ASIA FOREST NETWORK

The Asia Sustainable Forest Management Network supports the role of communities in protection and sustainable use of the region's natural forests. The Network comprises a small, select coalition of Asian planners, foresters, and scientists from government agencies, universities, and non-government organizations, many of whom have collaborated for years. The solidarity of the Network members is based on a common commitment to exploring alternative management strategies for Asia’s disturbed natural forest lands. The emphasis of the Network's research includes the ecology of natural regeneration, the economics of non-timber forest product systems, and the community organizations and institutional arrangements which support participatory management. The lessons stemming from the research aim to inform field implementation procedures, reorient training, and guide policy reform.

For more information about the Network and its publications, please contact Dr. Mark Poffenberger at the following address:

Center for Southeast Asia Studies
University of California
2223 Fulton Street #617
Berkeley, CA 94720 USA
Tel: 510-642-3609
Fax: 510-643-7062
©1996

Front Cover Photograph: Santhal house paintings, like this swan from Kudada, South Bihar, exhibit both fine technique and an enduring sensitivity and appreciation of nature (Poffenberger).

Back Cover Photograph: Tribal homes are often attractively painted with natural colors (Poffenberger).

GRASSROOTS FOREST PROTECTION:

EASTERN INDIAN EXPERIENCES
CONTENTS

Preface
Acknowledgments
PART 1 INTRODUCTION

Community Forest Protection
Joint Forest Management
Ecological Impact of Forest Protection Activities

PART 2 DEVOLVING FOREST CONTROL IN EASTERN INDIA

Community Forest Protection in Bihar

The Case of the Kudada Hills: Emerging FPC Apex
Organizations
Summary

The Evolution of Joint Forest Management in West Bengal

The Case of Chandri Beat: Forest Patch and Hamlet Clusters
Summary

Community Forest Management in Orissa

Forest Protection in Sarangi Range

The Case of Kaimati: A Small Village Forest

The Case of Rupabalia: A Medium Forest

The Case of Kapilas: A Large Forest

Summary

PART 3 EMERGING LEARNING

Lessons for Communities

Lessons for JFM Policies and Programs

Lessons for Forest Departments

Lessons for Non-Government Organizations

Lessons for Donor Agencies

Lessons for Others

NOTES

FIGURES, TABLES, AND BOXES

Figures

1. Estimated distribution of India's forest protection committees

2. Map of eastern India study areas

3. Map of Kudada hill forests and neighboring villages

4. Map of Chandri beat

5. Map of Sarangi range

6. Map of Kaimati village and forest patches

7. Map of Rupabalia Forest and neighboring communities

8. Map of Kapilas Forest with Sorsiapada and Bania enclave villages

9. Joint forest management transition processes

Tables

1. Percentage of total state forest under community management for districts in southwest Bengal

2. Percentage of Orissa forest under community management
Preface

In recent years news of community forest protection in India has attracted worldwide attention. Yet, due to the paucity of field data, the significance of India’s experiences is poorly understood. Many outsiders believe village-based forest protection is driven by conventional donor projects, as were the larger national social forestry schemes of the 1970s and 1980s. Others have assumed that community forestry is limited to a handful of “show case” examples, heavily subsidized, both professionally and financially, by donors and non-government organizations (NGOs). Finally, some feel community forestry is simply a new development fad, likely to be replaced in a few years by the next trend.

To better understand India’s changing public lands policies and field developments, the Asia Forest Network has worked with many state forest departments, researchers, and NGOs to document the evolution of community forest protection groups. Through oral histories and field investigations, India’s research team is reconstructing the emergence and spread of eastern India’s expanding community forest protection movement. In the following pages, stories of villagers from Orissa, West Bengal, and Bihar are recounted as they take over management responsibilities for hundreds of thousands of hectares of public land.

The case studies document patterns of forest protection committee formation, spread, and consolidation. While management strategies and issues vary, the studies show a large and growing number of communities are attempting to take control of degrading public forestlands in an effort to conserve resources and ensure ecological functions. These reports also indicate that community forest protection is an expanding rural social movement in eastern India. While informal management groups adopt a myriad of institutional configurations, they are consistently rooted in concerns over environmental degradation. This grassroots movement appears to have antecedents in the late nineteenth century, with its most recent manifestation originating in the 1970s. Since the late 1980s, forest departments have begun to recognize the rights and responsibilities of local forest managers under the banner of joint forest management, enacting supportive national and state resolutions.

The issuance of supportive policies by central and state governments in the early 1990s seems to have accelerated the spread of community forest protection in the three Indian states studied. Community forest protection in the three Indian states studied. Community initiatives are also reported to be gaining ground in Gujarat, Rajasthan, Andra Pradesh, Madhya Pradesh, and Tripura. While government and NGO support is and will likely be a facilitator, this report suggest that grassroots forest protection reflects a historic shift away from bureaucratic resource management to a gradual devolution of rights back to communities, a process that will likely persist well into the twenty-first century. This report concludes by drawing lessons from the state programs and case histories regarding the challenges and opportunities faced by community institutions, forest departments, donors, NGOs, and other nations as they begin to transfer power over public lands to establish collaborative systems of management.

Mark Poffenberger

Acknowledgements
The research team would like to begin by expressing its gratitude to the communities that participated in working to reconstruct the history of forest protection in their neighborhoods. Many of our village colleagues spent hours with team members identifying critical events, motives, and strategies that occurred as they recounted the unfolding transition of forest use and management. Without their collaboration, the documentation of their stories would not have been possible. We admire their efforts and are most grateful for their willingness to share their learning with us and our readers.

We are also very thankful for the help the research team received from many foresters and their institutions. Forestry field staff provided extensive help, from guards to divisional forest officers. We are particularly grateful to Mr. B. Reddy, Mr. A. Jha, Mr. S. K. Chadha, Mr. S.K. Pande, and their field staff. From the outset the project received the support and encouragement of the Inspector General of Forests, Mr. M.F. Ahmed, and of the Secretaries at the Ministry of Environment and Forests. We also give our sincere gratitude to the Principal Chief Conservators of the West Bengal, Orissa, and Bihar Forest Departments, and to their senior staff.

This study was made possible through the cooperative efforts of many Indian non-government organizations and the Asia Forest Network. The Society for the Promotion of Wastelands Development, Vasundara, the Institute for Biosocial Research and Development, Cenderet-Xavier Institute, PIPAR, the Indian Institute of Forest Managements, and the Worldwide Fund for Nature-India all contributed to this effort. Particular thanks are due to Mr. G. Raju, Dr. Kamla Chowdhury, Mr. Syed Rizvi, Mr. Samar Singh, Mr. Samarendra Satapathy, and Mr. Michael Bogaert. We are grateful to Cynthia Josayma, Tom Poffenberger, Nancy Podger, and Angana Chatterji for helpful suggestions in developing the monograph.

Finally, the research team would like to thank the donor agencies that supported this research and this publication. USAID's Asia Bureau, the NRMP-II Project, and the USDA Forest Service-International Forestry Office provided critical support for the Asia Forest Network's participation in the research. The Wallace Global Funds has been instrumental in sustaining the Indian field research throughout the project to spread learning emerging in rural communities. We are most grateful for the trust and support we have received from Bob Wallace, Charlotte Fox, Molly Kux, George Taylor, Mike Benge, Alex Moad, and many others.

Thanks are also due to the Asia Forest Network's host institutions, the East-West Center, and the Center for Southeast Asia Studies at the University of California at Berkeley. Finally, we would like to thank those who have helped bring this publication to press, including Helen Takeuchi's excellent editing of the text and Mark Ontiveros's fine maps.

Go back the Table of Contents
PART 1
INTRODUCTION

India offers excellent opportunities to learn about past and future methods of forest management. Under British colonial rule, the nation was one of the world's first countries to establish a national forest service in the mid-nineteenth century. The United States did not do so until nearly fifty years later. With more than 150,000 foresters, India has one of the largest professional forest services in the world.

The history of India's forest and its management reflects the experiences of many developing nations. Eighty percent of the Indian subcontinent was estimated to possess healthy forest cover as recently as 1,000 years ago. The nationalization and demarcation of India's forestlands began in the 1860s. Dietrich Brandeis, the first Inspector General of Forests, wanted to establish sustainable management systems for local use and commercial exploitation. He was convinced that community resource use systems should be fundamental elements of national forestry policy and operations; however, his position was overruled by Baden Powell. Over the next century forest nationalization continued, with frequent conflicts erupting over forest access among rural communities, private sector interests, and the state. Commercial use increasingly dominated forestry objectives and practices. Expanding timber felling and growing pressures from an increasing rural easing rural population, from the 1870s to the 1970s, degraded India's once-rich forests. By 1980, one-half of the nation's land area was declared unproductive.

Today, while nearly one-quarter of India's land area is designated public forest, only 8 percent sustains good forest vegetation. With the nation's population nearing 1 billion and projected to grow to 1.5 billion before stabilizing in 2050, both economic and demographic pressures on forest resources are intense. Fifty-four million tribal people mainly live in forest areas, and an additional 250 to 300 million rural inhabitants have significant biomass dependencies on forest resources. The continued degradation of forest environments is accelerating the displacement of upstream communities, as well as exacerbating water and hydroelectric supplies to downstream urban and industrial centers. The stability of India's forests is critically important for ensuring environmental services including forest products flows, hydrological functions, biodiversity conservation, and microclimatic stability.

Community Forest Protection

In India, as in most nations, there is a compelling need to intensify resource management with stronger use controls and incentives for sustainable and productive use of the resource. In recent years Indians have taken a proactive role in exploring strategies to stabilize natural forests through empowering communities as "keepers" of these valuable ecosystems. The past decades have seen the emergence of a broad-based grassroots movement to restore denuded forests. An estimated 12,000 to 15,000 villages, primarily in eastern India, have mobilized to protect one to two million hectares of regenerating forest (see Figure 1). The evolution of this approach to resource management draws on both ancient traditions and emerging strategies. It is rooted in the economic and environmental concerns, and initiatives of India's villagers. While foresters, NGOs, and researchers have assisted in supporting and illuminating this grassroots environmental movement, the restoration of degraded natural forests in central India must be primarily credited to the efforts of the country's forest protection committees (FPCs). In thousands of villages, men and women are guarding their newly regenerating forests, often without government objects or the advice of outside experts. Villagers have done so to ensure that they and their descendants will have the forest, water, and soil resources critical for their survival.

Figure 1. Estimated distribution of India's forest protection committees
Community forest protection is fundamentally a decentralized, grassroots movement initiated largely by small villages to protect local natural forests from further degradation. Protection activities are usually coordinated through traditional or informal cultural institutions (see Box 1). Most community forest protection groups are comprised of one or two hamlets. Since many of the groups are informal and scattered throughout some of the nation's more remote forest tracts, reliable survey data are still limited regarding precise numbers and distribution. Most of India's FPCs are located in India's central tribal belt where forest areas, poverty, and tribal populations dominate. The core area of the community forest protection movement extends from south Bihar through West Bengal, Orissa, and northern Andhra Pradesh where an estimated 10,000 groups are operating. Recent surveys in Madhya Pradesh, however, indicate that several thousand informal groups may be functioning. Another 600 groups are now operating in south Rajasthan and east Gujarat. Over 300 FPCs are reported to be operating in the hill and forest tracts of Andra Pradesh.

Box 1. Characteristics of Indigenous Forest Protection Groups
The following point suggest conditions that have catalyzed India's informal forest protection grassroots movement:

**Forest/poverty/tribal interface**

Forest protection activities appear most common in areas that are characterized by significant concentrations of forest, poverty, and high tribal populations. Cultural and economic ties to the forest often lead tribals to play a leadership role in establishing controls over degrading forests, although low-caste and low-income groups are also active.

**Forest degradation**

In central India, forests that reach a critical stage of degradation are often targeted for protection by communities. There may be a degradation or scarcity threshold at which management actions are likely to occur. There is also recognition that devegetation and topsoil loss will undermine the forest's capacity for recovery.

**Local environmental concerns**

Forest protection groups are frequently formed with little or no outside intervention, but originate from local concerns over resource depletion and environmental changes. Changing microclimate, falling groundwater levels, and disappearing biodiversity are frequently cited by villagers as critical problems. Deteriorating linkages between agriculture and forest ecosystems are also widely acknowledged. Perceived threats from outside forest users are also catalysts for social action. Growing values placed on sustaining or reestablishing forests drive communities to invest labor voluntarily to protect forests.

**Local leadership**

Local leaders, including traditional elders, teachers, village intellectuals, as well as youth club members, provide guidance to villagers in reaching decisions, formulating strategies, and coordinating forest protection with other communities and the forest department. Local leaders often have greater credibility with the community than political representatives from neighboring hamlets that fall within the same administrative unit, likely due to their greater immediate social accountability.

**Cohesive communities**

Forest protection is often located in small residential clusters frequently comprised of a single caste or tribe of twenty to fifty households. These groups, because they exist below the lowest level of local governance (pachayat), have less difficulties with divisive political factions and appear better able to reach agreements regarding management. Multihamlet forest organizations appear less stable and tend to divide into single hamlet management units over time.

**Internal process**

Community forest protection emerges as a process of social change and adaptation to growing environmental problems. The management transition responds to local resources, needs, and capacities for implementation. It may be influenced, and the process accelerated, by external policies and projects.

**Presence of supportive actors**

In many cases, villagers have been encouraged by small NGOs and forestry field staff in their decision to begin forest protection activities. Such actors can be instrumental as an initial catalyst, as well as accelerating the emergence of new groups and their consolidation.

**Ecological resilience**

Both community and joint forest management appear to work well where natural forests have retained their ecological resilience, allowing a rapid and visible biological regeneration and a corresponding increase in the flow of non-timer forest products.
In northeast India, much of the forestland was never taken over by state forest departments but was retained under community management. Tripura has been the only northeastern state to pass a joint forest management resolution. Since passage in 1992, the Tripura Forest Department has recognized nearly 2,500 communities as forest managers, formally acknowledging the control of local villages over 30 percent of the state’s total forest area. (FN 1)

Joint Forest Management

Joint forest management (JFM) policies and programs are designed by state forest departments to encourage communities to protect and manage the public forest domain. JFM programs were established in the early 1990s, after the central government and eighteen Indian states passed enabling legislation, which endorsed the protection responsibilities and usufruct rights of villages over small tracts of public forests. The programs attempt to bring government support to these small, informal community organizations by providing them with greater legitimacy. Forest department strategies include supportive actions such as formulating new policies, inventorying and registering FPCs, demarcating boundaries, assisting village groups to frame micromanagement plans, and running extension programs. The shift from custodial and commercial timber management systems to a participatory community orientation presents challenges for Indian forest departments. Some multiple needs requiring attention in developing supportive strategies are described in Box 2.

Box 2 Needs of JFM Support Programs

Policy

Rigid policies intended to support JFM may lack the flexibility to respond to diverse, localized efforts of rural Indian communities. There is a need to review and revise state JFM resolutions to better respond to local strategies of forest protection.

Forest department capacity building

Forestry field staff require training and incentives to conduct specific tasks related to JFM. While some training programs are under way, there has been no assessment regarding "best practices" for training staff at different levels. Guidelines for effective training strategies need to be developed and communicated to state forest departments and NGO training centers.

Inventories and mapping of FPCs

Thousands of FPCs are already operating in many parts of India without legal sanction. Mapping and inventorying FPCs, especially in regions where they are known to operate, are essential for long-term planning and to incorporate them within the formal management framework.

Education and extension programs

The spread of community forest protection has been accelerated by environmental education campaigns conducted by some forest department staff and NGOs. More systematic approaches to informing rural communities of new participatory forest management policies need to be developed and implemented, especially in high priority forest areas with large residential populations.

Registration and boundary demarcation

FPCs, which have functioned for a year or more, often request they be registered and their boundaries demarcated. State forest departments need to emphasize systematic registration programs. Procedures for boundary demarcation need to be defined and field staff trained in their use.

Microplanning
While community forest protection groups exist in many forms, some are taking on new organizational features to better perform forest management functions or in response to government guidelines. Under government JFM support programs, community management organizations are referred to as forest protection committees (FPCs). In this report, both informal indigenous forest protection groups, as well as those organized or registered by forestry agencies, will be generally referred to as FPCs.

It is important to distinguish the government's recent JFM support programs from the social forestry projects of the 1970s and 1980s. Earlier social forestry projects focused on establishing monoculture plantations of exotic, fast-growing species on agricultural and community land or farmlands. By the late 1980s, $400 million was invested in village and farm forestry activities. This effort did little to address problems in India's natural forests, which represent 23 percent of the nation's land area. Under the Bihar Social Forestry Program, for example, the forest department was establishing 5,000 hectares of woodlots per year (FN 2). By contrast, by 1994, 1,242 forest protection groups were inventoried protecting more than 600,000 hectares of state forests (FN 3). Since many more village groups remain unregistered, the total number of FPCs is likely to range from two to three thousand. In one survey in Hazaribagh district alone, thirty-two communities were involved in forest protection, representing 15 percent of all villages in the area (FN 4). It is instructive to analyze why government social forestry programs experienced problems interfacing effectively with spontaneous community initiatives. For one, the externally funded social forestry program was primarily based on models developed during the 1970s for the delivery of financial and technical assistance. This required forest departments to unilaterally determine what would be spent, where, how, and when, with a focus on common and private lands. While communities in some cases may have some influence in selecting species planted, the authority for the projects largely rests with the agency. By contrast, local communities were attempting to gain the authority to facilitate the regeneration of forests by building the institutional and management capacity to establish access controls.

Since community forest management groups form around local environmental concerns and are largely based in informal institutions, they cannot be directed through conventional development modalities characterized by earlier social forestry projects. As a social change process, however, it may be facilitated, supported, and guided. Indeed, because it has broad implications regarding the future of India's public domain, it must be understood, incorporated, and supported within national resource management plans and policies.

### Ecological Impact of Forest Protection Activities

Since community forest protection has grown primarily through the highly decentralized actions of small communities, and has only been recently recognized and supported as a national program, systematic studies of the ecological and economic effects of forest protection are limited. Nonetheless, available data from a variety of Indian forest ecosystems indicate that the movement has had considerable impact on both local environments and income flows.

- In southwest Bengal, 61 percent (271,000 hectares) of all state forestland is currently under community protection. A time series of satellite images from southwest Bengal indicates a 14 percent increase in closed canopy forest (above 40 percent) between 1988 and 1991 (FN 5). Much of the once-degraded sal (Shorea robusta) forest is now regenerating, with the average age of most of the forest ranging from six to nine years old. One study of sample plots indicated that the number of trees per hectare
above 10 centimeters GBH (girth at breast height) increased from 0 to 765 after five years of protection and to 961 after ten years, while basal area increased from 0 to 7.4 m²/ha after five years to 16.5 m² after ten years with an annual growth rate of 1.6 m² (FN 6). The number of edible tuber climbers, an important food source, nearly doubled (to 235 per hectare) during the first five years of protection. The restoration of the natural sal forest ecosystems in southwest Bengal is visibly identifiable on remotely sensed data for 1988 and 1991. (FN 7).

- One study of twelve FPCs from West Bengal identified 214 wild plant species, of which 72 percent were used by local communities for fuel, fodder, medicine, cottage industry, construction, and rituals.

- Income generation from non-timber forest products averaged $87 per household annually, or about 22 percent of total yearly family income (FN 8). A separate assessment from West Bengal reported similar findings with non-timber forest income ranging from $85 to $115 annually per household after three to four years of protection (FN 9).

- In the Shivilik hills, which comprise the foothills of the Himalayas, joint forest management activities have resulted in grazing and cutting bans. Studies of sample plots under varying periods of community protection found the number of trees per hectare increased from 91 to 472 after ten years of protection. Valuable local species, including Acacia catechu, A. modesta, and Dalbergia sissoo, responded especially well to protection (FN 10). Grass productivity also grew from 0.67 Mt (million ton) per year to 2.8 Mt after three years of protection; however, grass declined to 1.63 Mt after six years because of growing forest cover. (FN 11)

- Diversity of tree species also improves under community protection according to recent studies. In the Western Ghats the number of different tree species more than 1.5 meters high increased from zero in unprotected control plots to 26 after fourteen years of protection (FN 12).

Ecological restoration offers opportunities to restore the productivity and environmental functions of millions of hectares of degraded forestlands throughout India. In ecosystems where topsoils and root structures have not been severely degraded, natural regeneration can be both rapid and cost effective. The opportunity to reestablish a healthy forest environment is increasingly attractive to communities experiencing microclimatic changes and resource scarcities. In the past, natural regeneration was not emphasized in national afforestation strategies. Given the vast areas of degraded forest, policies and programs should emphasize facilitating ecological restoration through community-imposed access controls. Greater scientific inquiry regarding manipulation techniques to accelerate regeneration is also urgently required. The following case studies dramatically demonstrate how India's forests can heal themselves, when communities release their powers of ecological resilience.
PART 2

DEVOLVING FOREST CONTROL IN EASTERN INDIA

While forest department officers have played an influential role in devolving forest protection responsibilities to community groups, the extraordinary increase in the number of FPCs indicates a receptive social climate was already present long before initiation of formal JFM programs. Land reform programs of the 1970s, as well as political organizers, gave rural communities a new perception of their resource rights in a changing policy environment. This, combined with the accelerating degradation of the forest environment and consequent product scarcities, generated increasing concern and discussion in rural southwest Bengal. One outcome was the growing attempts by low socioeconomic status groups to gain greater control over local forests. As some villages demonstrated that they could effectively protect neighboring forests, other communities followed, generating an accelerating spread of community-controlled forests throughout the region. The cases in this report not only illustrate the diffusion of local management innovations, but also the need for effective working relationships between government officials and among local communities.

Despite the growing body of information on India's grassroots forest protection movement, much of this data is anecdotal and scattered. This report provides a detailed documentation of the history of forest protection in its center of origin. The in-depth studies describe the spread of JFM in three key eastern Indian states, illustrating changes in forest use practices among local communities in recent decades (see Figure 2). The cases from Orissa, West Bengal, and Bihar examine clusters of hamlets surrounding forest patches or large forest tracts. The history of use, conflict, and compromise illustrates how community concerns, local politics, and government policies and programs combine to create an environment where forest resource use begins to stabilize.

Figure 2. Map of eastern India study areas

Kudada, in south Bihar, provides an excellent example of cooperation among thirty-two forest villages living on the periphery of the forest. Over the past twenty years, without the assistance of the forest department or other outside organizations, community leaders have organized a coordinating body that oversees protection. The leaders are now exploring ways to bring the ecosystem into productive use.

In West Bengal, Chandri forest illustrates the evolution of forest closure systems initiated by a single village -- a system now spreading to many local tribal communities. The struggle to include settlements of "criminal tribes" in protection continues, while alternatives to commercial fuelwood collection are found to supplement
their income.

Case studies from Orissa are drawn from Sarangi range. Forest protection around small, medium, and large forest patches are examined. Kaimati villagers have managed a small hill forest for nearly twenty-five years for timber and non-timber products, revenues from which fund a variety of community projects. Around Rupabalia hill, over the past two decades ten villagers have gradually joined in a cooperative effort to restore the once-degraded forest. Finally, in the large Kapilas forest, enclave villages successfully stemmed illegal logging operations to stabilize forest use along a road that passes through the reserve.

Each case illuminates the struggles thousands of villages in India are experiencing, both with their own membership and with their neighbors, as they attempt to establish sustainable forest management systems for resources critical to their survival. The social and political complexity reflected in each case exemplifies the difficult environments in which management transitions are unfolding. Consequently, the findings presented here are preliminary, as the transitions in forest management are still under way. The cases may be read selectively, illuminating broader trends discussed in the introduction and emerging management lessons presented in the conclusion. The lessons in social process emerging from the cases may have relevance in many parts of India and beyond.

Community Forest Protection in Bihar

In the tribal districts of south Bihar, communities have become increasingly engaged in forest protection. Field visits indicate grassroots community forest protection activities are widespread. Oral histories reveal that many villages had initiated forest protection groups in the 1970s in response to a growing scarcity of forest products and threats of exploitation by outside groups. The widening influence of the tribal (Jharkhand) political movement also provided leadership and encouragement to these efforts to organize around environmental issues. Generally, these community groups received little support from the state forest department. Studies from the early 1990s indicated that in many areas villagers were distrustful of the forest department, and in some cases, had banished departmental field staff from their areas upon threat of physical harm. Village committees have attempted to restrict forest department felling operations in their area. In recent years in Hazaribagh West Division in southeast Bihar, of sixty-nine parcels slated for logging, only seven could be harvested since tribal communities burned or threatened to burn logging trucks if they entered the area (FN 13). As in other parts of eastern India, the degraded sal forests regenerated rapidly through the growth of coppice shoots and associated species.

At the same time, the Bihar Forest Department has been actively engaged through the 1980s in extending a social forestry program with bilateral funding from the Swedish International Development Authority. Like similar programs in other states, the establishment of nurseries and fast-growing tree plantations was encouraged under the initiative. While strategies to form village forest committees (VFCs) and to develop joint management plans for community woodlots were components of the program, these activities remained separate and isolated from the indigenous natural forest protection initiatives, which were expanding throughout the southern part of the state.

Despite their efforts, many villages faced serious difficulties sustaining their new management systems (FN 14). Frequently, through either internal or external pressures, protection systems broke down and the forests were felled. In one district with sixty-five FPCs, 70 percent had collapsed. In some areas, timber merchants, in collusion with corrupt forest department field staff, attempted to undermine community protection efforts to gain access to the timber (FN 15). In other areas, when the value of the forest reached a certain level, often after three to four years of protection, internal community pressures to exploit the resource overcame commitments to regulate its use.

Some communities decided to exploit their regenerating forests, reflecting severe economic conditions where fuelwood sales were essential for survival. In other cases, neighboring villages initiated mass looting of a community protected forest. Yet, despite their collapse, often within a year or two of the felling, many villages attempted to reestablish their forest management systems. This experience suggests that indigenous community forest management groups in south Bihar are fragile and vulnerable to collapse, and may benefit from outside support to enhance their legitimacy and provide economic assistance during severe hardship.

In recent years, some foresters in the Bihar Forest Department have begun seeking new ways to encourage village forest protection groups. In 1990, the state passed a resolution authorizing the organization of village forest management and protection societies. Since 1993, the forest department has taken more active measures to implement the government order. The guidelines for community forest protection are very
specific regarding organizational structure and function, with limited flexibility to incorporate the diverse range of local organizations being formed informally to stabilize forest use. For example, Resolution No. 5244 of 11 August 1990 states that:

Members of the Managing Committee will include the mukhya, teacher, sarpanch, traditional pradhan, voluntary agencies, and representatives of such people who are headloaders or otherwise dependent on the forests... Membership should be a minimum of 15 people and a maximum of 18 and should have a minimum of 3 and a maximum of 5 women (FN 16).

In many cases, since grassroots FPCs operate at the hamlet level, it is impractical to involve the panchayat headman (sarpanch) who may politicize the management group. Further, there is no need to limit women's participation on the committee. Many indigenous FPCs have not even formed formal managing committees for decision making, but rather do so through the entire community.

The Bihar resolution also requires income from forest produce to be sold by the managing committee at market prices to the community. This can be unfair to the lowest income families in the community who are more forest dependent and contribute to protection, yet have limited cash available for purchasing forest commodities. Ultimately, the resolution's rigidity and lack of fit with local management systems undermine the contribution of this legitimizing order. Indigenous groups may face a dilemma in that they must either (1) continue to function in existing ways and thereby fail to gain government recognition or (2) change and conform to the resolution guidelines, which may undermine the group's effectiveness and even lead to the collapse of the community's informal forest protection organization.

When interviewed, some villagers in Bihar have stressed the need to be given unequivocal rights and benefits to the forests they protect. They requested the right to protect the forests through their own customary management systems, including the authority to employ local people as forest guards who will be accountable to the community. They further suggested that communities without forests should have depots, which can supply them with forest products (FN 17).

While many management issues confront joint forest management in Bihar, as in other states, it is important to note the rapid spread of local forest protection groups in the southern part of the state. The case of the Kudada hills dramatically illustrates the types of local initiatives communities have taken over the past twenty years to restore degraded forestlands, and how successfully a few villages led other hamlets to join until entire hill tracts fell under community control. Kudada is also instructive in suggesting the directions village institutions may evolve, creating a multicommunity coordinating body to deal with powerful outside interests.

The Case of the Kudada Hills: Emerging FPC Apex Organizations,

In the late 1960s, the once-forested hills of Kudada, south Bihar, were covered with stones and scrub. During the monsoon, new shoots would sprout, but villagers would hack them for sale as firewood as soon as they emerged. In the early 1970s, the wood markets of Jamshedpur, 10 km to the north, would absorb any fuel the communities could find for Rs 2 to Rs 3 per 30 kg headload. Most villagers were actively involved in commercial fuelwood cutting. The main forest reserve, a 2,000-hectare hill surrounded by thirty-two villages, was badly degraded (see Figure 3). Any coppice or seedling growth in the lower slope sal forests or mixed forests of the upper slopes and ridge tops was quickly suppressed through hacking and grazing. Villagers became increasingly concerned over environmental changes and the dwindling supply of important forest products.

Figure 3. Map of Kudada hill forests and neighboring villages
This case examines the process of forest management change in four stages: (1) the awareness among a few village leaders, (2) the mobilization of community opinion to take forest management protection action, (3) the process of FPC formation spreading to other communities in the area, and finally (4) the emergence of an apex coordinating organization.

Stage 1 -- Early Environmental Concerns As early as 1970, some villagers began voicing concerns over the growing degradation of local forests. The nature of their anxieties were both economic and environmental. Tribal communities, heavily dependent on forest resources for housing, agricultural tools, medicines, food, fuel, and fodder, recognized that depletion of the resources threatened their own livelihoods. Ecological changes also implied an altered microclimate, depleted water resources, and a generally less hospitable living environment. Village leaders came from the tribal elders and from the younger, socially active community members. Often a series of meetings were held in one or two local hamlets to discuss the problem and possible courses of action. Over several years, a consensus emerged supporting closure of forest hillsides to allow regeneration.

Suren Singh Sardar, an 80-year-old tribal, noted that some initial attempts of the Balidih village, one of the first to discuss forest protection, began in the early 1960s, but eventually collapsed. By 1968, the forest was in extremely bad condition. Most standing trees had been felled and roots extracted for fuelwood, exposing a stony ground cover. In 1972, a meeting was called involving three neighboring hamlets (tolas) (Dungi, Bhumij, and Mazhi). According to those present:

"In the meeting we discussed our needs for many products including timber for ploughs, which we could get without cost. If we have to purchase these things from the market, it is very difficult for poor villagers. Besides ploughs, we used to get fuelwood, wood for house-building, for bullock carts, different fruits and leaves for food.... We also need sal leaves from these sacred trees for ritual purposes; if the forest is denuded, how can we live?"

While the economic importance of the forest to tribal villages is compelling and is an often-cited reason for protection, local people often assess environmental impact in other ways. In the nearby cluster of villages to the north, villagers were also concerned about forest destruction by the late 1960s. Nunaram Mardi, of Bhitar Dari village, was one of the early leaders in his area of the forest protection movement. Mardi is a traditional medicine practitioner, writer, and poet who spends time collecting herbs in the forest and walking to distant villages to provide them with his services. He explains why he began encouraging his neighbors to protect the forest:

One day my friends and I were walking from Marang Buru to Dulfhi hill. On the way we saw a mother monkey running with her child. She wanted to sit on a stone, but the stone was too hot. She was forced to keep running. We saw a dove making her nest on a bush. We realized that
the monkey was running to protect her child from the hot sun. But there was no tree to give her shelter or provide a place for the dove to build a nest. So we came back to our village and called a meeting. We described to our villagers what we had seen on our walk. In that meeting we decided to protect the forest for our own sake, as well as that of the wild animals.

<table>
<thead>
<tr>
<th>Box 3: Kudada Hills Time Line</th>
</tr>
</thead>
<tbody>
<tr>
<td>1960s</td>
</tr>
<tr>
<td>1969</td>
</tr>
<tr>
<td>1970</td>
</tr>
<tr>
<td>1971</td>
</tr>
<tr>
<td>1974</td>
</tr>
<tr>
<td>1975</td>
</tr>
<tr>
<td>1977-79</td>
</tr>
<tr>
<td>1979</td>
</tr>
<tr>
<td>1980-90</td>
</tr>
<tr>
<td>1984</td>
</tr>
<tr>
<td>1986</td>
</tr>
<tr>
<td>1987-95</td>
</tr>
</tbody>
</table>

By mid-1970, a second cluster of communities north of the hills began discussing the need for forest protection (see Box 3). They had met often with villagers from Bhitar Dari to the south and knew they had made progress in controlling cutting in their area. One Turamdih elder who helped organize his community explained he knew that if the forest disappears:

> Our survival will be endangered. The hillock, which is full of stone, will heat-up and as a result the temperature will be higher, which will be intolerable. A forest without trees is as good as a desert. When there is no forest, the cattle will starve. The lack of herbal plants will hamper the medical facilities of our tribals. These forest plants save the lives of our cattle and people. The forest's existence is our existence.

Another villager simply noted that "We are *adivasi* (tribals). We are totally dependent on the forest. Destroying the forest means the destruction of *adivasi* culture; that's why we protect the forest."

Community elders also played a supportive role in the formation of FPCs. One older tribal noted that village elders encouraged protection activities by saying, "We may not live long; the forest is yours so you have to protect. Moreover, the trees are growing up now and at this stage it needs protection; otherwise the forest will be destroyed again."

*Stage 2 - The Process of Community Organizing and Establishing Forest Protection Systems.* Regenerating the natural forest required village leaders to mobilize enough support within their own and neighboring communities to effectively close the area to use. Forest closure presented considerable hardships for economically marginal people who found it difficult to accept.
The process of organizing community forest protection was not without conflict. In 1976, in the initiating cluster of communities in Bhitar Dari, forty women from distant Tirildih village entered the forest near Bhitar Dari. Local villagers confiscated their fuelwood headloads. Village forest protection members from Turamdih, Hakegora, Bisrampur, Bahar Dari, and Bhitar Dari went to the offenders' village of Tirildih to stress the importance of forest protection and resolve the conflict that had led to the mass theft. The Tirildih people felt isolated against their neighbors' united position. A second conflict with a large group of women headloaders from a neighboring village occurred in 1978. At that time, forty saplings were cut down. A meeting was called with political representatives who were invited to help mediate, and the disagreement was resolved.

Throughout the history of Kudada's forest protection movement, the communities received little support from the Bihar Forest Department in organizing or resolving conflicts. Dispute resolution was done through intervillage meetings. Both informal leaders, as well as local panchayat representatives, played a role in mediating conflicts. The growing participation and formation of forest protection groups over time gradually established a consensus that the hill forests were closed to cutting. Many of the communities that initially attempted to exploit the newly protected forests later formed their own management groups.

Stage 3 - The Spread of Forest Protection Groups For forest protection activities to be effective, village leaders reported that they needed to gain support not only from their own community, but also from neighboring communities. Since the small hillside forests were effectively open access resources, villagers from surrounding communities shared them. Without an agreement from their neighbors, any unilateral attempts to impose access controls and a moratorium on cutting and grazing would have been futile. Consequently, village leaders visited neighboring communities during the early stages of their organization and discussed the benefits of forest protection.

Devandra Naik, Nunaram Murmu, and other Ho, Santhal, and Kol tribal people have restored Kudada forest. Villagers from Talsa and Turamdih began protecting the forests in the northeastern side of Kudada hill track in 1978. At that time the hill was covered with grass and stone; today it is a multi storied forest.

Foresters, university researchers, and NGO staff work collaboratively with community members to document the history of forest protection. Sketch maps proved effective in identifying spatial interactions, use domains, and areas of conflict.
A forest protection committee leader neighboring Shimli village proudly displays the certificate of registration that provides his village with rights and responsibilities for 50 hectares of state forest land.

Southeast of Kudada hill, Bhitar Dari village leaders brought the five neighboring hamlets together to discuss forest protection needs, before a consensus was reached among the communities to close access to Dulthi and Marang Butu hills. Bhitar Dari leaders note that the success of their efforts over the past twenty years was based on the joint commitment to forest protection.

North of Kudada hill, however, the spread of FPCs was gradual. Initially, Nandup village met with neighboring communities in 1974, when a Nandup tribal leader initiated the process. The other communities were not yet willing to initiate forest closure, but agreed that Nandup should be allowed to protect a small forested hill on their border. Three years later, after being visited by three village leaders from neighboring Nandup and Banduhuran (see Figure 3), Talsa, Nutandih, and Turamdih villages decided to protect the forest along the northern slopes of Kudada hill.

Still, some villages failed to cooperate: “Our village is located near the forest and the township. There is a good market for fuelwood, and the villagers are very poor. They were used to entering the forest to cut trees, so we faced a lot of troubles at the time. So we went to every household in the offending communities and motivated them by showing the example of Talsa committee, which was running very well under the leadership of Bhagmat Tudu.” By 1995, fuelwood prices in Jamshedpur market had reached an attractive high of Rs 40 per headload, but virtually no household in the area was engaged in the activity since the closure of the forest.

Stage 4 -- The Emergence of an Apex Coordinating Committee In 1979, a meeting of all thirty-two villages in the area was called in Kudada to reach an agreement regarding the protection of the hill forests. The gathering was a turning point. The ten communities already engaged in forest protection convinced the other twenty-two to initiate active protection activities. An agreement was also reached to form an Apex Committee called the Adargha Gram Vikash Samithi. Besides encouragement from hamlet leaders, the support of Panchayat Pradhan (headman) K. K. Murmu was instrumental in reaching the agreement.

The Apex Committee is comprised of representatives from the thirty-two communities participating in forest protection. Now that local community support for forest protection is strong, the committee feels its primary goal is to protect the local forests from outside threats. A number of private firms are attempting to get mining rights to the hill tracks from the government. Indeed, experience with the Uranium Company of India, Ltd. (UCIL), dramatically demonstrated the dangers of outside exploitation. In 1984, UCIL succeeded in securing rights to the Nandup hill, forcing a resettlement of the village that resulted in deforestation of the hill.

In January 1995, at a meeting of the Apex Committee, the leadership noted that the biggest threat facing the thirty-two villages of Kudada was of a political nature. Entrepreneurs from Jamshedpur continue to seek ways to exploit the forests and mineral resources of the area. Matteson Sardar, the committee chairperson, concludes, “We need a strong committee; we need to register as a formal entity and find ways to generate income for our communities.... We are concerned the forest department will attempt to fell our forests, but with our committee we may be able to resist these threats.”

While the committee currently rejects felling the young secondary forests or even thinning them to generate revenues, they are interested in exploring ways to enhance its productivity. As the sal trees reach fifteen to twenty years of age, they begin producing oil-bearing seeds. With nearly 2,000 hectares of forest, collection and processing of oil seeds could provide the protection groups with substantial revenues. Yet, capitalization, technology, and market information is not easily available to the committee. Whether the forest protection groups of Kudada can move from forest protection to productive management remains to be determined.

The Role of the Forest Department Interactions between Kudada's FPCs and the Bihar Forest Department
have been sporadic and both positive and negative. When Kudada leaders began initiating forest protection groups, the forest department had no policy or program to support such activities. In some cases, supportive guards and beat officers provided ideas and motivation; in other areas, field staff viewed village efforts as an encroachment on the forest department’s authority. Chumaram Mahot, an 80-year-old tribal from Bahar Dari village, said,

In the year 1966, when our forest was on the verge of total degradation, I came in contact with one forest officer. He encouraged me to take action. He used to visit us to discuss protection and the utility of the forest for future generations. Sometimes we would call meetings in Bhitar Dari and other villages. Our village leaders would help him, but often the community response was poor. He asked me how forest destruction could be stopped, and I said, "When the forest is destroyed, and there are no trees left to make agricultural implements, then we will be ready to protect it."

Another village leader, however, noted that he had little assistance from the forest department staff in organizing his community: "The forest guard allowed women to cut dry branches of the trees as fuelwood in exchange for rice and other things."

Conflicts with the forest department also occurred over plantations being established in the area. Community members generally disapproved of the species, particularly eucalyptus, being planted. One man noted, "Eucalyptus is not a good tree; even the bird will not build a nest in it." Some young eucalyptus plantations were cut down by villagers, more as a protest than for the fuelwood. After this occurred, the forest department ceased planting activities in the area.

In recent years, since the approval of community forest protection by the state government, a local divisional forest officer began meeting regularly with the Kudada Apex Committee. Village leaders were impressed by his sincere interest in assisting them. He carefully noted their needs for equipment to improve protection activities and promised to supply them with flashlights, a vehicle, and other goods. Later he was transferred, and none of the promised equipment was given. At the time of this study, the villagers had few expectations regarding assistance from the forest department. Their greater concern was that the forest department might sell logging rights to Kudada to an outside contractor, betraying their efforts of nearly twenty years.

**Summary**

The Kudada experience reflects the successful ways in which Bihar communities have cooperated to restore substantial tracts of once-degraded natural forests. The threat of outside exploitation of local resources has encouraged villages to establish common management objectives and organize a coordinating institution to strengthen their position. The lack of field support from the Bihar Forest Department is striking, considering the agency has a heavy investment in social forestry programs and a state policy supporting community forest protection. While some divisional forest officers and forest department field staff have attempted to make contact and develop cooperative efforts with Kudada’s FPCs, the lack of forest department institutional support to create long-term collaborative management systems has not allowed these well-intentioned efforts to be sustained long enough to evolve real management partnerships.

Due to the institutional development of Kudada’s apex organization, its strong leadership, and the broad acceptance of a shared set of management goals by participating communities, this area provides an ideal opportunity for the Bihar Forest Department to establish a joint management partnership. In the future, community-forest department working relationships may be often coordinated through apex bodies like Kudada’s. The management transition taking place in Kudada and elsewhere in Bihar requires the forest department to acknowledge that the communities are in control of these forests and that the department’s role will be primarily supportive. In the future, the forest department may increasingly be a service provider in the areas of management institution development, technology, and marketing. The shift implies spending less time on custodial protection and industrial timber production and more on community extension, applied research, and training.

In recent years the Bihar Forest Department has begun registering community forest protection groups. NGOs have been contracted to carry out staff training programs in participatory forest management. Such activities are important and deserve accelerated integration and emphasis in territorial operations. Divisional forest officers need encouragement to work with their range staff to systematically map all FPCs in their areas. Regular meetings need to be conducted with FPCs to begin building relationships and developing specific programs for cooperative management. Even in Kudada, where villagers are suspicious of some forest
department officers, community members acknowledge that it would be very helpful to discuss resource use options and appropriate technologies for producing, processing, and marketing non-timber forest products. That the Bihar Forest Department has not responded more effectively to support Kudada's remarkable effort to stabilize its forest resources reflects the constraints within that bureaucracy as well as the need for leadership that can assist the organization respond to the challenges of the twenty-first century.
The Evolution of Joint Forest Management in West Bengal

With a population of 70 million, West Bengal has only 0.02 hectare of forest per capita, one of the lowest rates in Asia (FN 18). While officially forest covers 13 percent of the total land area, only 9 percent possesses vegetative cover, and much of this is severely depleted. Of the West Bengal's non-mangrove forest, 45 percent is classified open, with a canopy closure of only 10 to 40 percent. In the western forests of the state, the native Shorea robusta (sal) stands have been subjected to intensive commercial and subsistence use pressures for more than a century. Continued clearfelling during the 1960s and 1970s, combined with extensive fuelwood cutting, reduced timber reserves to extremely low levels. By 1993, the standing stock was only 15 m³/ha versus a national average of 77 m³, with highs of more than 200 m³ in the mountain forests of West Bengal (FN 19).

In the late 1960s and early 1970s, the political atmosphere in southwest Bengal was tense. Low-income households, especially tribals and scheduled castes, began rapidly cutting the state forests as government authority waned after the communist Naxalite uprising. Although the forest department sought police assistance to protect remaining forest stands, they were often met with forcible resistance from community groups. Violent confrontations resulted in deaths on both sides. In Purulia district the situation was particularly explosive. The region had been carved out of south Bihar in 1956 and was the poorest district in West Bengal. Poor villagers were often hired by contractors to cut fuelwood, accelerating deforestation.

In 1970, in another corner of southwest Bengal, A. K. Banedee, an Indian forest service officer, had been appointed silviculturist for the Midnapur area. Experiments were being conducted with native sal, teak, eucalyptus, and other timber species. The trials were often disrupted by villagers cutting fuelwood and grazing their cattle on the experimental plots. The silviculturist began meeting with members of eleven villages surrounding the Arabari forest experimentation area. The officer attempted to offer the villagers a comprehensive employment program, to absorb them in plantation work. In return he asked them to stop grazing and cutting on the field plots and in nearby forests. He explained that where there was viable rootstock, community forest protection would result in rapid regeneration of degraded natural forests at very little cost. Natural regrowth led to substantial increases in biomass productivity, enhancing the availability of fuel, fodder, fibers, and numerous non-timber forest products. Later, Banerjee agreed to provide 25 percent of the revenues from timber sales and all rights to non-timber forest products to villages participating in forest protection. In 1972, the first forest protection group recognized by the forest department was formed in West Bengal.

The effect of Banedee's achievements was limited to small forest tracts, however. Agreements with the village forest committees were informal and had little validity beyond the term of the individual forest officers. Foresters were often rotated every few years, providing little continuity for cooperative arrangements. Banerjee attempted to extend his approach, preparing a plan for the Nayagram forests in Midnapur district, but was rotated in 1974 before he could initiate a dialogue with neighboring communities.

While successful examples of joint management agreements were beginning to emerge in Arabari and a few other places in Midnapur, Bankura, and Purulia districts after 1972, throughout the decade they remained isolated cases with little impact on routine forest management systems. Nonetheless, these early experiences demonstrated that opening communications with resident forest communities could effectively reduce conflicts between the forest department and local residents. Unfortunately, lessons emerging from Arabari received little attention until the late 1980s.

By late 1970, some villages in southwest Bengal had begun taking the forest management crisis into their own hands. Facing forest product scarcities, often encouraged by local leaders, a few hamlets began taking control of small tracts of degraded forests, establishing patrols and closing them to cutting. People who were found cutting green wood or grazing animals were warned by village volunteers. Repeat offenders from participating villages were fined; outsiders were turned over to forestry field staff. Most confrontations occurred during the first and second year of forest closure, after which the restrictions and rights of the protecting communities gained greater recognition from neighbors.

As investments in social forestry grew in the 1980s, funded largely by the World Bank, the forest department's perspective focused increasingly on community collaboration. While stress was initially placed on establishing eucalyptus woodlots on village lands, the success of community forest protection groups began to be recognized. Several senior forest officers began to encourage the communist forest minister to extend formal recognition to village FPCs. The minister also received favorable reports from the party's grassroots political workers. As a consequence, a government resolution recognizing the important contributions of village FPCs was passed in 1989. Drawing on the Arabari experience, the resolution also vested them with rights to a 25-percent share of timber harvests and most non-timber forest products. The new resolution encouraged both
forest department field staff and village groups to expand local forest protection efforts. As a result, the number of forest protection committees in southwest Bengal increased from a few dozen in 1985 to 1,250 in 1989, and to 1,912 in 1993 (see Table 1) (FN 20).

Table 1. Percentage of Total State Forest Under Community Management for Districts in Southwest Bengal

<table>
<thead>
<tr>
<th>District</th>
<th>1985 (%)</th>
<th>1989 (%)</th>
<th>1993 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Midnapur</td>
<td>2</td>
<td>40</td>
<td>72</td>
</tr>
<tr>
<td>Bankura</td>
<td>1</td>
<td>35</td>
<td>51</td>
</tr>
<tr>
<td>Purulia</td>
<td>1</td>
<td>39</td>
<td>65</td>
</tr>
<tr>
<td>Total Area Protected (ha)</td>
<td>5,000</td>
<td>152,000</td>
<td>254,646</td>
</tr>
</tbody>
</table>

The Case of Chandri Beat: Forest Patch and Hamlet Clusters

Chandri forest is located in southwest Bengal on the border with Bihar, just 10 km south of Jhargram town. The forest is comprised of 1,500 hectares of uniform sal trees, with some mahua and other species. Until 1962, the forest was managed by a local Zamindar: Narasinghina Malodev, Raja of Jhargram. During the Raja's time, forest use was strictly controlled. Binindo Mahato, an 85-year-old tribal from Shimli village, recalls that tigers and wolves were fairly common, although the Raja leased the land for felling every ten years.

Twenty-eight communities (sahi) are located around Chandri forest. Each community has 15 to 100 households, primarily Mahato and Santhal tribal peoples, with some Lodha and Bhumij tribals as well (see Figure 4). The forest is divided to the north and south by National Highway 6.

Figure 4. Map of Chandri beat
Community forest protection activities in the area began in Shimli village. A mixed community of Mahato and Santhal tribal peoples, the hamlet has historically been closely involved with forest management under the Zamindar administration. According to Gundar Mahato, a 40-year-old leader of the village FPC, some Shimli villagers worked as the Raja’s forest guards, collecting fees for fuelwood and timber cutting. Because Shimli villagers had little private rain-fed rice land, they, instead, planted millet in open patches in the forest and hunted. At that time, the community consumed many forest foods including tubers, mushrooms, mahua seeds and flowers, bhel, kendu, and piyal.

In 1962, following the Zamindari Abolition Act (1957), the West Bengal Forest Department (WBFD) acquired the Chandri tract and designated it as reserve forest. It was subsequently closed to hunting and farming. Shimli villagers resisted the new policies throughout the 1960s. In one confrontation, Mahato tribals fought with WBFD guards over forest access, and six villagers were jailed for three months (see Box 4).

<table>
<thead>
<tr>
<th>Box 4: Chandri Beat Time Line</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pre-1957</strong></td>
</tr>
<tr>
<td><strong>1957</strong></td>
</tr>
<tr>
<td><strong>1962-63</strong></td>
</tr>
</tbody>
</table>
In 1970, after some delays, the WBFD began implementing the working plan for the area, which prescribed the clearfelling of sal on a 10-year rotation, leaving only mother trees (“coppice with standards”). Timber felling operations continued in the Chandri area until the mid-1970s. Felling parcels (coups) were auctioned to local businesspeople, and in 1973 a Shimli villager acquired a lease. He hired a few neighbors to help him cut the timber. These growing economic ties to the forest may have given some members of the Shimli community an added stake in sustaining the resource.

In 1978, Community Party India Marxist (CPIM) again won the state election and many communities around Chandri forest took this as a signal that the forests would be turned over to the people, likely influenced by the earlier land reform program. It may be that some CPIM cadre had implied such a policy would be enacted if their party were victorious. A number of communities became actively involved in cutting trees in Chandri forest for commercial sale. The Lodha villages of Baghajhapa and Barapal were particularly active in commercial felling. The Chandri beat officer reported that the forests experienced severe degradation from 1978 to 1982.

Most Shimli villagers, however, did not engage in illegal felling. In 1979, seeing the rapid deforestation occurring, community leaders held meetings deciding that cutting should be forbidden in the forests neighboring Shimli. A volunteer patrol system was established. Ten to twelve young men participated under the direction of a group leader. The men patrolled the periphery of the protected area at night. During the day, any village person who went to the forest was responsible for reporting illegal cutting. If an incident occurred, other villagers were called to control the situation. Conflicts with other villages were common in the years after protection began. Gundar Mahato remembers that “The Lodhas used to come twice weekly for cutting. On Sundays they came to cut fuelwood to sell at the market (hat) on Tuesday, and again they would come on Wednesday to cut more for sale. We could find them by the sounds of their tools in the forest. Sometimes they would fight back with their axes. Once Jiwan Mahato and Punchanam Mahato were injured.”

The Shimli FPC received periodic encouragement from local Forest Department Range Officer Gurai Babu, although no formal community forest protection program existed at the time. A local range officer, impressed by the dedication of the forest protection group, contributed sports equipment to the FPC in 1985 as an

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1964-70</td>
<td>WBFD closes forest to hunting and farming. Shimli village resists; Mahatos fight with WBFD guards over forest access, and six villagers are jailed for three months.</td>
</tr>
<tr>
<td>1973</td>
<td>Shimli villager wins felling auction and hires a few villagers to help cut timber.</td>
</tr>
<tr>
<td>1977-78</td>
<td>CPIM wins election. Many communities around Shimli forest believe they now have rights to fell trees. Lodha villages begin commercial felling in forests around Shimli.</td>
</tr>
<tr>
<td>1979</td>
<td>Shimli villagers hold meeting and begin patrolling forests to halt felling</td>
</tr>
<tr>
<td>1982-89</td>
<td>Heavy forest cutting by local communities and degradation in forests not protected by Shimli FPC</td>
</tr>
<tr>
<td>1986</td>
<td>Pressures from neighboring villages increase as forest regenerates. Shimli establishes formal FPC. Frequent confrontations with Lodha communities. Shimli's authority challenged by neighboring villages.</td>
</tr>
<tr>
<td>1988</td>
<td>Shimli FPC seizes axes, saws, and carts. Fights occur.</td>
</tr>
<tr>
<td>1989</td>
<td>West Bengal government order for joint forest management passes.</td>
</tr>
<tr>
<td>1990</td>
<td>Shimli divides protected forest with six neighboring hamlets that form FPCs.</td>
</tr>
<tr>
<td>1991</td>
<td>Shimli FPC initiates mapping of forest tract and is registered by WBFD. Three villages south of highway establish FPCs.</td>
</tr>
<tr>
<td>1992-93</td>
<td>Villages east of Shimli forest unable to control forest use</td>
</tr>
<tr>
<td>1994</td>
<td>Meetings held with eastern villages. Two new FPCs form with protection initiated in Asanbani and Kundasol.</td>
</tr>
<tr>
<td>1995</td>
<td>WBFD holds meeting with eastern communities that have not organized FPCs.</td>
</tr>
</tbody>
</table>
By 1986, the *sal* trees near Shimli had regenerated well, reaching 10 to 15 meters in height. As the trees gained greater commercial value, these assets attracted the attention of town-based entrepreneurs who began organizing gangs to fell the trees. In 1987, a large group of Lodha tribals from Baghajhapa village entered the forest at night. Two men were caught by the Shimli patrol and taken to the forest department office. The two men, however, lodged a countercomplaint against the Shimli FPC, asking the district forest officer, "What right does Shimli have to stop us? This is the forest department's job; only they have the authority." They also threatened the Shimli villagers with physical harm if they entered the Lodha area.

To muster broader-based public support for forest protection, Shimli leaders organized a series of meetings with a number of neighboring communities, telling them they could share rights to the collection of non-timber products. They also encouraged other villages to form their own FPCs. Most villages were not yet able to agree to close the forest to felling. Many were skeptical that the government and more powerful interest groups would allow them to benefit from protection. However, Baksol and Purnapani villages, which had strong kinship ties to Shimli families through marriage, began organizing protection activities.

An organized gang from Jhargram town began a major felling operation in the Shimli area in 1989. The group had trucks and arms, so the community did not confront them immediately. They developed a plan to trap the loggers at night by barricading the road. On an agreed-upon signal, more than thirty tribals, armed with bows and arrows, spears, and axes, came out of the forest. The loggers fled, but several truck drivers were apprehended and turned over to the forest department. The department offered the Shimli FPC a reward; however, the village leaders rejected the money, saying that was not the purpose of their protection activities.

In 1989, the West Bengal government issued a resolution legitimizing joint forest management. Forest department field staff began holding meetings with communities, encouraging them to follow Shimli's example. Between 1990 and 1991, twelve communities west of Chandri forest patch formed FPCs. The Shimli FPC agreed to subdivide its protected forest with four neighboring communities (Madhupur, Jaruliya, Auligeria, and Baksol). The eight other villages began protecting degraded forest tracts near them.

To better establish its forest rights, in 1990 Shimli village decided to demarcate the community's protected forest. While Shimli had allowed members of neighboring communities to collect non-timber forest products, tree cutting was forbidden. After the West Bengal government order was passed in 1989, Jaruliya, Auligeria, Madhupur, and Baksol formed independent FPCs and began questioning the authority of Shimli to control so much of the local forestlands. Shimli villagers realized that they could not continue to assume responsibility for all forestlands to the north of National Highway 6. Meetings were held with ten representatives from each of the FPCs of the neighboring villages northwest of the forest, and an agreement was made to divide the Shimli protected area with neighboring communities. The FPC executive committee also invited the local revenue (mouza) officer and forest department range officer to assist with the demarcation. Natural land features, as well as roads, were used for boundary identification. Maps were made for the FPC and the beat and range officers. A signature book of all Shimli community members was also prepared.

Purnapani and Baksol villages, situated along National Highway 6, formed an FPC in 1990. Despite their vulnerable location of the forest because of its road access, the community has successfully controlled illegal felling. Eight other communities south of the highway have also succeeded in protecting the forest with impressive regeneration. The southern villages, however, had a series of conflicts with headloaders from Parshana, Sonakera, and Phutilpal hamlets across the Dulung Nada River. Apparently, villagers had been paid in advance by a middleman to supply him with fuelwood. Once their efforts had failed, due to protecting forest communities, the entrepreneur stopped financing their activities. Ultimately, the six hamlets found they could succeed in controlling the pressures from across the river by coordinating their protection systems.

Villages east of the forest have had more difficulties protecting their areas (see Figure 4). Since 1991, the forest department has held regular meetings with these hamlets, but little progress was made in establishing effective access controls. In 1994, however, the Mahato communities of Kundasol, Asanbani, and Kashitariya were able to activate their FPCS, and extensive sat regeneration became apparent in their areas.

The two Lodha communities of Baghajhapa and Barapal apparently still require income from commercial fuelwood headloading, and have found no alternative that would allow them to close nearby forests to cutting. The four other hamlets to the immediate north and south of Highway 6 are near the small town of Aquibani. Commercial headloaders from the town put additional headloading pressure on these areas. The four small communities may not have sufficient villagers to deter outside users from the town. *Gram panchayat* member Ardhendu Shekhar Giri, a Brahman from Aquibani, says, "We have told them they can get a 25-percent share of the forests, but when we catch them, they only say they will not cut the forests again, but then they do."
Since 1991, forest department encouragement of FPC actions, with panchayat support, has increased. Regular meetings are organized for FPC groups around Chandri forest. It seems likely that over the next few years the remaining communities will also establish effective protection groups. Shimli FPC is currently thinking beyond protection toward forest management options. Already the FPC has allocated rights to 400 mahua trees in its area to the 100 village households. This privatization of more valuable resource usufructs indicates a move toward more intensive management. Shimli leaders suggest that more mahua trees could be planted in gaps in their 250-hectare forest tract. Currently, the forest is well stocked with an average of 1,200 sat trees per hectare, generally ten to fifteen years old. The IFPC leaders believe that trees could be cut on a 10-year rotation, 25 hectares per year. They feel that it would be difficult to selectively fell them, since this would leave stumps in the forest and members would not be able to differentiate the legitimate from the illegal feelings.

Shimli is also interested in intensifying the production and marketing of mushrooms. Virtually all households collect mushrooms, although two individuals have been selected for marketing them. They also feel there is some potential to better market their sat leaves, which are used for leaf plate-making.

Communities surrounding Chandri forest are increasingly concerned about a herd of elephants that migrate into the area and take shelter in the regenerating woods. They are reluctant to cross the forest at night for fear they may encounter the herd. No clear ideas have emerged regarding ways to co-exist with the animals.

Summary

The evolution of protection activities around Chandri forest is characteristic of changes occurring in forest management in southwest Bengal. Rapid deforestation proceeded throughout the 1960s and 1970s, driven by industrial exploitation, demographic growth, and political change. Concern over resource depletion led a single village to begin protecting part of Chandri forest in the late 1970s. Over the next fifteen years, more than twenty communities joined Shimli villagers in an attempt to impose effective access controls and stem the process of deforestation around this 1,500-hectare patch.

Forest closure has resulted in displacement of some low-income, tribal fuelwood collectors who continue to pursue their trade in a social environment that reflects the growing conservation sentiments of neighboring communities. While some forest department staff have attempted to encourage community forest protection efforts, the capacity to facilitate a smooth management transition appears limited. The forest department has had little success responding to the needs of communities of landless families who depend on fuelwood gathering, particularly women.

The Shimli village case also exemplifies a gradual transition from initial access closure and strict protection toward productive management. With nearly 2.5 hectares of productive forest per household, Shimli's forest represents an important economic resource. Past management had dictated a 10-year clearfelling cycle, which was designed to meet industrial objectives rather than those of the village. Now that the forest has come under village management, new production objectives are being discussed, reflecting the multiple needs of the community. Unfortunately, the forest department has little research or practical experience with techniques to manipulate these sal forest ecosystems for multiple products. Currently, Shimli forests remain slated for clearfelling under the working plan. While some Shimli villagers are attracted by the 25-percent share they may receive from timber harvest, some have alternatively proposed enrichment planting of indigenous fruit trees and mushrooms within the forest for household management. New methods for production-objective setting and management planning to bring foresters and villagers together are urgently needed throughout southwest Bengal, as communities move from protection to sustainable production.

Due to its political history, the West Bengal Forest Department has had a greater involvement in the evolution of community forest protection than the neighboring states of Bihar and Orissa. The state’s communist government, by encouraging land reform, decentralized governance systems, and other participatory programs, has created an environment where communities perceive a growing right to manage local natural resources. The West Bengal Forest Department has attempted to change with these evolving policies, but still faces the challenges of forestry professionals in neighboring states. The new roles for foresters remain vaguely defined, and traditional ways of managing forests tend to dominate.
Community Forest Management in Orissa

Orissa is one of India's most important forest states, possessing a large forest-dependent tribal population. The state's total forest area was estimated to be nearly 6 million hectares in 1981. By 1989, satellite imagery indicated that this had decreased to 4.7 million hectares, representing a decline of 22 percent. Commercial exploitation and growing rural population pressures over the past thirty years have accelerated forest degradation.

Forest classification and tenure status influence both forest department and community resource use practices. Of Orissa's total forest area, approximately 48 percent is reserve forest, 29 percent demarcated protected, and 23 percent undemarcated protected (*Khesra*). Reserve forest areas are more remote and more actively patrolled by the Orissa Forest Department, while protected forests have often been used as open access resources. Past state policies have encouraged communities to adopt and protect *Khesra* lands, although forest protection has spread to reserve tracts in many areas. Concern over the poor condition of the state's forest has led to recent policy changes including a general moratorium on commercial felling.

Due to the cultural and economic importance of Orissa's forests to the region's diverse tribal population, many communities practice traditional forest management. The rights of these groups, however, were eroded by the nationalization of most forests beginning in the mid-nineteenth century. While some villages continued to manage local forests, many communities lost control of these resources to high-caste groups, the forest department, and commercial interests. Yet, since the 1970s, due to growing scarcities of important forest products and perceived outside threats, many communities throughout the state began forming village FPCs (*Gramya Jungala Surakya Samiti*). Some of these groups have been recognized and assisted by forest department field staff, while others have been operating informally without support through their own initiatives or with the help of NGOs.

By late 1980, foresters and social scientists were discovering that thousands of villages were engaged in protection activities on state and community forestlands. In response to these grassroots initiatives, in August 1988 the state government passed a resolution-sanctioning community protection of reserve forestlands. The resolution provided communities with responsibilities for theft and fire prevention and extended them rights to firewood and small timber to meet their subsistence needs. In 1990, a second resolution was passed providing greater usufruct rights to communities, including up to 50 percent of all timber harvests, while also allowing greater flexibility in community management group structure.

By March 1992 the Orissa Forest Department (OFD) had registered 6,085 FPCs. At that time, senior OFD officers estimated that only 25-50 percent of the registered groups were active. Recent studies from Balangir district, however, indicate that while many of Orissa's 6,000 registered protection committees are nonfunctional, there are hundreds of other unregistered groups in that district alone that are actively protecting forests (FN 21). Including unregistered groups, it is likely that there are between 4,000 and 8,000 functioning community FPCs in Orissa. Most forest management groups control anywhere from 25 to 500 hectares.

One survey of Orissa's FPCs indicates that a high percentage operate along west of the state next to the Madhya Pradesh border (FN 22). The study reported that 55 percent of Kalahandi forests and 71 percent of Balangir district forests were under community protection. This suggests that virtually all small- and medium-sized forests are already under community control, with substantial tracts around the periphery of larger forests. Along the eastern coastal plain, however, forest protection is less pervasive, covering from 10 to 30 percent of all forestlands (see Table 2). This may reflect the greater difficulty of closing forestlands closer to larger populations and urban industrial centers.

While many types of forest protection groups exist in Orissa, the most common groups are located in small hamlets (*sahi*). These groups are often comprised of a single caste or tribe. Due to their relative social homogeneity, the hamlets are able to establish consensual access controls among households. Often FPCs operate through the general membership of the *sahi*, under the leadership of the *sahi* president or other community leaders. At the same time, many FPCs are administered by Village Youth Clubs, Village Councils, or Councils of Elders. In some cases, NGOs have been instrumental in organizing community-based FPCs. Many OFD staff note that tribal communities tend to be the most effective managers, especially smaller, homogeneous groups having diverse interests in the larger forest ecosystem. However, many FPCs are comprised of low-caste artisans and cultivators, with higher-caste communities forming forest protection groups in increasing numbers since the passage of supportive state policies.

Table 2. Percentage of Orissa Forest Under Community Management
Forest Protection in Sarangi Range

Sarangi range is located in Dhenkanal division, approximately 15 km northeast of Dhenkanal town (see Figure 5). Dhenkanal district is dominated by an undulating topography characterized by rain-fed agricultural fields in the fertile valleys and lower plains, with forested hillocks and larger hill tracts interspersed (FN 23). The forest ecology is broadly classified as north Indian tropical moist deciduous. Upper slopes and hilltops are comprised of mixed forests with stands of sal dominating the lower slopes, with an average annual rainfall of 1,421 mm. In 1991, Dhenkanal district had a population of 1.9 million. The population is predominantly Oriya Hindu farmers. Fourteen percent of the population is tribal, including Juang, Munda, Saora, and Santhal.

Figure 5. Map of Sarangi range
The Sarangi area was originally settled by Saora, Munda, and Santhal tribal peoples in the late nineteenth century. Once settlements were established and forest openings in the plains were cleared for agriculture, Brahmmins began moving into the area, often bringing with them families from agricultural and artisan castes. Tribal land rights were eroded in the process. While most tribals have shifted to sedentary farming, often as landless laborers, they remain much more dependent on the forest for timber and non-timber products than their Hindu neighbors.

By the early 1970s, villagers were experiencing growing scarcities of timber and non-timber forest products. Encouraged by local leaders and small non-government groups, forest protection initiatives began to emerge. In mid-1992, sixty-one FPCs had been registered, of which forty-six were considered active. Thirty of these community groups began operating before the OFD began its program to encourage group formation. Since then, many more villages have formed groups after observing the successful forest regeneration efforts of their neighbors. By 1995, 159 FPCs in Sarangi range were registered. The FPCs have established effective access controls over 30 percent of the forestland in the range. The divisional forest officers noted that communities were largely responsible for forest protection: "Basically, we play a mediating role, sorting out problems between villages." He reported that the JFM guidelines for FPC formation do not always reflect the ways villages have organized their forest protection groups.

**Forest Size Management Issues** Sarangi range is comprised of large, medium, and small patches of upland forest, some protected by communities and regenerating, while the remaining forests continue to be experiencing degradation through uncontrolled use. Management needs apparently vary for forests of different sizes. By studying the histories of different-sized forest tracts, it is possible to identify size-related problems and protection strategies. In Sarangi range, forests can be grouped into three broad categories.

- **Small village forests** usually ranging from 10 to 150 hectares are normally managed by a single hamlet. These areas are often the easiest to protect. They may also have the most intensive management, allowing for enrichment planting, thinning, and selective felling. At the same time, small patches may have experienced greater ecological disturbance in the past. Typically, small patches are not reserve forests, but rather protected demarcated or undemarcated. Since the community may have better established rights to the land as a village forest, tenure conflicts may be less frequent over small patches.

- **Medium forest patches** vary from 150 to 2,500 hectares and often require the coordination of two or more hamlets to impose effective access controls. For moderately sized forests, protection may be gradually extended to cover the entire area. Initially, a single village may initiate protection on a forest slope neighboring its hamlet, with other communities gradually joining in to manage and establish controls over adjoining forests. Over time the entire patch is subdivided and patrolled. During this process, management conflicts may arise between participating FPCs and with excluded user
communities. A transition from open-to-controlled access may take ten to twenty years. Sometimes an apex organization emerges to coordinate participating FPCs.

- Large forests of 2,500 to 20,000 hectares imply a different set of management needs. With large continuous patches, complete access controls are far more difficult to establish. These forests possess large, sparsely settled core areas with small enclave hamlets. The periphery is populated by more numerous but often low-income communities. Large forests are prime targets for smugglers and poachers who often coopt forest hamlets because they are impoverished and isolated. It is difficult for villagers to withstand outside pressures and harder to coordinate protection activities. Unprotected areas may act as corridors for exploitation, especially where dirt roads and rivers provide extraction channels. As with medium-sized patches, some segments of the forest can be protected through coordinated efforts. These are primarily around the periphery or along roads cutting through the forest.

To better understand the effects of forest tract size on community forest protection strategies, three areas in Sarangi range were selected for study. Kaimati was chosen to represent small forests of approximately 100 hectares located on hillocks and small patches. Rupabalia was picked to reflect a medium-sized hill forest of 1,000 hectares, while Kapilas was selected as a large forest with 13,450 hectares.

Forest Product and Ecological Management Issues

At present Sarangi range faces a number of management issues. Non-timber forest products are important for many groups in the Sarangi area, especially tribals. Tubers (Discorea spp.) are used as a staple food by many tribal communities for at least six months of the year. Tendu leaves are also collected for commercial sale, while fruits from trees such as mahua are an important dietary supplement. There are few effective initiatives that support the improvement of non-timber product yields, processing techniques, or market access.

In the past, many of Sarangi's tribal and low-income caste communities were engaged in commercial fuelwood headloading. Since the 1960s, with the growth of Dhenkanal town, an expanding market for fuelwood emerged. Low-income communities have responded over the past thirty years by intensifying the cutting of green wood for sale, resulting in depletion of many forested areas. In some areas, communities have responded to forest depletion by organizing protection groups and instituting access controls. Yet, this has often displaced other low-income communities, cutting them off from an important source of supplementary income, often generating social conflicts.

Aside from fuelwood collection, according to a divisional forest officer, commercial timber smuggling is a continuing problem: "Sarangi is one of the most complicated ranges in the state of Orissa." Some patches like "Rupabalia are doing well because smuggling is less, but in the southern portions of the range villagers are afraid of the illegal commercial timber felling. Nehru Prasad village is the center of timber smuggling -- everyone in the village is involved in the illegal timber trade, especially for poles and charcoal. The timber smugglers can easily intimidate small communities; they are armed and will burn their houses."

Fires are a problem throughout Sarangi range. The officer noted that "Almost the entire area burns, usually between February and March." Villagers like the burning as it clears the ground for mahua and tendu collection. Burning also leaves ash, which washes down the watershed into the farmers' fields during the monsoon. Fires do not have much effect on canopy trees; however, they do suppress regeneration and, as a result, the age gradation of forest trees is poor. They also damage herbs and shrubs, including valuable medicinal species. The Orissa Forest Department is trying to organize a fire prevention program for the FPCs.

Large mammals also present management problems for human settlements located near larger forests in the range. Approximately forty-five to fifty elephants live in Kapilas forest, at least part of the year. The elephants sometimes trample agricultural lands during the paddy and sugarcane harvests. Leopards, panthers, wild boar, bears, monkeys, and barking deer are present in the area and occasionally damage agricultural crops. Poaching is also a problem. Elephants are killed for their tusks, bears for medicine, and large cats for their skins. There has been little dialogue between the Orissa Forest Department and forest communities regarding ways to co-exist with the large mammal population.

The Case of Kaimati: A Small Village Forest

Kaimati is a small hill forest, which has been productively managed for more than thirty years. There are many small village forests in Sarangi range, often located on low hills with soils too poor to convert to agriculture. Kaimati village has nearly 300 households, divided into six hamlets, comprised of Chasa farmers, Gouda milkmen, Pana, and Saora and Juang tribals. The village currently protects four village forest patches, two
social forest plantations, and a larger mixed forest on Jankhira hill (see Figure 6). Kaimati was one of the first villages in Sarangi range to initiate forest protection in the early 1960s. Perhaps because forest protection has been successfully implemented for more than three decades, Kaimati forest is one of the few resources to be managed intensively for production. As the forest grew, carefully planned thinning, felling, and planting operations were instituted by the Village Forest Committee (VFC), with a detailed user fee, pricing, and auction system in operation.

Figure 6. Map of Kaimati village and forest patches

Throughout the 1950s, Kaimati villagers watched as the forest department demarcated surrounding forest coups, leasing them to contractors for felling. Once demarcated, the villagers' rights to forest use were diminished, while commercial cutting undermined forest health and productivity. Watching the rapid deforestation progress, and fearing the ultimate destruction of local forests and their productivity, in 1960 the Kaimati community began holding meetings to discuss management options. In 1962, the community formed a VFC and passed a resolution mandating the protection of a 150-hectare forest neighboring the village. One hill was designated village forest (Khesra), allowing the community to extend its authority over the resource. Rules were framed, which required strict protection of the hill forest. Entry with cutting tools was banned, and a security guard was appointed to patrol the area. In addition, each adult male in the community was required to contribute Rs 1 to a fund to buy additional degraded forestland in the name of the village temple. In 1962, when forest protection was initiated, much of the land was badly degraded and unproductive. Consequently, there was little resistance from neighboring villages. By 1969, however, as the sal and other valuable trees grew larger, neighboring villages began to question Kaimati rights to the forest. After an attempted felling by nearby villages, the VFC met with the neighbors to discuss the problem. Without involving the forest department, the VFC was able to resolve the conflict by urging the other villages to protect small hill forests in their own vicinity, instead of relying on Kaimati forest. Due to strong leadership and the commitment of village household heads, the VFC effectively resolved both intervillage and intravillage disputes, handling twenty to twenty-five cases each year.

In 1992, however, as a result of panchayat electoral politics, a major conflict divided the community into two groups. Police intervention averted bloodshed, but the VFC's functions were undermined. As a consequence of this conflict, the Village Youth Club ceased functioning, and in 1992 two separate village feasts were held, rather than the traditional common ceremony. Each group accused the other of illegal felling in the forest, while cleaning operations were not carried out in 1993. Protection activities were abandoned for 400 hectares of the Kapilas Reserved Forest, which in 1988 had been placed under Kaimati's responsibility by the Orissa Forest Department because of their impressive resource management record. The VFC's rice-milling and small-loan programs, financed by income from the village forest, were also disrupted as some village members defaulted on payments. Many villages in Sarangi have reported that panchayat politics are disruptive to cooperative forest management efforts, especially during the campaign and election periods. Over the past year, village leaders have attempted to reach agreements to reunite the community (see Box 5).
The VFC acts under the 22-member Village Council, representing all community hamlets. The VFC has five members and a chairperson who advise the Village Council on management operations, including the setting of user fees, timber prices, and cleaning and felling operations. The Village Council holds ultimate decision-making authority over forest protection and management. Orissa Forest Department staff have had little interaction with the VFC over the past three decades.

The VFC hires a security guard who is paid Rs 400 per month and 2 kg of rice annually from each household. The guard patrols the forest areas and is responsible for mobilizing protection. Community members are also involved in protection. Although no night patrolling is done, villagers listen for cutting sounds and report any unusual activity in the forest. Youth patrols are organized to guard against illegal felling during religious days when bonfires are traditionally set.

While strict protection was originally mandated, community forest-use guidelines now allow for grazing and collection of dead wood, leaves, and other non-timber forest products. Villages are required to gain permission and pay fees to cut poles, fuelwood, and other timber. Because some villagers had worked as forest contract laborers in the past, knowledge of thinning and felling techniques is present in the community. Timber from cleaning, natural falls, and that confiscated from illegal fellings are auctioned by the committee. Fuelwood is also graded and auctioned in stacks. Sales are oriented toward community needs, and no one is allowed to purchase more than one stack at a time. Villagers are not allowed to re-sell timber and fuelwood products. The village of nearly 300 households consumes about 300 to 350 tons of fuelwood each year, while only 10 to 20 tons is harvested from the village protected forest. The remaining fuelwood is harvested in forests up to 10 km away from the village.

In 1992, low-income tribal villagers complained that the fuelwood auction system discriminated against them, since they could not compete with wealthier households. In response, the Village Council canceled the auction system and switched to a fixed price of Rs 35 per stack, giving first option-to-buy to scheduled castes and tribal peoples. Unfortunately, the price was still too high for most tribal families. Timber is sold at a fixed rate with a harvest of twenty-six trees in 1992. All income from timber and fuelwood is managed by the Village Council, which currently generates an annual income of Rs 60,000 (approximately US$2,000).

Non-timber forest products are important for tribal families in Kaimati. Sal leaf collection and plate-making employ forty Juang tribal families who work seven to eight months per year, generating income of Rs 400 to Rs 500 annually. Mahua flowers, kusum fruit, bela, and mushrooms are all collected for home consumption. Sal seeds are sold or are used to make edible oil, generating Rs 12,500 in 1992.

Ecologically, the impact of forest protection has been substantial over the past thirty years. The once scrub-covered land has reverted to 40-60 percent forest canopy closure, with trees averaging 16-20 meters high and 21-25 cm DBH. Tree density varies from 500 to 1,300 trees per hectare, representing a well-stocked forest. The lowland forests are dominated by sal, whereas the hill has a mixture of nineteen tree species, with khakada (Casearia tomentosa) the most common. Animals have also returned to the forest including

<table>
<thead>
<tr>
<th>Box 5: Kaimati Forest Time Line</th>
</tr>
</thead>
<tbody>
<tr>
<td>1947-59</td>
</tr>
<tr>
<td>1960-61</td>
</tr>
<tr>
<td>1962</td>
</tr>
<tr>
<td>1965</td>
</tr>
<tr>
<td>1969-70</td>
</tr>
<tr>
<td>1971-72</td>
</tr>
<tr>
<td>1973</td>
</tr>
<tr>
<td>1988</td>
</tr>
<tr>
<td>1991-92</td>
</tr>
<tr>
<td>1994</td>
</tr>
</tbody>
</table>
monkeys, a bear, rabbits, and snakes.

Cooperative forest protection activities have been a binding force in the social fabric of Kaimati. Initial community organizing efforts to reestablish a healthy, productive forest led to the development of a credit system for crop loans, the building of a youth clubhouse, and the purchase of a village rice-hulling machine. Income from the village forests has also financed feasts, dance dramas, the maintenance and repair of village buildings, and a street light system. While panchayat politics have had a disruptive influence on community cohesiveness, the need to maintain forest management systems helps to hold the village together. While Kaimati, compared to other FPCs in Sarangi range, has succeeded in developing a product-driven forest management system, it still confronts equity problems in distributing benefits. The inability of the forest resources to meet more than 5 to 10 percent of the hamlets' fuelwood and timber needs is also a concern. Kaimati's need to import biomass from Kapilas forest must be coordinated with the hamlets that are managing the larger forest tracts.

The Kaimati case illustrates how internal conflicts can undermine forest management, even in small, long-established village forests. The absence of forest department support to Kaimati is striking. It may be that better contact with the Orissa Forest Department could have helped stabilize the Kaimati forest management group during leadership transitions. Further, a closer working relationship between the forest department and Kaimati may help the village successfully manage the larger tract in Kapilas Reserved Forest, which was offered to the village. Kaimati needs additional fuelwood resources, while Kapilas forest requires better local management experience. The forest department could play a greater facilitating role in assisting Kaimati's forest management group to both extend and consolidate its activities. The Kaimati case indicates forest department staff may need greater involvement and training in ways to facilitate new management arrangements and to resolve conflicts within and between communities.

The Case of Rupabalia: A Medium Forest

The 1,000-hectare Rupabalia Reserved Forest is located on a hilly ridge, surrounded by eleven villages (see Figure 7). Ten villages are involved in forest protection. Villages in the area also protect 700 hectares of undemarcated protected forests (Khesra) scattered in small plots on the plains and hillocks neighboring Rupabalia Reserved Forest. Each village is comprised of 20 to 200 households. The villages are often subdivided into hamlets (sahi), which tend toward homogeneity in caste and tribal composition.

Figure 7. Map of Rupabalia forest and neighboring communities

Rupabalia represents a situation where a mid-sized forest tract has come under the effective control of a number of resource-dependent communities. This process has taken place over the past twenty-five years. Although the area remains a reserve forest, the forest department plays a minor role in its protection, with management being carried out by the ten participating villages, through twenty to thirty village or hamlet-based forest protection committees (FPCs). In the past, village and sahi committees were informal bodies that looked after village ponds, temples, and common lands. The general body of these groups is comprised of all household heads in the community, with an executive body comprised of eight to ten members and office bearers. Elections are usually held every one to three years by the general body.
Anando Baske, Narayaa Murmu, and other Santhal tribal elders from Shimli village began protecting local sal forest in 1979. By 1995, sixteen neighboring communities had joined them allowing a vigorous coppice regeneration of the forest.

Sal leaf plates made from leaves and stitched by women and children are a very important cash source for many families in Shimli and other tribal communities. Trucks make pick-ups several times a week throughout the year to take the forest produce as far as Calcutta.

When forty Saora tribal families in Mahapada village began protecting 25 hectares of denuded hillside on Rupabalia hill in Orissa in 1981, higher caste groups ignored them. Fifteen years later, all ten communities surrounding the hill are involved in protecting over 2000 hectares of healthy mixed deciduous and secondary sal trees.

Economically, the forests of Sarangi range are most important for Orissa's village women. Fuelwood headloading can bring Rs. 15-30 each day to low income families, while thousands are employed making leaf plates.

Most groups meet monthly, with minutes recorded and signed members. FPCs maintain small funds generated through members contributions, fines, and user fees. No formal coordinating body has emerged, although the idea is discussed periodically.

Most FPCs have daily patrols of two to four persons. Patrolling duties rotate among households. Failure to
participate results in a fine or an extra day on the patrol. Men on duty are responsible for stopping illicit use that occurs during their watch. They may be fined if they fail to respond to thefts. Fines are also levied on anyone caught collecting without the committee's permission or if they have not paid if necessary fees. User fees are charged primarily for timber, poles, and cut wood. Non-timber forest products can be collected by any FPC member on a no-fee basis. Fee structures may be set by designating specific collection area, by volume, or by time. Within each FPC members have equal rights to forest produce. However, each FPC has different-sized forest areas from 0.08 to 0.58 hectare per household. Apparently, communities that first initiated forest protection gained control of larger areas, while the remaining communities in the area either obtained the smaller tracts of unprotected forest or lost out entirely. These equity issues remain a potential problem for community forest management in the Rupabalia area. As the trees gain commercial value, pressure on the large forest-holding villages may grow and may threaten FPC effectiveness.

Conflicts along party lines and between low- and higher-income groups are common among Rupabalia's communities. Many FPCs that began under multihamlet Village Councils were later subdivided along tribal and caste groupings. As a result, most FPCs tend to operate through more homogeneous, small sahi councils. While this may strengthen internal decision-making processes and cohesiveness, it does not alleviate the need for coordination and conflict management between FPCs.

The regeneration of the Rupabalia forest has substantially increased the availability of fuelwood and timber. By the late 1960s, wood resources were so diminished that villagers would spend two to three days collecting fuelwood at Kapilas forest, 8 to 10 km away, at a cost of Rs 100 to Rs 120 per cartload. In 1992, most village households collected two to three cartloads from the local forests at a nominal cost of Rs 3 to Rs 5 per cartload. Fruits are collected by a majority of the families from most caste groups. Kendu leaf and sal seed collection for sale employs many villagers during their respective seasons, lasting forty-five days for the former and fifteen days for the latter. In addition, tribal women and children are involved in making leaf plates and mats, using raw materials from the forest, for six months of the year.

The Rupabalia forest was originally controlled by the Raja of Dhenkanal, who had forest guards living in Nathua and Vejibolu villages. In 1933 it was demarcated and listed for coppice with standards management prescribing a clearfelling every eight to twelve years, leaving behind a few larger mother trees as seed sources. After World War II, leases were given to contractors for fuelwood harvesting as well as timber felling. In Rupabalia, contractors felled both the sal forests of the lower hill slopes and plains, as well as the mixed forests located on the mid-slopes and ridge tops. After felling, regeneration was poor and topsoil erosion accelerated, especially on the steeper slopes. Forest department documents and plans for Rupabalia note in retrospect that "The following blocks probably did not contain good forest growth with adequate coppice vigor... The hilly areas... have been completely devastated and probably the adoption of this faulty system of management is primarily responsible for this calamity, which could have been averted (FN 24).

After Rupabalia hill was designated a reserve forest and leased to contractors for felling, community controls broke down. Although local forest communities attempted to regulate use by villagers arriving from north of the Mahanadi River, requiring they pay a small fee to cut a cartload of fuelwood, ultimately forest use exceeded regeneration and the resources were gradually depleted. By early 1970, most of Rupabalia hill, including the lower sal forests and upper mixed forests, were barren. Villagers report that the land was either covered by scrub averaging a meter high or was entirely bare with stones visible and very little vegetation.

**Stage 1 -- Protection of Khesra Forests: 1967-72** The growing scarcity of forest resources apparently first motivated communities to begin forest protection. Initially, Tarava village began protecting its Khesra forest in 1967. The 1962 Orissa Land Survey determined that all nonreserve forests should be under village control, whereas a 1966 state order mandated that at least 10 percent of village land must be forested. These government acts encouraged some communities to reestablish controls over nonreserve forests, as occurred in Kaimati, including both the protected demarcated lands and especially the undemarcated (Khesra) forests. Dr. Radhamohan, a Gandhian activist in collaboration with the People's Institute for Participatory Action and Research (PIPAR), a local NGO, also began visiting Tarava and other villages at this time urging them to protect their forests. Mr. Dehury, a 64-year-old landowner and Tarava leader, commented that his hamlet first mobilized to protect the Khesra forest by treating it as village property. The panchayats at that time had no interest in forest management.

Once Tarava had set a precedent by controlling access and announcing exclusive rights to the small patch of Khesra forest near its hamlet, other neighboring communities, including Nathua an Birikunti, followed Tarava's example (see Box 6). Communities began to realize that it was possible to gain control of local forests, the potential value of which were perceived to have increased as forests products became scarcer. People would comment, "We are farmers; we must have timber for our agricultural tools, our houses... "

Stage 2 -- Initiating for Protection on Reserve Forests: 1972-7
Gradually, communities began to extend controls over reserve forests starting in the early 1970s. Nathua and Mahapada were among the first villages to control access to reserve forests. As hamlets began to institute access controls over reserve forests, they were forced to exclude fuelwood collectors from neighboring villages, which frequently resulted in conflicts. Sometimes they were exacerbated by natural disasters, which forced low-income families to exploit the forest to generate cash. In 1976, for example, the Nathua forests were looted by poor families during a drought. Fuelwood headloading was heavy throughout the area during this period. Often after loots, the hamlets would attempt to strengthen protection and patrolling activities. The FPCs near Rupabalia often negotiated agreements with excluded communities, allowing them to sweep leaves in the forest for cut shrubs and fuel.

Stage 3 -- Expansion of Reserve Forest Protection on Rupabalia Hill: 1980-85
Between 1981 and 1982, many multivillage meetings were held where forest protection was discussed. The question of communities extending their authority over reserve forests was also raised. In 1982, Dr. Radhamohan and PIPAR held a meeting in Nathua village; thirty-two neighboring hamlets attended, some coming from as far away as Ashwakhola forest and Sorsiapada village in Kapilas forest. Many of the villages had already made some attempts to protect their **Khesra** forests and were beginning to initiate protection of the reserve forests.

After the Nathua meeting, protection of the reserve forests of Rupabalia hill appears to have accelerated, with many of the surrounding villages taking control of segments of the hill. Some villages that had been protecting larger tracts gave some of their protected forests to neighboring communities to manage.

Management of the hill was reasonably stable during the mid-to-late 1980s, although periodic conflicts did occur. In 1986, a dispute between two villagers in Joranda and Atinda resulted in a conflict that involved both hamlets and led to a mass loot where 50 hectares of regenerating *sal* was cut in a single night. More recently, a dispute arose between Atinda and Kenduparda. Although the conflict did not focus on the forest, the
Kenduparda people came with weapons to cut Atinda’s trees in retaliation. PIPAR intervened and mediated that dispute. Kenduparda complained that they had traditional rights, along with several other villages, to the Khesra forests of Atinda. Since they had shared these rights historically, Kenduparda argued they should have them today. Atinda countered that the rights were to forest products and that by the 1970s those products were completely exhausted. Furthermore, since Atinda alone had allocated the labor and organization to protect the forest and brought it back to productivity, it should have exclusive rights to the forest. The forest department prefers to stay out of disputes over Khesra and protected forests, since they are considered outside their jurisdiction. The case of Atinda and Kenduparda is not uncommon. As long as protecting villages do not harvest forest products commercially, there is less jealousy and friction. However, if felling is initiated, there is considerable potential for disputes based on previously shared usufructs. Where larger, politically stronger communities are pressuring smaller forest-protecting hamlets, it is uncertain whether management systems could sustain themselves.

The Rupabalia experience indicates that larger village groups often subdivide along hamlet lines to form more homogeneous, smaller management units. According to Mr. Dehury, a village leader active in the community’s forest protection group: “These days we have no conflicts with other villages; they recognize our rights.” There were differences of opinion within the village, however, that led to a subdivision of the protected area: “We had to divide into three groups in 1994. We were no longer able to cooperate. One group proposed a no-use policy for the forest, while another wanted to have use based on payments to a village fund. The third group wanted to have free use, based solely on requests.”

The subdivision followed hamlet lines, which are also aligned with different political parties.

Before we subdivided the FPC, four persons went daily on patrol. Now two persons go from each hamlet. The patrols are made by volunteers. If someone fails to go when it is his turn, he must pay a fine of Rs 25.

In our forest, members make proposals to the committee to cut timber and fuelwood; if approved, they must pay a fee. In Chhatia FPC, they do forest cleaning annually, then divide the fuelwood evenly among the households. Most FPCs have no restrictions on collection of non-timber forest products, only firewood and poles.

There has been discussion about forming a formal apex committee to coordinate forest management around Rupabalia hill and to arbitrate disputes. PIPAR and Mr. Hota, a retired forester, have urged the establishment of such a coordinating body since the early 1980s. Mr. Hota convened a meeting in 1994. During the meeting he noted that the forest department was apathetic and inactive and that through a forum, the communities could better represent their rights to government. Hota continues to be concerned over the lack of authority of the FPCs to deal with illegal acts. If FPCs catch illegal cutters, the forest department takes the fine, leaving the village without the right to levy penalties or obtain revenues.

The FPCs around Rupabalia, however, are reluctant to form an apex organization. According to Orissa’s JFM resolution, panchayat leadership must be represented in FPC organizations. The expansion and incorporation of local forest management groups under an apex organization would further necessitate a formal integration with larger village panchayat structures. Rupabalia’s forest protection hamlets fall into four larger village panchayat administrative units, further complicating this process. The village panchayat centers are located some distance from Rupabalia and tend to be controlled by wealthier, higher-caste groups. Rupabalia’s FPC fear that more powerful outside communities might gain control over their forests if they were to form an apex body. The tension between small, politically weak forest communities and their integration with local governance structures is clearly reflected in the case of Rupabalia.

While Rupabalia’s FPCs fear being swallowed by larger, more powerful communities, they must also deal with smaller, forest-dependent hamlets excluded from management.

Only the villages located within one kilometer of the hill are actively involved in forest protection, while the remaining communities have little access to forest resources. PIPAR estimated that 90 percent of the families in the area depend primarily on wood for fuel. Since the closure of the forests people are backing palms more intensively and, as a consequence, many palms are diseased and dying from overpruning. Currently, an estimated 25 percent of the population have sufficiently low incomes that they will engage in illegal fuelwood headloading if they have an opportunity. While the uncontrolled use practices of the past were not sustainable, forest protection has denied low-income families access to this source of cash, creating economic hardships or placing them in conflict with neighboring hamlets. Rupabalia’s communities still need to find better ways to address social and gender-based equity problems arising from emerging management systems.
There is a clear role for the forest department in assisting with the management transition under way in Rupabalia. The forest department, working with PIPA R, could mediate discussions between the participating villages involved in forest protection and those that are being excluded from the resource. The forest department is in a position to assist communities with no forest reserves, by helping them to establish fuelwood, timber, and multipurpose tree plantations. Assistance to excluded groups could help respond to their fuelwood needs and help minimize conflict over natural forest resources.

In Rupabalia, the forest department could play a helpful role in assisting forest protection groups to establish their apex management organization without losing control to panchayat elites. As a medium-sized forest, with more than 1,000 hectares and several dozen interacting hamlets, coordinating protection and management activities requires some organizational structure. In addition, as Rupabalia’s community managers think beyond protection to intensified production management, they will benefit from an organization that can assist with longer-term planning and operations. The existence of a functioning apex body would also provide the forest department with a central contact point within Rupabalia. If the forest department expressed a strong support for establishing the apex organization, it would likely give PIPAR the additional encouragement it needs to bring the communities together.

The Case of Kapilas: A Large Forest

Kapilas hill complex, with more than 13,000 hectares, is the largest contiguous forest area in the Sarangi range (see Figure 8). Extending from north to south, the hill forests are bounded by populous.

Figure 8. Map of Kapilas Forest with Sorsiapada and neighboring communities

Cuttack Plains on the east, with Sarangi farming communities inhabiting its western border. Small tribal communities live along a road that runs through the interior of the forest. Natural sat forests grow where hill slopes meet the plains. Teak plantations, established during the 1940s and 1950s, are interspersed. The hilltops are comprised of mixed deciduous forest. Because the hill forests are remote and do not possess species with commercial timber value, they are not under the same pressure from illegal loggers as Kapilas’s lowland sat forests. They are, however, under pressure from fuelwood collectors.

The major threat to the Kapilas forest comes from organized, illegal logging gangs. Sorsiapada and its surrounding villages are located along a notorious smuggling i7oute, which serves the expanding demands of Cuttack township. At times, forest staff have been sufficiently intimidated by local smuggling gangs to forego overnight stays in the area. Bribes to forest guards have also allowed for illegal felling to occur.
The problems of community protection of large tracts of forest like Kapilas involve communication and coordination between widely scattered village forest protection groups and foresters working in different administrative territories. Presenting a unified front against mobile, organized, and often armed gangs who communicate with wireless radios is a challenge for village forest managers. The case of Sorsiapada, a small enclave tribal village, is presented to reflect emerging management strategies.

Sorsiapada village is located approximately 25 km from Dhenkanal town, inside Kapilas forest along a small paved road. The village is populated by eight to nine extended families of Saora tribals, who now live in twenty-five nuclear family households. Most of the communities in the area were established by Munda and Saora tribal families in the 1930s. By the early 1970s, forests neighboring the villagers were heavily damaged by logging and local users.

Local tribal communities depend heavily on the forest for hunting and collecting non-timber forest products for subsistence. Important products include forest tubers (Discorea spp.), which are an important staple food. *Panialu*, *Mesihaluu*, and *Kantaalu* are the primary species consumed, yielding 5 to 6 kg daily. Other products collected are *mahua* seed for cooking oil, *mahua* flowers for food and fodder, and plant species for medicinal purposes.

Kapilas, because of its rich forest, has long been a center of commercial logging. With deterioration of the forest environment from both official and illegal felling, the forest department ceased timber operations in the 1970s; however, smuggling continued. According to a Sorsiapada villager, "Logging usually takes place from February through May, just prior to the monsoon. Hundreds of people would come from Cuttack with guns and swords, bringing bullock carts. They drank country liquor and took our women into the woods. Then they began cutting the trees. We were afraid so we cooperated." Large fires, which spread quickly, were also reported to occur during this period. The small tribal village has not been in a position to resist large, armed logging gangs. Logging pressures shifted to the Sorsiapada area in the mid-1960s. The road may have been built or improved at that time, creating better access.

The village, with outside help, has attempted to establish forest protection systems for several decades. In 1968, a timber smuggler was killed after being crushed by a falling tree, which caught the attention of a range officer to the area. He began organizing meetings with Sorsiapada and some of the neighboring communities, urging them to establish patrols during the day and to generally keep watch over the forest.

In 1981, representatives from PIPAR came to meet with the villagers. Discussions were held with the Mukhiya (village headman) and other tribal leaders. The villagers did not want the armed logging gangs to come because they molested village women and harmed the forest, but they were afraid of their numbers. PIPAR continued to meet with the community and suggested they organize to resist the loggers. A number of forest protection committees were formed by local communities, and plans were formulated to defend the forests against the illegal loggers.

One night in the winter of 1982, several hundred loggers came with seventy-five carts, twelve trucks, and eight jeeps. The tribal men hid in the forest. When a whistle was blown, according to their plan, the tribals, armed with staves, bows, and spears, surrounded the loggers. The loggers were taken by surprise. Many fled, but their carts and vehicles were confiscated by the forest department. The leaders of the logging gang later threatened the life of PIPAR's director. However, with support of a divisional forest officer and a collector, the logging gangs were unable to retaliate against the communities. Smuggling has declined in the Sorsiapada area since the mass action occurred, although illegal timber smuggling has shifted to other parts of Kapilas forest.

Although logging pressure has decreased in Sorsiapada, it has not stopped. In October 1994, six persons from Atgarh town were caught stealing timber with the villagers' help. People continue to come from Atgarh and Cuttack to the south, and selectively fell *sal*. They now tend to come in smaller groups of twenty to thirty people, although sometimes up to 100 will come with carts. They are often agricultural laborers who come during the summer off-season, use saws, and fell at night. The tribes of Sorsiapada feel that illegal logging could be better controlled if the forest department staff from Atgarh and Dhenkanal better coordinated their patrolling with the village committees, especially between Sarangi and Mangrajpur ranges. They recommended that cooperative protection activities cross administrative boundaries. The Sorsiapada villagers noted that their neighbors in Kolha village are terrified of the loggers and need support if they are to participate in forest protection. Also the Similta and Ramai communities are under great pressure from the logging mafia, which is said to operate from Nehru Prasad village in the northern part of Sarangi range.

In 1990, the Sorsiapada FPC was registered, although the villagers have been protecting the forests around their village for at least twenty years. They coordinate their forest protection activities with other neighboring
committees located along the road. After registration, the forest department issued a map indicating the forest patches under each village's management. The communities had earlier demarcated these areas by constructing footpaths (dhandi) along the borders. The FPCs continue to patrol the area in groups of four. Batons (thenga), as well as bows and arrows, are carried to signify that the individuals are on patrol duty. In neighboring Bania, in 1992 a gang of timber smugglers were caught by a village patrol and were fined Rs 800 by the FPC.

Villagers take pride in their ability to control access and to regenerate the once-degraded forests. They note that besides better cooperative support from the forest department to guard against organized smuggling, the department should cease from planting additional areas with teak. They argue that given the high commercial value of the species, its presence attracts illegal loggers, bringing the communities into conflict with outside interests. The villagers contend that sustainable management will result from a more species-diverse forest managed for local needs and wildlife conservation.

Where large mammals are present, forest department staff and communities need to discuss how to minimize conflicts between the animals and villagers. Activities that draw animals into human habitations may need to be shifted to areas farther from the forest periphery. The department may also assist the communities to find economic benefits from having large mammals in their area. Ultimately, long-term plans for managing large forests like Kapilas need to be developed jointly by resident communities and the forest department in response to the particular management problems being encountered in areas with extensive forest tracts. Timber smuggling, large mammals, and dispersed population centers require emphasizing strong communication linkages between villagers and the forest department.

In large forest tracts like Kapilas, forest department support and overall coordination of community forest protection are essential. Villagers in Sorsiapada repeatedly noted that they require forest department support to withstand pressures from organized timber gangs. The transportation and communication resources of the forest department also provide necessary technology to link community actions to stabilize and control access over larger tracts of forests. The department would benefit by developing plans to gradually involve all local communities around Kapilas in forest protection activities, helping establish umbrella institutions that allow foresters and villagers to communicate and plan together.

Summary

There is an immense potential and a need for community forest management in the state of Orissa. Nearly 37 percent of Orissa is designated as state forestland. While much of the forest is degraded, the majority of the land still possesses scattered trees and coppicing rootstock representing good ecological restoration possibilities. The state is also endowed with many viable tribal communities with strong ties to the forests. Further, many agricultural communities and caste villages have shown an interest in and a capacity to become effective forest resource managers. In addition, Orissa has hundreds of small NGOs operating at the grassroots levels, some of which have been effective mobilizers of community members, and several dozen larger NGOs, research institutes, and universities. Aside from carrying out community development programs, these organizations have diagnostic research and training capabilities that are already being tapped to assist the forest department in understanding how to best support community forest management systems.

Working with grassroots community forest management groups and NGOs is a new challenge for the Orissa Forest Department (OFD). One senior forester noted that the department needs to carefully develop its support program for FPCs to ensure that departmental activities do not undermine community management efforts. He identified the need for more diagnostic studies and inventories to locate groups, assess their needs, and understand their patterns of management. The OFD is currently compiling updated lists of FPCs statewide, based on range-level data being collected by field staff and NGOs.

Many senior Orissa foresters report the need for more training programs for field staff and forest department officers to better prepare them to support the transition to joint forest management systems. Some field-level foresters are confused as communities take over their custodial functions. Other foresters wait for in-service training to give them a greater capacity to work with FPCs. One senior forester noted a need to document successful cases of community forest protection and to publish, in local languages, photo essays on the processes of natural regeneration. He also suggested that while the new Survey of India is being mapped during the 1990s, it would be an ideal opportunity to locate and demarcate community-managed forest patches. While both senior foresters and field staff in the OFD are increasingly supportive of community forest management, they would benefit from greater institutional support and clarity of vision regarding ways to facilitate the public lands management transition ongoing in their state.
Collectively, the preceding case histories illustrate a pattern of grassroots environmentalism emerging in India's villages. While struggle, conflict, and inequities are part of the social process redefining authority and control of the nation's natural forests, an increasing stabilization and restoration of natural forest ecosystems have been a fundamental outcome. Given worldwide concern over deforestation and resource depletion on our increasingly overcrowded planet, forest conservation efforts in some of India's poorest villages are encouraging. Concluding remarks attempt to draw lessons from their experiences.

Lessons for Communities

The evolution of forest management institutions within Indian communities is, by definition, a sequential process (see Figure 9). In these cases, the process typically begins with growing concerns among village leaders and members over deteriorating forest conditions. This is followed by a series of interactions among local leaders and members where forest protection needs and options are discussed. As a consensus for action emerges, forest protection activities appear, characterized by volunteer patrols and watchers, with systematic development of rules and fines. Once forest protection activities are firmly established in one area, they often begin to be adopted by neighboring villages that share the same or nearby forest patches. Many JFM study areas in India are witnessing the spread of protection systems to neighboring areas. In some situations, like Kudada, community groups begin forming informal or even formal apex bodies to resolve conflicts and facilitate communication and coordination with government agencies, especially the forest department. Older, more established forest protection committees like Kaimati, Shimli, and Kudada are moving beyond simple resource protection to explore how forest production might be increased through ecological manipulation, as well as improved processing and marketing.

In the cases considered here, forest protection group operations are determined by independent communities based in one or two hamlets. Their only administrative identity is as component settlements within a
multihamlet village panchayat. Currently, only the forest department can recognize a hamlet's rights and responsibilities as protectors of public forests. In interviews, representatives from FPCs often stress the importance of gaining legitimacy from the forest department. Without recognition, their authority to control previously open access forests can be constantly questioned by neighboring communities, migratory graziers, commercial interests, as well as forest department staff. In some areas, like Kudada, communities are distrustful of the forest department. Yet, increasingly communities are requesting that their FPCs be recognized through registration documents, demarcated maps of their protected areas, and other more immediate symbols of authority such as uniforms, badges, whistles, and staves. Further, some communities are requesting the authority to collect fines from offenders, a right exclusively held by the forest department.

This need for formal authority over public forestlands is a fundamental motivation driving community collaboration with forest departments. Currently, the forest department's capacity to formalize relationships is limited. While enabling policies allow legitimation, and a growing number of divisional forest officers and field staff are effectively interacting with community forest management groups, the departments still lack the broader capacity to map, register, and otherwise involve and delegate management responsibilities to forest communities. In most parts of India, even the location of forest protection groups has yet to be identified. The process to bring traditional and emerging systems of forest management into the governance domain has just begun.

Some communities, like Shimli and Kudada, are also expressing needs for technical assistance from forest departments to enhance forest productivity. While FPCs now have the right to protect forests, they generally lack the authority to manipulate them through enrichment planting, cleaning, and thinning, and have limited technical knowledge regarding methods to generate higher product flows.

The emergence of apex organizations, like Kudada's, which strengthens FPC interactions with the outside world, mediates conflict, and facilitates forest production and marketing systems, is already occurring in some parts of India. While apex organizations offer the valuable functions previously noted, they also provide opportunities for politicians or local elites to gain control over these fledgling resource management groups. Studies of FPC apex organizations may reveal how their positive features may be enhanced, while reducing the likelihood of manipulation by outside interests.

The relationship of FPCs to local government also needs clarification. Many FPC leaders stress the need to keep politics out of forest management. They note that community unity is a key element in reaching a consensus regarding forest management. Panchayats are often highly politicized, and many FPCs find the party factionalism can undermine their efforts at community organizing, as demonstrated in the cases of Rupabalia and Kaimati. Maintaining FPC autonomy appears the most popular position among members, yet pressures remain to bring FPCs under panchayat control. Ultimately, issues of how to relate small community resource management groups to local governance structures will need to be addressed.

Gender equity in FPC decision making remains an issue in many states. Many rural Indian communities limit women's participation in hamlet councils, including emerging FPCs. Yet, women are often primary forest users and rely heavily on forest products. Male and female priorities for forest production also differ. JFM resolutions and guidelines that simply mandate women's participation, however, may not be effective. New ways need to be found to create opportunities for women to play greater roles in FPC leadership and decision making, especially as protection activities take on greater management functions.

**Lessons for JIM Policies and Programs**

Supportive, enabling actions, both at the policy and field levels, that empower local communities as resource managers appear to encourage the spread of forest protection. "Enabling" actions refer to policies and programs that permit, authorize, and encourage communities to manage public forests. Enabling actions should possess flexibility, extending decision-making authority to communities regarding ways to organize, control, and utilize the resource. Enabling actions can be differentiated from "directive" actions, which are characterized by a retention of control by forest departments or government agencies, and where permissible activities are highly specified and rigid.

At both the national and state policy levels, enabling orders authorize forest officers to encourage communities to initiate protection activities. While existing JFM policies are generally regarded as imperfect instruments that are overly specific and rigid, their very existence allows the state forest departments to proceed with the devolution of rights and responsibilities for public lands. Prior to the existence of these policies, progressive foresters who attempted to involve communities in management were open to criticism by their colleagues.
Rigid JFM policies and project activities that empower government agencies to direct and control community management efforts generally fail to either enhance or encourage the spread of grassroots resource stabilization efforts. Policies and guidelines that dictate specific organizational structures and management prescriptions for FPCs have been poorly received by village communities. Since community groups are informal and reflect local traditions and leadership patterns, organizational structures vary significantly among participating villages. Imposing rigid standards undermines community authority to establish functioning management systems. Uniform sharing agreements may also not reflect variations in the productivity of the forest resource.

Quantitative targets for the formation or registration of FPCs have generally failed to accelerate the emergence of viable groups. In Orissa, many of the FPCs formed after politicians set targets were later found to be nonfunctional. Targets may send the wrong message to forest field staff who often feel under pressure to meet numeric goals, rather than help set a management transition process in motion.

In India, development strategies often assume that material incentives have to be provided to encourage communities to participate in programs. Community forest protection actions indicate that this is not necessarily the case. Emphasizing material incentives to "motivate" communities to manage forest resources may erode indigenous efforts to stabilize resources and establish resource control systems.

There is a need to adjust existing government JFM policies to encompass local social, cultural, and ecological variability. Feedback from community groups to the government regarding ways to improve policies is badly needed. Through the establishment of better communication channels and discussion platforms, better policies and more supportive programs could be developed.

**Lessons for Forest Departments**

Most large government bureaucracies tend to be conservative and resistant to change. It can be argued that due to the long growth periods required for trees, forestry institutions need to maintain stable policies and programs. The rapidly changing demographic, political, and economic conditions in developing countries, however, are demanding dramatic transformations within forest departments. How then do forestry agencies adjust to these new needs? In India, throughout the 1970s and 1980s, forest departments were under heavy attack by academics, NGOs, and rural communities for their perceived lack of responsiveness to needs for conservation and rural priorities. Criticism tended to unite foresters in a defensive posture, forcing them to find arguments to support past and existing practices, while rejecting even constructive critiques.

In the three states studied, political changes in recent decades raised expectations among rural communities regarding their forest rights, while eroding the authority of the forest department. Elected officials have encouraged the forest department to place greater priority on community needs. Forest depletion and conservation policies resulted in the weakening of commercial interests. New resources for forest departments increasingly came from large social forestry loans. While social forestry plantation schemes yielded mixed results, they encouraged forest departments to give greater emphasis to community oriented programs.

Forest departments are not well organized to implement participatory programs. India faces the challenge of retraining more than 150,000 foresters to respond to this broad-based shift in forest management. Just as the evolution of community forest protection systems is a sequential process, so too will be the development of forest department support programs. This analysis suggests that forest departments initiating JFM strategies may want to phase in activities and build new institutional mechanisms gradually (see Figure 9). Donor assistance in this sector will need to reflect a sequential strategy of institutional development. Investments in staff reorientation and research and development programs to create new planning and service delivery systems require priority attention.

Initial experiences with JFM support activities, including microplanning and registration, indicate that the process is complicated and slow. Forest departments are still struggling to develop new information systems, educational programs, and methods for boundary demarcation. There is also a need to establish participatory research programs that explore new ways to meet community requirements for a sustainable flow of forest products. In India, most forests under JFM are simply protected rather than managed intensively. Given the need for forest products, job creation, and income generation, intensive forest management will be desirable.

The transition from protection to intensive management implies the development of new institutional capacities as well as technical skills. At present, knowledge at the community level, and even with the forest departments, remains limited regarding the range of management objectives that should be considered and the types of
pollarding, pruning, thinning, enrichment planting, and harvesting procedures to achieve them. While it is desirable that communities should attempt to optimize the productivity of their forests in a sustainable way, much applied research, both by communities and outside groups, will be needed to identify procedures to achieve this objective. It may be necessary for hamlet-based FPCs to cooperate with one another, as well as with outside institutions, especially the forest departments, in developing applied research programs. Most important, there is a need to recognize that communities need both support and authority to develop management capabilities.

Lessons for Non-Government Organizations

In recent years NGOs have played a number of roles in the growth of JFM. At the field level, some grassroots NGOs conduct environmental education camps, hold meetings with villagers, and are involved in efforts to raise awareness regarding the need for forest conservation. Some NGOs also conduct technical extension work to support non-timber forest product processing and marketing. Finally, some local NGOs act as advocates for forest-product collectors in their dealings with forest departments and commercial firms, as well as mediating conflicts.

Several Indian NGOs are also developing specializations as trainers for forest department staff. Separate programs are developed for senior officers and for field staff. NGOs involved in forest department training need to interact and share experiences with approaches to staff reorientation and curricula.

At the state and national levels, larger NGOs conduct applied studies regarding social, economic, and ecological issues emerging as a result of transitions to decentralized forest management. One NGO currently acts as the facilitator of the national support group (NSG) for JIM. This agency acts as a clearinghouse and analysis body for field-level studies. The NSG holds periodic meetings of NGOs in the research network, allowing members to discuss methods and findings, as well as their implications for program strategy. The NSG is currently attempting to establish a national working group on JFM within the Ministry of Environment and Forests. This group would review findings and recommendations forwarded by the NSG, allowing the office of the Inspector General of Forest to provide new implementation guidelines to state forest departments based on emerging field learning.

During this early stage of JFM program development, effective feedback is important to guide new policies and programs. The NGO community has the flexibility to assist with establishment of learning mechanisms, relying on collaborative networks that link field experience with planning and policy centers. To carry out these tasks, however, NGOs may require support conceptualizing the components and functions of the learning mechanisms, as well as guidance in research design and data analysis, and in preparing reports outlining recommendations. Network facilitators are required to help synthesize information and communicate findings among participating groups. Donor agencies provide legitimacy to the effort, as well as financial assistance.

Lessons for Donor Agencies

In India, the World Bank has played a leadership role in supporting projects with JFM components, totaling several hundred million dollars since the 1991 resolution was passed. The Overseas Development Agency and the Swedish International Development Authority have also provided substantial loans to several Indian states for JFM. The availability of donor funding has given JFM further credibility within the national government and with state forest departments. Task managers have attempted to use the loans to leverage changes in forest department program priorities and staff patterns supportive of transitions to JFM.

While multilateral and bilateral project support has drawn greater attention and support to JFM, it has also raised new problems. First, supporting JFM through conventional project modalities risks the possibility of emphasizing capital and technical inputs rather than underlining the important social change processes at the center of this grassroots environmental movement. One divisional forest officer reported that some of his colleagues view JFM as a World Bank project, rather than as a long-term transition to decentralizing forest management. Such perceptions generate attitudes that it is a transitory effort, only lasting as long as the project cycle. Projects also bring with them rigid implementation guidelines, targets, and expenditure deadlines that focus staff attention to achieving quantitative goals and processing paper, rather than changing attitudes and building capacity within both the department and the community. Finally, large loans to Indian state forest departments may further empower the bureaucracy, reinforcing the status quo, rather than providing incentives for change and decentralization.
During the early phase of management transition, donor agencies need to explore ways to place greater emphasis on training, research, and development components in their loans, while de-emphasizing capital investments and technological inputs. Where such inputs are required, they might be deferred until communities and forest departments demonstrate growing organizational capacity to protect and manage further investments in the resource. Indicators of progress, including social and vegetation conditions, need to be established. Better communication linkages with forest communities and a commitment to in-service training and applied research need to be stressed. Donors may benefit by maintaining small, flexible budgets to engage NGOs, university researchers, and local consultants for diagnostic studies, preparing regional and sectoral background assessments, and generally sensitizing project design teams to shifting policy environments, and field conditions and opportunities.

Donor project officers are often under pressure to move loans on schedule and maintain certain levels of capital transfer. Division heads and developing country counterparts may not understand the need for a different approach in packaging loans to support social change strategies. In many cases, however, time spent with counterparts in developing JFM initiatives as part of the loan process may be one of the most critically important steps in the activity. If donors attempt to leverage change with loans to accelerate their approval, rather than discussing them and reaching a consensus on the wisdom of the action, decisions may be accelerated but implementation will remain in doubt. Many JFM programs, especially in their early years, may benefit substantially from smaller budgets that emphasize training and research. Experience indicates that forest departments with JFM loans that carry large capital investment components tend to ignore smaller funding for crucial training and research activities. Experience with JFM is only beginning to emerge. There are no JFM "experts," and there is limited knowledge regarding "best practices."

**Lessons for Others**

Learning from JFM in West Bengal and Orissa has important implications for Asia, other Indian states, countries, and nations. India appears to be pioneering a new transitional approach to public lands management that promises both to stabilize the resource and lead to more sustainably productive use. Since forest degradation processes are pervasive throughout the developing world, any initiatives that significantly reverse these trends at very low costs deserve careful attention.

In India, joint forest management appears to have the greatest potential in areas with substantial tracts of public forests and forest-dependent communities. Central India, the Himalayas, the northeast, and the Western Ghats fit this description. Since JFM strategies were designed to support and build on local forest management interests and initiatives, forest departments and NGOs need to be sensitive to existing or emerging community efforts oriented toward environmental stabilization. Researchers, NGO staff, and donor consulting teams that are looking for this type of phenomenon often uncover local management activities in Indian forest districts. Locating forest protection groups on existing topographic maps is a first step toward providing them with some legitimacy. A diagnostic inventory program is being planned in India that would identify high potential areas for JFM and document where community forest protection efforts are already under way.

Foresters and scientists working with the Asia Forest Network find participatory management is relevant throughout Asia. In upland Southeast Asia, including the Burmese hills, northern Thailand, southern Yunnan, Laos, and highland Vietnam, ethnic minority hill tribes remain dominant. Migratory patterns and swidden farming are more and more restricted by growing population densities. Communities are becoming increasingly settled and, in response to growing economic and demographic pressures, are seeking ways to protect a shrinking natural resource base. In some areas in northern Thailand, different ethnic minorities are initiating dialogues with one another on their own, seeking forest and watershed management agreements to avoid conflicts. In many areas, traditional leaders and resource use institutions remain sufficiently resilient to provide a framework for management agreements with government agencies.

The Philippines has drafted clear policies and programs for ancestral domain designation and community forest management. Yet, implementation progress has been slowed by the inability of agencies to interface with local contexts and initiatives. In other Asian countries where forest policy reforms are not yet in place, strategies need to be developed to promote decentralization. In Vietnam, Indonesia, Thailand, and China, interagency working groups are being established as mechanisms for discussion and planning. Donor support need further mobilization to encourage these developments. In socialist countries like Vietnam and China, privatization policies for public lands receive growing support; however, initial experience indicates they are likely not appropriate for much of the upper watershed forest. India's experience with community management, building on local institutions, has particular relevance in these contexts.
In most nations where forests were nationalized during the late nineteenth and early twentieth centuries, the management role of user communities and other indigenous controls has eroded. Forest management agencies have generally been unable to unilaterally impose effective access controls, resulting in unsustainable use practices and biological degradation patterns. Given growing demands, intensified management systems for forests, pastures, agricultural lands, and water will be essential in the twenty-first century. Many communities are well-positioned to impose access controls; however, most governments lack policies or programs that provide authority to local groups to participate in public lands management. This is true not only in developing nations, but also in the United States and certain other developed countries.

India’s experience indicates that community forest protection can be highly effective in regenerating degraded natural forests. Where conditions are suitable, grassroots movements can spread local initiatives, rapidly stabilizing forest resources over large areas. Government planners in many developing nations increasingly recognize the need to devolve management downward from forestry agencies to local communities. Creating opportunities for interaction among planners, forest administrators, and rural communities will provide for a more systematic method of learning and for implementation of policies and actions that would accelerate changes.

Notes

1. Personal communication from D. Nag, Principal Chief Conservator of Forests, Tripura, July 1995.


10. A. Panda et al., "Impact of participatory forest management on the ecology of the Shivalik hills in Haryana state" (New Delhi: Haryana Forest Department and Tata Energy Research Institute, 1992, pp. 8-12.

11. A. Panda et al., "Grass yields under community participation in Haryana Shivaliks" (New Delhi: Haryana Forest Department and Tata Energy Research Institute, 1992, p. 9.)


Mark Poffenberger and Samar Singh, "Community management for India's forests" UNASYLVA (Rome: FAO, 1992), Summer.


14. Ibid.

15. Ibid.


18. B.K. Bardan Roy, "Wastelands to wealth: The West Bengal way" (Calcutta: West Bengal Forest Department, 1993).


23. Ibid.


**ASIA FOREST NETWORK PUBLICATIONS**

No.


Hawaiian Mediation: Balancing People, Pigs, and Plants, forthcoming 1996

Ethnic Minorities and Upland Resources: Experiences form the Da River in Northwest Vietnam, forthcoming 1996


Case Study Training Modules Series, 1995