ecosystems. With the coming of the rainy season, the remaining trees will initiate rapid regrowth. If the rootstock has been removed for fuel or land clearing, and the top soil has been lost through sheet and gully erosion, only costly planting and erosion control measures will begin to restore the forest, and then at a much slower rate.

Natural regeneration costs are negligible from the governments perspective, often running from one to five percent of the expenditures involved in establishing a fast growing, monoculture tree plantation. Costs are higher from the community side, since social fencing requires substantial investments in volunteer patrols, organizing meetings, wages for watchmen, if used, as well as the opportunity costs of not harvesting the forest. The perceived benefits compensate the community, otherwise they would not take on these management responsibilities. The benefits are often in the form of environmental services, especially hydrological ones. Protecting watersheds, enhancing the productivity of seasonal springs and streams, amplifying the recharge of shallow aquifers to improve well levels, and slowing run-off and erosion are all commonly cited by community members. In semi-arid zones, moderating the microclimate that adds humidity to the air is an important benefit during the hot, dry months when temperatures may reach 40 to 45 degrees Celsius.

Biodiversity is important to villagers, providing a wide variety of important products that for economic, market, and logistical reasons are otherwise unavailable. As reflected in the case studies presented in Part V, communities are often motivated to protect forests in order to restore the flow of medicinal products, special timber for agricultural tools and housing, famine foods for times of hardship, fruits and berries for critical sources of nutrients, as well as green manure, fodder, and fuelwood.

Natural regeneration is not a new silvicultural management strategy, but was widely relied upon as an important approach to restocking the forest after felling operations in the early half of the twentieth century. As funds for plantations became more widely available and

techniques developed, forest departments relied less on coppice with standard systems. Today, forest departments are returning to natural regeneration in response to demands by communities for greater diversity of forest species, and to enhance survival rates while lowering costs. Even where enrichment planting is to be carried-out, foresters like D.N. Pandey advocate for advance closure of the area for at least one year prior to sapling planting to evaluate the progress of natural regeneration and to enhance it rather than replace it. Natural regeneration is a low-cost strategy to restore degraded forest ecosystems while responding to the desires of resident peoples for endemic species.

MANAGING PRODUCTION SYSTEMS

In the studies from Nepal and Orissa, community forest management groups aspire to return their forests to their previous levels of productivity, and in order to do so they are adopting strict conservation policies and allowing only very limited use. Most communities studied in this regional review and in other related field observations are not yet interested in viewing their forests from a commercial timber perspective. This often brings them into conflict with established working plans for their area, especially in forests historically zoned for timber production.

Designing manipulation strategies to selectively optimize the productivity of certain species within a forest ecosystem first requires a clear statement of management goals. Pruning, thinning, harvesting, enrichment planting, and controlled burning are all strategies to modify the forest, and each has multiple impacts affecting light availability, soil moisture, competition, and other factors. Silvicultural models of the past tended to focus on a limited number of tree species as sources of timber and fuelwood, making the manipulations less complex. Communities manage forests not only for timber trees, but for fruit, fodder, leaves, as well as for shrubs, and herbs. Local knowledge of manipulations strategies can be extensive within the context of forest gardens and agroforestry systems such as those found in Sri Lanka (see Part case study in V), however natural forests in many parts of the

sub-continent have never been managed with the same degree of intensity.

Given the diversity of community management goals, reflecting the many social and economic contexts found in the region, and considering the wide ecological diversity; it will be necessary to develop a wide variety of approaches to managing natural forests to enhance their productivity. Just as agricultural research has shifted increasingly from research stations to farmers fields, so too will the science of forest management need to rely more on *in situ* experimentation by FUGs and FPCs. They will need support from forest departments, universities, and NGOs to draw on technologies and methodological approaches to their field trials. New approaches to the management of forest ecosystems to enhance the productivity of a wide range of species, including trees, shrubs, and herbs will need to be developed. Community management groups need to play a leadership role in designing and monitoring experiments in forest manipulation to determine what interventions best result in meeting their needs in a sustainable manner.

SUPPORTING TRANSITIONS

Government and government organizations that work in the forestry or related sectors are undergoing important transitions in South Asia as management orientations shift to reflect societal demands for more sustainable management emphasizing environmental and social services over timber production. Development assistance is financing new training programs and the building of institutional capacity within forestry agencies as well as among a new generation of NGOs that have emerged to support community resource managers.

FOREST DEPARTMENT REORIENTATION

While many of the region's forestry agencies still retain the hierarchical, command and control orientation that they inherited from the colonial era, this paradigm is in the process of change. The transformation will extend over the professional lives of several generations of

foresters involving important shifts in attitudes, structural and operational policy reforms, and the creation of new capacities to provide the larger society with a different variety of supportive services.² The task of human and institutional reforms is vast, involving not only the national Ministries but dozens of state and provincial forestry departments. Throughout the South Asia region there are nearly 200,000 professional foresters, not to mention forest guards and laborers.

Top-down channels of communication are gradually being opened to allow field staff to inform senior officers regarding field conditions, problems, and needs. Field staff are developing new skills as community organizers, dispute mediators, and technical extensionists. Senior officers are redirecting their attention towards community interactions and dialogue with political representatives.

While trends are evident in the region that reflect the opening of the forestry establishment towards the forging of new management partnerships with resource dependent communities, many foresters remain reluctant to hand over lands with valuable timber and wildlife resources. Much of the area extended for FUG and JFM activities over the past decade has been badly degraded forests. It has only been in the past few years in India and Nepal that policy makers have begun to release well-stocked forests with valuable timber to communities. Protected areas still remain largely out of bounds for community management.

One of the biggest challenges confronting forestry agencies is controlling corruption. While political processes have helped promote policy reforms, politicians have also played an important role in exacerbating forest department corruption throughout the region by taking control over staffing assignments. While not widely discussed, corruption often fueled by donor financed projects remains a major impediment to effective operations. Practices of illegal payments to obtain postings, conducting illegal felling operations, and avoiding transport regulations are common. In the future, forest departments will need to be accountable to their community partners, demon-

strating a high degree of integrity. Financial and budgetary matters will need to be managed in a transparent manner relying on full disclosure of transactions. Promotions will need to be based upon performance to allow for the establishment of advancement based on merit, rather than seniority and political patronage. Reform within forest institutions is an essential element in the current transition to participatory forms of forest management. Policy, procedural, and attitudinal shifts across the sector will require strong political will from government and agency leaders, as well as the long-term support of internal and external agencies.

BUILDING CAPACITY OF SUPPORT ORGANIZATIONS

NGOs and universities in South Asia have played an important role in articulating and catalyzing new forms of forest management based on the engagement of communities. Such institutions have often pioneered the documentation of indigenous forms of forest stewardships, grassroots forest protection movements, and innovative actions of professional foresters. Some organizations have been extremely effective as advocates of the rights of forest dependent peoples, mobilizing public opinion and lobbying political representatives for policy reforms.

Other NGOs, working in rural environments have often acted as catalysts, motivating communities to take action by protecting degraded forests, facilitating their conservation behaviors, and helping them to organize federations and other bodies to represent their needs before state and provincial governments. NGOs are also developing new partnerships with forest departments, working collaboratively to help train field staff, field test methods, and facilitate communication with community forest management groups. NGOs and universities have important roles to play in building both community and forest department capacities to implement new management systems for production and conservation forests. These organizations need financial and technical support as they build their own outreach capabilities.

SUMMARY

South Asia is moving through a historic reconsideration of its approaches to forest management. The development paradigms of the post-World War II era were premised upon the assumption that economic growth would relieve pressures on the natural environment as societies moved from primary modes of natural resource exploitation, to industrial manufacturing and post-industrial technologies. In part, due to the extraordinary patterns of demographic expansion occurring over the past fifty years, direct dependence on water, soil, and forest resources has increased rather than decreased. Industrial demands for forest products continue to grow, while productivity is declining.

The failure of state administered, industrial management models to sustain South Asia's natural forests is demonstrated by the accelerating deforestation of the 1970s and 1980s. Societal concerns over the depletion of natural forests has placed pressure on political leaders and forest departments to develop more effective, and more sustainable approaches to forest stewardship. This, in turn, has generated a plethora of experimental projects, often emphasizing participatory approaches for the production of fuel wood, fodder, and non-timber forest products. At the same time, growing concerns of rural communities throughout the region over the deterioration of local ecosystems has led to the emergence of grassroots environmental movements oriented towards forest conservation. Nepal and India have taken a leadership role in formulating national policies to endorse community forestry and facilitate the transfer of the public forest domain to village stewards. Other countries in the region are experimenting with related strategies and it is likely that these new paradigms will become increasingly dominant in South Asia in the coming decades.

Notes

- 1 Mark Poffenberger "The Struggle for Forest Control in the Jungle Mahals of West Bengal: 1750-1990," in Poffenberger and McGean, *Village Voices, Forest Choices* (New Delhi: Oxford University Press, 1998).
- 2 See Subhabrata Palit, "Indian Forest Departments in Transition," in Poffenberger and McGean, *Village Voices, Forest Choices* (New Delhi: Oxford University Press, 1988).

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LIST OF ACRONYMS

ADB	Asian Development Bank
AFN	Asia Forest Network
AKF	Aga Khan Foundation
AKRSP	Aga Khan Rural Support Programme
CBFM	Community Based Forest Management
CFM	Community Forest Management
CIFM	Community Involvement in Forest Management
DANIDA	Danish International Development Agency
DENR	Department of Energy and Natural Resources
DFID	Department for International Development
DFO	District Forest Officer
EDI	Environmental Development Institute
BJPP	Budhikhamari Joint Protection Party
FAO	Food and Agricultural Organization for the United Nations
FECOFUN	Federation of Community Forest Users of Nepal
FD	Forest Department
FF	Ford Foundation
FIPI	Forest Inventory and Planning Institute
FPC	Forest Protection Committee
FP&DP	Forestry Planning & Development Project
FSMP	Forestry Sector Master Plan
FUG	Forest User Group
GIS	Global Information System
GO	Government of India
GPS	Global Positioning System
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit
HIMAWANTI	Himalayan Grassroots Women's Natural Resource Management Network
ICIMOD	International Centre for Integrated Mountain Development
ICRAF	International Center for Agroforestry Research
IDRC	International Development Research Center
IFF	United Nations Intergovernmental Forum on Forests

IFS	Indian Forest Service
IPF	United Nations Intergovernmental Panel on Forests
IUCN	The World Conservation Union
JFM	Joint Forest Management
JFMC	Joint Forest Management Committee
MARD	Ministry of Agriculture and Rural Development
MOEF	Ministry of Environments and Forests
MOF	Ministry of Forestry
MSFP	Malakand/Dir Social Forestry Project
NGO	Non-Governmental Organization
NORAD	Norwegian Development Assistance Organization
NWFP	Northwest Frontier Province Project
NTFP	Non-Timber Forest Product
PA	Protected Area
PO	People's Organization
SEHD	Society for Environment & Human Development
SF	Social Forestry
SIDA	Swedish International Development Agency
SRMP	Sustainable Resources Management Project
TNC	Transnational Corporations
UN	United Nations
UNDP	United Nations Development Program
UNV	United Nations Volunteers
US-AID	United States Agency for International Development
VFPC	Village Forest Protection Committee
VO	Village Organization
VSS	Van Samakshan Samiti
WB	World Bank
WCFSD	World Commission on Forests and Sustainable Development
WG-CIFM	Working Group on Community Involvement in Forest Management
WPMP	Watershed Planning & Management Project
WWF	World Wildlife Fund

Glossary of Terms

agroforestry	Interplanting of farm crops and trees.
arboreal	Tree-dwelling.
arboretum	Place where trees and shrubs are grown for study and display.
aseasonal	Without clear seasons.
baid	Rainfed rice.
biodiversity	Richness of plant and animal species and in ecosystem complexity.
biomass	Amount of living matter in a defined area.
bund	An earthen embankment constructed to retain water.
canopy	The whole of a forest from the ground upwards. Some scientists use canopy to mean just the top of the forest.
catchment	A river basin, sometimes referring only to its upper part.
clear felling	Complete clearance of a forest, as opposed to selective felling.
climax	The final stage in the natural succession reached by a community of organisms, especially plants, in equilibrium with existing environmental conditions.
closed canopy	Canopy which is effectively complete, rather than consisting of scattered trees; in practice, canopy cover 40% or more.
dipterocarp	Member of the <i>Dipterocarpaceae</i> , a family of old-world tropical trees valuable for timber and resin.
ecosystem	A natural unit consisting of organisms and their environment.
endemic	Native or confined to a particular area.
escarpment	Long cliff or slope separating two more or less level slopes, resulting from erosion or faults.
fauna	Wildlife in a particular area or time.
felling cycle	Time period between successive forest harvests.
fire climax	Regions of plant life, e.g. forests, grassland, where fire plays an important role in suppressing some plants and encouraging the growth of others.
forest corridors	Strips or belts of forest running through forested land, joining larger forest blocks.
forest-dependent people	Rural people who use forests for domestic purposes and as an integral

part of their farming system.

flora	Wild plant life in a particular area or time.
floristics	The plant species composition of an ecosystem.
gajari	<i>Shorea robusta</i> or sal
hardwood	Wood of a flowering plant, technically recognized by its possession (with rare exceptions) of vessels. Hardwoods range from hard and dense (e.g. <i>Lignum vitae</i>) to soft (e.g. <i>balsa</i>).
hectare	A metric unit of area measurement equal to 2.47 acres.
jhum	Swidden cultivation practiced by the Garo, Bangladesh.
khas	Non-classed forest land.
mandis	The name of the Garo people in the Madhupur language.
mangrove	Forests that grow in shallow water near the shore. They have spidery roots that hold sediments in place while providing an important habitat for fish.
monoculture	Cultivation of a single crop.
monsoon forest	Closed canopy forests in seasonal tropical climates.
montane forest	Forests that grow in mountainous areas.
nayeb	The Zamindar's representative.
NTFP	Non-timber forest product.
old-growth forest	See PRISTINE FOREST.
outsiders	A term used by communities to describe people who are not part of their geographical or cultural group.
patta	A temporary right of ownership.
pattan	A right of ownership.
perhumid	Permanently humid climate with no dry season.
primary forest	See PRISTINE FOREST.
pristine forest	Forest in a primary, virgin or undisturbed state.
production forest	Forest designated for the production of goods, usually timber.
rain forest	Closed canopy forests in aseasonal climates; may be found in tropical and temperate latitudes.

refugium	Region where biological communities have remained relatively undisturbed over long periods.
residual stand	The number of trees left standing after logging.
riparian	Land bordering water.
rotation	Length of time needed for a stand of commercial timber trees to reach a suitable felling size.
sal	Shorea Robusta
sawlogs	Logs which are to be sawn lengthwise for the manufacture of sawnwood.
secondary forest	Forest containing fast-growing trees which flourish after disturbance.
shifting cultivation	System of agriculture that depends on clearing and burning an area of forest for farming over a temporary period.
silviculture	The cultivation and management of forests and woodland.
slash and bum	See SHIFTING CULTIVATION.
storey	Layer or stratum of a forest.
swamp forests	Forests that exist in areas with water-saturated soils.
swidden agriculture	Shifting agriculture carried out in the traditional, sustainable way, i.e. with periods of fallow to restore soil fertility.
taungya	A forest management system combining swidden cultivation with tree plantation.
ungulate	A hooped mammal.
usufruct	The legal right to use and enjoy the benefits and profits of something belonging to another.
virgin forest	See PRISTINE FOREST.
woodland	Woody vegetation formations with scattered trees, generally with less than 40% crown cover. Also known as open forests.
Zamindar	Revenue collector.

