

Report No. 34481-IN

# India

## Unlocking Opportunities for Forest-Dependent People in India

(In Two Volumes) Volume I: Main Report

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Agriculture and Rural Development Sector Unit  
South Asia Region



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## CURRENCY EQUIVALENTS

Currency unit: Indian rupee (annual average)

2000: \$1 = Rs47.0	2002: \$1 = Rs49.3	2004: \$1 = Rs45.0
2001: \$1 = Rs48.5	2003: \$1 = Rs46.7	2005: \$1 = Rs43.0

## FISCAL YEAR (FY)

April 1–March 31

## ACRONYMS

ANU	Australian National University	LPG	Liquefied Petroleum Gas
APCCF	Additional PCCF	MAI	Mean Annual Increment
BPL	Below Poverty Line	MIS	Management Information System
CBO	Community Based Organization	MOEF	Ministry of Environment and Forests
CIFOR	Centre for International Forest Research	MOU	Memorandum of Understanding
CSO	Community Support Organization	NABARD	National Bank for Agriculture and Rural Development
DFID	Department for International Development	NEDFI	Northeastern Development Finance Corporation
DFO	District Forest Officer	NFC	National Forest Commission
DPIP	District Poverty Initiatives Program	NIRD	National Institute of Rural Development
FAO	Food and Agriculture Organization	NTFP	Non-Timber Forest Product
FD	Department of Environment and Forests	PCCF	Principal Chief Conservator of Forests
FDA	Forest Development Agency	PESA	Panchayat Raj (Scheduled Areas) Act
FSI	Forest Survey of India	PFMA	Participatory Forest Management Agreement
FRDAB	Forestry and Rural Development Advisory Board	PRA	Participatory Rapid Appraisal
GDP	Gross Domestic Product	PRI	Panchayat Raj Institution
GIS	Geographic Information System	RUPFOR	Resource Unit for Participatory Forestry
GPS	Global Positioning System	SANDEE	South Asia Network for Development and Environmental Economics
HDI	Human Development Index	SASAR	South Asia Agriculture and Rural Development, World Bank
ICFRE	Indian Council for Forest Research and Education	SASES	South Asia Social and Environment, World Bank
IFS	Indian Forest Service	SSFE	Small Scale Forest Enterprise
ITTO	International Tropical Timber Organization	TERI	The Energy Research Institute
JBIC	Japan Bank for International Cooperation		
JFM	Joint Forest Management		
JSFDC	Jharkhand State Forest Development Corporation		
LAC	Latin America and Caribbean Region, World Bank		

## Unit Measurements

ac =acre	km=kilometer
gm=grams	mt=metric ton
ha=hectare	

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# INDIA

## Unlocking Opportunities for Forest Dependent People

### Table of Contents

#### Main Report – Volume I

<b>Acknowledgments</b> .....	vii
<b>Executive Summary</b> .....	viii
<b>Glossary</b> .....	xx
<b>1. Introduction</b> .....	<b>1</b>
Joint Forest Management and Community-Based Forestry Models.....	1
Study Objectives and Structure of the Report .....	2
<b>2. Overview of the National Forest Economy</b> .....	<b>4</b>
Forest Land Base .....	4
Contribution of Forestry to Gross Domestic Product .....	6
Structure of Domestic Forest-Based Industry.....	7
National Wood Supply and Demand Trends .....	7
Primary Institutions for Community-Based Forestry in India .....	8
Public Expenditures on Forestry.....	10
Extent of Joint Forest Management in India.....	12
Global Forest Transitions and Community-Based Forestry .....	13
<b>3. Evolving Legal and Policy Environment</b> .....	<b>15</b>
National Legal and Policy Framework .....	15
Legal and Policy Framework in Assam, Jharkhand, and Madhya Pradesh .....	15
The Panchayat Extension to Scheduled Areas Act of 1996: Panacea for Community Forestry? .....	20
<b>4. Forests as a Source of Livelihood: Perspectives of Forest Dwellers</b> .....	<b>22</b>
Characteristics of Forest Dwellers in Assam, Jharkhand, and Madhya Pradesh .....	22
Results of Focus Groups and Community Surveys.....	23
Community-Based Forestry Institutions in India.....	26
Local Perspectives on JFM in the Three Focal States.....	27
Forest Livelihoods and Linkages with Rural and Tribal Development in the Three Focal States.....	29
<b>5. Forest Management Systems and Community-Based Forestry</b> .....	<b>30</b>
Resource Assessment and Planning Systems.....	30
Forest Management Systems .....	33
Forest Department Capacity and Community-Based Forestry .....	33
Social Capital Building Processes and JFM.....	36
Economic Incentives for Community Participation in JFM in India .....	37

<b>6. Forest Marketing Systems, Benefit Sharing, and Community-Based Forestry .....</b>	<b>38</b>
Marketing of Specific Forest Products in Assam, Jharkhand, and Madhya Pradesh .....	38
Summary of Product Marketing .....	42
Benefit-Sharing from Community Forestry in India .....	43
<b>7. Unlocking Opportunities for Forest-Dependent People: Policy and Program Options..</b>	<b>46</b>
Introduction .....	46
Options for Reform .....	46
Strengthening the Forest Resource Tenure and Management Rights of Communities .....	48
Strengthening Support Systems for Improved Forest Management, Monitoring and Control .....	54
Improving the Market System for Forest Products .....	61
Effective and Flexible Institutional Models .....	68
Potential for Welfare Gains from Proposed Reforms .....	74
Priorities and Phasing of Reform Options .....	75
<b>VIII. Conclusions .....</b>	<b>79</b>
<b>References.....</b>	<b>80</b>

#### List of Tables

Table 2.1. Forest ownership in Brazil, China and India (percent) .....	4
Table 2.2. Forest Cover in India, other Countries in South Asia, and other Regions, 2000 ...	5
Table 2.3. Secondary Forest Industry in India .....	7
Table 2.4. National JFM Characteristics .....	12
Table 3.1. Historic Forest Tenure Rights in Assam, Jharkhand, and Madhya Pradesh .....	17
Table 4.1. Characteristics of Households Deriving Low, Medium, and High Proportion of Income from the Forest .....	25
Table 5.1. Working Plan Approval in Focal States .....	30
Table 5.2. Field staffing of Forest Departments in Assam, Jharkhand, and Madhya Pradesh .....	34
Table 5.3. Returns to Alternative Land Uses in Assam .....	37
Table 6.1. Benefit Sharing Schemes in Assam, Jharkhand, and Madhya Pradesh.....	44
Table 6.2. Mean Revenue and Expenditure in Selected states, 1999-2000 (Rs per hectare)	45
Table 7.1. Forest Rights Regimes without Land Title in Selected Countries .....	50
Table 7.2. Economic Returns from Improving the Efficiency of Nontimber Product Production .....	63
Table 7.3. Nation--Fiscal Systems in Selected Countries .....	67
Table 7.4. Options for and Phasing of Proposed Policy and Program Reforms.....	76

#### List of Figures

Figure 2.1. Contribution of Forestry/Logging, and Agriculture to India's GDP, 1982-2001.....	6
Figure 2.2. Contribution to GDP of Logging and Forestry Services in Selected Indian States, 2001 .....	6
Figure 2.3. Projected Supply of and Demand for Fuel and Timber in India, 1996-2006.....	8
Figure 2.4. Plan Expenditures by the Ministry of Environment and Forest Management, 1992/93 - 2002/03.....	10
Figure 2.5. Breakdown of Spending on Forestry and Wildlife by the Ministry of Environment and Forests, 2002-03 .....	11

Figure 2.6. Real State Forestry Expenditures, Assam and Madhya Pradesh 1995-2002 .....	11
Figure 4.1. Sources of Permanent Income in Jhabua, 2001. ....	24
Figure 4.2. Share of Permanent Income of Selected Natural Resources in Jhabua, 2001 .....	24
Figure 7.1. GIS Mapping to Support Village Land-Use Planning, Karnataka Watershed Development Project .....	58

### List of Boxes

Box 2.1. Pressures on India's Forests .....	5
Box 2.2. Opportunities for Small-Scale Producers Created by Global Forest Transitions ....	13
Box 3.1. Crafting Effective Forest Resource Rights .....	18
Box 3.2. Impact of Transit Rules in Jharkhand.....	19
Box 4.1. The Unrealized Potential of Timber for Increasing the Income of Forest Dwellers .....	25
Box 5.1. Field Realities and Operating Constraints facing District Forest Officers .....	35
Box 7.1. Critical Enabling Conditions to Unlock Forest Values for Forest-Dependent People.....	47
Box 7.2. Terms of Reference for National Forest Commission.....	48
Box 7.5. Opportunities to Advance Community Tenure Security .....	52
Box 7.6. Mapping Customary Land Tenure in Canada and Indonesia .....	52
Box 7.7. Social and Institutional Elements of an Operational Manual .....	56
Box 7.8. Why Consolidate Forest Committees? .....	56
Box 7.9. Options for Conducting a Community Forest Inventory .....	58
Box 7.10. SMART Indicators for Monitoring Forest Livelihoods.....	60
Box 7.11. Contract Farming in India.....	62
Box 7.12. Lessons from Andhra Pradesh for Improving Forest Livelihoods.....	62
Box 7.13. Strengthening Producer Organizations in Mexico.....	65
Box 7.14. Extending the e-Choupal Concept to Forestry.....	65
Box 7.16. The Madhya Pradesh Lok Vaniki Initiative.....	69
Box 7.17. International Finance Corporation Support for Partnerships between Communities, Farmers, and Industry .....	70
Box 7.18. Carbon Financing in Community-Based Forestry in India.....	71
Box 7.19. Options for Delivering Rural Development Service in JFM .....	72



## VOLUME II

### Appendixes & Statistical Tables

Appendix 1. Description of Study Methods in Jharkhand, Assam, and Madhya Pradesh	1
Appendix 2. Structure of the Indian Secondary Forest Industry .....	11
Appendix 3. Fiscal Analysis of the Forest Sector.....	19
Appendix 4. National and State Legal and Policy Frameworks.....	23
Appendix 5. Community Livelihoods in Assam, Jharkhand and Madhya Pradesh .....	33
Appendix 6. Community Forestry Institutions in Maharashtra .....	48
Appendix 7. Forest Management Planning Systems .....	49
Appendix 8. Linking Overstory Management to Nontimber Forest Production .....	52
Appendix 9. Market Analysis for Selected Products and States .....	54
Appendix 10. Forest Fiscal Systems and Analysis.....	71
Appendix 11. Preliminary Economic Appraisal of JFM Forest Management Options .....	76
Appendix 12. Community Forestry Models and Forest Poverty Pathways .....	78
Appendix 13. Poverty Impact Monitoring System .....	80
Appendix 14. Institutional Options—Roles and Responsibilities for Key Actors in Reformed Community-Based Forestry .....	91
Appendix 15. What is the Potential for Increased Revenues from Community-Based Forestry? ... ..	93
References .....	100



## Acknowledgments

This report represents a major step by the World Bank toward improving the understanding of Joint Forest Management (JFM) in India. It describes how JFM is evolving and identifies reforms that could enrich both forest conservation and forest livelihoods. The report's findings will contribute to ongoing policy dialogue and reform related to watershed development at the national and state level.

The report was prepared by Grant Milne, Barbara Verardo, and Reena Gupta, under the general guidance of Adolfo Brizzi, of the South Asia Agriculture and Rural Development (SASAR) of the World Bank. The report draws on seminal literature from Indian and global community forestry, and background papers for Assam, Jharland, and Madhya Pradesh (available on request). These reports were prepared by a team of national and international consultants that included Robert deKock (resource assessment and planning systems), Owen McIntyre (international law), Alan Ogle (forest marketing systems), Peter Schatens (community forest management), Sanjay Upadhyay (legal and policy structures), and the Energy Research Institute of Delhi (social and institutional review). Moeko Saito of the Agriculture and Rural Development of the World Bank, provided material on Bank experiences in community forestry in other regions. Urvashi Narain, of Resources for the Future, contributed valuable ideas and analytical material on forest livelihoods in Madhya Pradesh. John Spears, World Bank consultant, provided information on International Finance Corporation (IFC) programs related to small-scale forest enterprises and communities. Brian Belcher and Deep Pandey, of the Centre for International Forest Research (CIFOR), provided input on forest livelihoods and monitoring. The authors acknowledge the indispensable contributions made by forest department staff in Assam, Jharkhand, and Madhya Pradesh. They provided excellent support and cooperation throughout the field work phases and were a sounding board for new ideas and concepts for reforms in informal follow-up discussions.

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## EXECUTIVE SUMMARY

This study by the World Bank indicates that forests offer vast potential for poverty reduction and rural economic growth in India while also supporting critical national conservation goals. Forestry is the second largest land-use in India after agriculture. An estimated 275 million people in rural areas depend on forests for at least part of their livelihoods. Forest dwellers, which include a high proportion of tribals, are among the poorest and most vulnerable groups in society. The government of India has adopted Joint Forest Management (JFM) as a principal approach for community-based forestry. The program now covers 27 percent of the national forest area across 27 states, and encompasses 85,000 village committees. Over the past decade, the JFM model has been evolving from an approach heavily oriented towards commercial timber managed by state forest departments (with communities providing labor), to an approach more supportive of forest conservation with communities sharing benefits in return for assisting with limited management activities.

Although this transition has been successful by some measures, most communities still fail to utilize the full potential of forests to improve local livelihoods. Forests are mainly used as a safety net during difficult economic periods, or for seasonal subsistence products like fuelwood and fodder. For communities to better exploit the untapped potential of forests, wide ranging and carefully phased reforms are required at both the national and state levels addressing: 1) stronger forest rights and responsibilities for forest communities; 2) more effective management systems targeted at communities involved with forestry; 3) improved access to more efficient market systems for major and minor products; and 4) more effective and flexible institutions and capacities.

The potential benefits from such a reform program around forestry at the community level, coupled with gains in forest productivity, are enormous. For the area presently under JFM alone, a simple analysis shows that total forest income from commercial timber, bamboo and non-timber products on improved forests could rise from an estimated US\$222 million in 2004 to approximately US\$2 billion per annum in 2020. Modest value addition could increase commercial incomes by another US\$220 million in 2020. Many communities could earn up to Rs1 million or more in cash income each year, using existing technology and management options without compromising forest sustainability and the multiple values associated with forest resources. Communities would continue to enjoy subsistence benefits from the forest worth another US\$1.1 billion per annum. Ecological and eco-tourism values from current JFM forests could be as high as US\$1.7 billion by 2020.

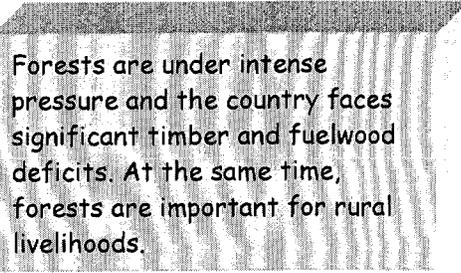
A reform agenda as outlined above emphasizes the challenges facing policy makers in further evolution of JFM towards a model where communities are more empowered with stronger forest rights, clear and consistent rules, and access to favorable markets. Such a model would position forest departments to focus more on core business functions such as technical advisory service delivery, facilitation of partnerships with communities and the private sector, and forest monitoring. A prudently phased program of reforms at the state and national level should be considered as part of a dialogue to build a national consensus on the direction, pace and scale of community-based forestry evolution in India. These kinds of reforms will require significant time, finances, and technical support, particularly to build the requisite capacities in communities, forest departments, and other relevant agencies. These reforms will also need strong political will and major commitments to foster awareness and craft a common vision among a diversity of stakeholders. By taking these bold steps however, poor social groups living in forest communities will ultimately see an improvement in their livelihoods as they become better integrated into a more productive and competitive sector of the rural economy while also safeguarding national forest conservation goals.

This report is designed to assist senior Indian policymakers in evaluating policy and program options that could help many communities gradually become more empowered to use forests as one means of moving

out of poverty. By identifying options for shifting roles and responsibilities among key actors, it contributes to the ongoing policy debate over how Joint Forest Management (JFM) should continue to evolve in India. The report focuses on the underlying legal and policy framework, institutions, resource assessment and management systems, and market systems.

The report draws heavily on detailed background studies in Assam, Jharkhand, and Madhya Pradesh, three states that represent a good cross-section of JFM history, scale and implementation progress. It is also informed by a wide array of national and international research and case studies.

## Forest Sector Overview

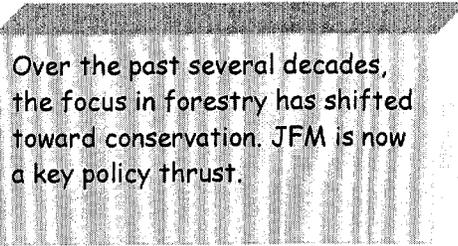


Forests are under intense pressure and the country faces significant timber and fuelwood deficits. At the same time, forests are important for rural livelihoods.

**Forestry is the second-largest land use in India after agriculture**, covering about 641,130 square kilometers, or 22 percent of the total land base. Roughly 275 million poor rural people in India—27 percent of the total population—depend on forests for at least part of their subsistence and cash livelihoods, which they earn from fuelwood, fodder, poles, and a range of nontimber forest products, such as fruits, flowers, and medicinal plants. Seventy percent of India's rural population depends on fuelwood to meet domestic energy needs. Half of India's 89 million

tribal people, the most disadvantaged section of society, live in forest fringe areas, and they tend to have close cultural and economic links with the forest. Forestry and logging accounted for just 1.1 percent of India's Gross Domestic Product (GDP) in 2001; adding nonmarket benefits of environmental services, subsistence fuelwood, fodder, and many other nontimber forest products, doubles the GDP contribution.

**An estimated 41 percent of India's forest cover has been degraded to some degree in the past several decades.** Average forest productivity is about one-third of potential rates. Timber and fuelwood demand is well above the sustainable harvest level. The national government is committed to conserving the forest and developing new forests to meet the goal of increasing forest cover to 33 percent of the land area by 2012. To meet this goal, expenditures from the center have increased by 8.1 percent a year over the past decade, mainly to support forest improvements. Budgets for critical core business functions, such as policy, research and development (R&D), and forest inventory, are very low by comparison. State budgets, while rising slightly in real terms, mainly cover recurrent costs.



Over the past several decades, the focus in forestry has shifted toward conservation. JFM is now a key policy thrust.

Before and immediately after Independence in 1947, forest management in India focused on commercial plantations, with little regard for the development needs of forest communities. In the early 1980s, a strong shift toward conservation occurred, with the Forest Conservation Act. As a supporting strategy, West Bengal and a few other progressive states experimented with allocating a specific area of forest along with limited management responsibilities to communities in return for a share of forest revenues from timber and

better access to nontimber forest products. The National Forest Policy of 1988 led to a policy circular in 1990 that formally adopted this model as JFM. It is now a principal element of forest management strategies in India, with a primary focus on protection and conservation goals. Since 1988, JFM operations have continued to evolve, with greater attention paid to rural livelihoods. Programs currently span 27 states, represent 85,000 village committees, and cover more than 17.3 million hectares of forest land.

India's community-based forestry model is evolving, but most communities are not tapping the full potential of forests to improve their livelihoods and reduce poverty.

**The current JFM model is weighted in favor of state forest department control over planning, management, investment, harvesting, and marketing.** Most communities participating in JFM fail to tap the potential of forests to improve local livelihoods. Forest communities still tend to use forests mainly as a safety net during difficult economic periods, or for seasonal subsistence products, such as fuelwood and fodder. For communities to capture more of this untapped potential, wide ranging and phased reforms are required at both the national and state levels.

The potential economic benefits from improved forest productivity and policy reforms for community forestry in India are huge, both for people and governments.

**The potential benefits from improvements in forest productivity, coupled with further reforms around community-based forestry are massive.** Considering only the area currently under JFM, total forest income from commercial timber, bamboo and nontimber forest products could rise from an estimated \$222 million in 2004 to about \$2 billion a year in 2020 based on modest assumptions about forest productivity gains and commercial output from forests managed by communities. Further, with modest value addition and quality enhancements,

annual commercial incomes could increase by \$220 million in 2020. Many communities could earn up to Rs1 million or more in cash income each year, using existing technology and management options without compromising forest sustainability and the multiple values associated with forest resources. Given improved technology and better market access, many communities could evolve higher level value-added activities that generate even greater returns. Communities would continue to enjoy subsistence benefits from the forest; the net value of domestic fuelwood and fodder could be worth another \$1.1 billion a year. Ecological and ecotourism values from current JFM forests could be as high as \$1.7 billion as formerly degraded forests mature and begin to generate important conservation benefits.

The timing is right for a renewed national debate on community forestry and reform agendas.

**Many stakeholders at both the state and national levels agree that strengthening forest rights and management responsibilities of communities could help unlock more of the value inherent in Indian forests and boost local livelihoods while also supporting forest conservation policy goals.** A range of opinions exists however, on how this transition can be

achieved, the pace at which it should occur, and what the immediate and longer term policy and program priorities should be to make this transition a reality.

**A number of recent events suggest the timing is right for a broad, national debate on community forestry, leading to a program of progressive reforms.** First, the government of India has commissioned a National Forestry Commission, chaired by the former chief justice of the Supreme Court, to present a report to Parliament in early 2006 addressing a range of forest sector issues, including community forestry. Second, a strong debate is emerging over proposed national legislation that would recognize historic land and resource rights of many tribal people living in scheduled areas in India. Third, the change in national government in 2004 has focused increased attention on a development agenda aimed at rural economic growth.

## Community-Based Forestry in India: Key Issues

Legal issues associated with land and forest rights, the free movement of forest produce, and conflicts with the Panchayat Raj (Scheduled Areas) Act impede the evolution of community-based forestry.

**India's legal and policy environment for forestry is complex and challenging.** Under India's Constitution, national and state governments share jurisdiction for forestry. The Indian Forest Act of 1878 and Indian Forest Act of 1927 emphasized commercial timber production. The Forest Conservation Act of 1980 and the 1988 National Forest Policy shifted the pendulum strongly toward forest conservation and JFM. This conservation direction was complemented by the 1972 Indian Wildlife (Protection) Act.

The central government has issued numerous and in many cases progressive policy circulars on JFM since the 1980 Act, but implementation has been slow. States apply a set of laws to forests and forest management, largely following the provisions of the Indian Forest Act of 1927. At the state level, a number of critical legal and policy issues exist, including the erosion of historic land and forest resource rights held by many communities and tribal people, the weak legal foundation for JFM in many states, poorly defined resource rights for participating communities in JFM agreements, restrictive rules on the harvesting and transport of many forest products (despite guidelines by the Ministry of Environment and Forests in 2004), and conflict resolution mechanisms that are too heavily weighted in favor of the forest department.

Another key issue relates to decentralization. The 73rd Constitutional Amendment of 1992 supports the government's goal of decentralizing governance through *panchayat raj* institutions. Under the Panchayat Extension to Scheduled Areas Act, 1996 (PESA), *gram sabha* (village assemblies in scheduled areas) were endowed with powers over community resources, including ownership of minor forest produce. These powers included the power to prevent alienation (where lands are expropriated or otherwise reallocated to other users) of land in the scheduled areas, to take appropriate action to restore any unlawfully alienated land of a scheduled tribe, and to manage village markets. A number of potential areas of conflict and uncertainty exist between state forest legislation and PESA that need to be better understood and addressed.

The current JFM model does not fully recognize the unique needs and characteristics of forest dwellers, who are among the poorest groups in society.

**Forest fringe communities are among the poorest in society.** In many of these communities, tribal people represent a significant share of the population. They depend on forests for their cultural, spiritual, and to varying degrees economic needs. The decline in traditional institutions has adversely affected forest dwellers. Government devolution programs and sector-driven initiatives such as JFM do not usually recognize the unique characteristics of forest dwellers, including tribal people, which can reduce the

effectiveness of project thrusts and their impact on poverty.

Communities, including those with large tribal populations, often view JFM as imposing external rules that ignore existing management institutions governing prudent uses of natural resources that incorporate local knowledge and cultural contexts. Many villagers view JFM formation as a top-down, nonparticipatory process that can exacerbate existing social tensions between tribal and nontribal people. Meaningful participation of communities in the micro-planning process is often quite weak, with insufficient regard given to people's subsistence forest requirements and broader development needs.

Forestry is not usually a high development priority for rural people; the most pressing needs for development tend to be improved agricultural production through irrigation and extension services; safe drinking water and simple hand pumps; assistance with village-based income generating activities; access

to electricity; improved roads and better transport facilities; better access to education and health facilities. Rural development programs for remote forest communities appear to be poorly coordinated and suffer from anemic service delivery.

Agriculture, labor, and forests all contribute to rural livelihoods in forest fringe areas. Subsistence products, particularly fuelwood and fodder, are the main contributors to local livelihoods from the forest. Rural people generally earn very little cash income from forests, due to poor roads, a focus on low-value products, poor forest quality, and weak market linkages.

**Current forest management systems need significant strengthening to monitor forest change and support further transitions in community-based forestry.**

**Several key issues around management planning and resource assessment appear to be hindering more progressive forest management with communities:** First, resource assessment systems need strengthening, even in states such as Madhya Pradesh, where forest inventory and growth and yield systems are reasonably robust. These systems are particularly weak at the community level, especially for nontimber forest products. Second, mapping

capacities vary across state, but all states examined require significant incremental investments in financial and technical resources. Third, deficiencies in forest resource assessment systems and mapping make it difficult for state forest departments to effectively monitor how the forest is changing over time. Routine monitoring of forest livelihoods and poverty is not conducted. Forest departments focus on meeting annual targets rather than outputs, impacts, and outcomes. Fourth, the geographic area of responsibility and the range of responsibilities for field staff are much greater than in many other countries. More creative options for forest department staffing and mandate need to be considered for field operations that build on resource realities and comparative advantages of forest department field staff, private consultants, and communities. Fifth, community forestry needs more guidance from financial and economic analysis, yet there is little technical capacity in state forest departments and the Ministry of Environment and Forests. Five areas are emerging where economics analyses could support policy reform and program implementation: reviewing alternative tenure and access rights systems and their relationship to forest livelihoods conservation, forest productivity, and public expenditures; evaluating the economics of silviculture for community-managed forests; assessing local incentives by allocating communities good-quality forest along with degraded land; analyzing the costs and benefits of farm forestry; and reviewing current benefit-sharing schemes.

**State forest marketing institutions tend to be inefficient and limit communities from more direct market access that could yield higher incomes.**

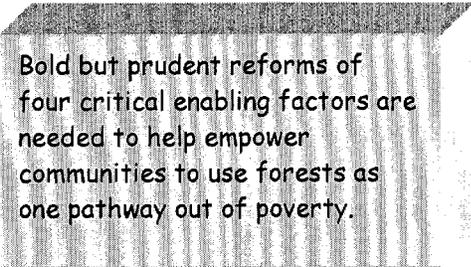
A range of forest product marketing models exist in India, and they are continuing to develop. However, for many timber and nontimber forest product species with commercial value, market systems are still largely dominated by state monopolies supported by a restrictive legal and regulatory framework. Private sector involvement in forest resource establishment and marketing appears to be limited in most states.

An analysis of several major product groups illustrates a range of critical issues and opportunities in forest product market systems. Communities have very little capacity, and are given very limited space to engage in direct marketing of timber, which could open significant opportunities for forest revenues while also reducing the need to maintain costly state institutions in harvesting and marketing. With nontimber products such as kendu leaf, market forces are not allowed to operate at all points along the value chain. Collectors are simply paid a wage per bag, largely divorced from market signals about product quality. Bamboo, a major product in Northeastern India, offers excellent opportunities for private growers to

supply pulp mills. In Assam, however, a complex, cross-subsidized purchasing scheme distorts markets. Meeting fuelwood demand and improving livelihood opportunities requires innovative solutions on both the supply and demand side. Medicinal plants and aromatic oils offer exciting promise for the future in all states. Assam and Madhya Pradesh provide examples of good progress in developing demand-driven market systems through partnerships between communities and public and private sector interests. Approaches in these two states and others, such as Andhra Pradesh, illustrate that forest departments do not need to control the market but can instead play a supportive and facilitating role.

**Several problems with the forest fiscal system in India hinder transformation of community forestry.** First, the JFM benefit-sharing system is overly complex, has high transactions costs, and is focused on a narrow range of revenue generation options at the primary resource level. Second, the policy direction for this approach is not clear, and there are contradictions with economic theory. Furthermore, while most commercial products harvested by communities are subject to benefit sharing, a few can be marketed privately, with the state collecting no revenue. Third, average revenue generation from primary forest production by the forest departments is low, reflecting poor commercial opportunities by communities and suboptimal forest productivity.

## **Policy and Program Options for Unlocking Opportunities for Forest-Dependent People**

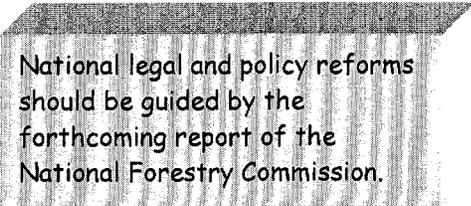


**Bold but prudent reforms of four critical enabling factors are needed to help empower communities to use forests as one pathway out of poverty.**

**Despite the notable achievements of JFM in the past two decades and many highly skilled and dedicated staff, the current JFM model has not adapted quickly enough to keep pace with the rapidly changing domestic and global business and policy environment.** Forests are not a major contributor to cash livelihoods in most communities, but the potential exists to increase commercial forest-based activities as one step along the pathway out of poverty. Bold but prudent policy actions are needed at the national and state levels to shift JFM from a

command and control model with a strong conservation focus to a more commercial and livelihood based approach that empowers communities. Reforms need to focus on four critical enabling factors: achieving more secure tenure and management rights for forest dwellers; strengthening forest management, monitoring, and control systems; providing access to more efficient market systems; and developing more effective and flexible institutional models.

### ***Achieving More Secure Tenure and Management Rights for Forest Dwellers***



**National legal and policy reforms should be guided by the forthcoming report of the National Forestry Commission.**

The Ministry of Environment and Forests constituted a National Forest Commission in 2003, chaired by the former chief justice of the Supreme Court, to review the working of the forests and wildlife sector, including the national legal and policy framework. That commission's report and its recommendations for national policy and legal reform are expected to be issued in early 2006. In the meantime, it is important that India consider developing a

national consensus on the legal and policy framework governing forestry. To build this consensus, public input beyond what the commission has already gathered may be required, possibly led by a national steering committee comprised of government and broader civil society.

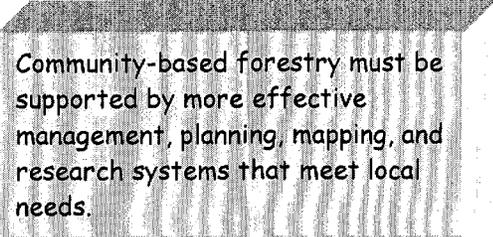
**States need to strengthen forest policies and grant stronger land or resource rights to communities.**

Individual states need to examine practical options for legal and policy reform. In some cases this may mean amending existing law; in others it may mean drafting a new consolidating Forest Act. Both options must be supported by a more effective regulatory framework. Specific reform options to consider include the following:

- *Strengthen current forest policies* Policy should be a dynamic process, with adjustments in tune with changing social, economic, ecological and cultural factors. Using a participatory process, policymakers should revise state forest policies to recognize historical tenure-based forest resource rights and lay out a new community forest management framework with stronger forest resource tenure for communities. The 2004 Assam forest policy is a good model to examine as a starting point; it is progressive, innovative, and based on a reasonable level of public input. The Department for International Development (DFID) and state forest departments in Orissa and Himachel Pradesh are also crafting comprehensive forest sector strategies and policy.
- *Establish stronger resource rights for communities.* New approaches are needed in three broad areas. Where historic forest resource rights already exist, they should be clearly acknowledged in policy, codified in law, and recorded on maps. A number of countries, such as Brazil, have successfully addressed this situation. Where no historic forest resource rights exist, global experience can help guide reforms. Although the most efficient option might be to assign land title to communities (or households), this is a long-term and politically sensitive issue. As an interim measure, tenure could be granted for a fixed term, giving the community specific contractual rights and responsibilities over the forest. China has had successful experiences with this approach. Another option is to grant 20 to 25 year tenure, renewable and extended in five-year increments, based on the community meeting clear performance standards for forest stewardship. This model has worked in Latin America and Canada. Tenure rights for nomadic tribal people also need to be addressed. State governments may wish to establish a high-level forest rights review body, chaired by the chief minister's office, with appropriate representation from line ministries, communities, and tribal groups.
- *Revise implementing mechanisms for community forestry.* Community-based forestry as represented by JFM needs a stronger and more consistent legal footing, either linked to an existing state law, as in Assam, Uttaranchal and Uttar Pradesh, or merged with new consolidating forest legislation. In the absence of land title, forest tenure with communities on state land need to be a legally binding agreement, preferably as a "management contract" between the community and state. A more flexible forest user group committee model is required that is better suited for existing community institutions and that also respects PESA provisions in scheduled areas. The government of India and the states should consider a national review of community institutions and the PESA interface to better understand linkages and legal and regulatory constraints, identify a roadmap for reforms, and develop a program for capacity building and education in relevant line agencies. Recent global experience from Canada, Nepal, Latin America, and parts of Africa provide useful models.
- *Reform the harvesting and transit permit regime on selected forest products.* Some states have made progress in relaxing these rules based on 2004 guidelines from the Ministry of Environment and Forests, but further reforms are still needed to improve efficiency. One option would be for state governments to convene an independent panel of stakeholders, including forest departments, private forest farmers, JFM committee members, local sawmill owners, major buyers of nontimber products,

local development banks, and interested community service organizations. This process would benefit by the Ministry of Environment and Forests issuing a list of only those species that require a more restrictive regulatory framework based mainly on international biodiversity conservation rules, such as Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Other species could then be taken off transit permit lists by states, in line with improved monitoring systems to track movement of high-value forest products.

### ***Strengthening Forest Management, Monitoring, and Control Systems***



Community-based forestry must be supported by more effective management, planning, mapping, and research systems that meet local needs.

To facilitate a gradual and measured transfer to communities of more rights and responsibilities over forest management, a number of reforms are needed in underlying management, monitoring, and control systems. Reforms should be guided by a comprehensive forest sector strategy that sets out a framework for forest sector development with a focus on conservation and rural livelihoods improvement. Key priorities for reform include the following:

- *Strengthen planning approaches for community forestry.* As community-based JFM in India expands and evolves, it will gradually account for a more significant share of the forest area in many forest divisions. Current top-down working plans will become less relevant and could be transformed into more concise guiding strategic documents. Better information is required on the forest resource base and changes, economics and market intelligence, and community social capital and institutions. Consideration should also be given to incorporating a reasonable level of public input to working plans, possibly through the Forest Development Agency structures. Community-level micro-planning must be guided by a comprehensive operational manual, which could be based on experience in community-driven development programs in other sectors in India, such as watershed development and District Poverty Initiative Programs. Manuals produced in Assam and Madhya Pradesh for JFM also show promise as models. Micro-planning should also consider clustering communities where appropriate to build on tribal institutions and take advantage of economies of scale for planning and program implementation at a watershed or landscape level.
- *Increase investments for resource assessment and mapping systems.* The underlying resource assessment and monitoring system must be significantly strengthened at the division and community levels to support further shifts in rights and responsibilities to communities and allow for improved monitoring programs. These improvements must be underpinned by significant investments to strengthen growth and yield information and models. Models need to be developed for forest species of interest and value to communities rather than traditional commercial timber species. There are considerable opportunities to use communities to gather baseline and change data. Global experience in this area can provide useful lessons to build on. Enhanced monitoring systems must also account for changes in livelihoods from forest-based activities. Ongoing Bank-funded work in Jharkhand is developing simple tools that could easily be replicated in other states.
- *Review and refocus research and development.* Although some states, such as Andhra Pradesh and Madhya Pradesh, are gradually reorienting R&D to nontraditional timber and nontimber forest product species to meet community needs, national R&D still focuses largely on plantations and traditional commercial timber species. To improve the linkages between R&D, dissemination and subsequent uptake by communities across India, the Ministry of Environment

and Forests and state forest departments may wish to consider developing a new national strategic plan for R&D, oriented toward community forestry transitions and priorities.

### *Providing Access to More Efficient Market Systems*

Market systems for community-based forestry need to be liberalized and more aligned with ongoing transitions and reforms in agriculture marketing.

Forestry appears to be lagging far behind agriculture marketing systems, which have been subject to a series of reviews and major reforms in recent years. One of the greatest challenges in forestry market systems is to change the prevailing mindset that forest products, particularly many nontimber forest products, are “different” from agricultural commodities and that marketing therefore has to be managed by the forest department. This attitude is slowly changing in some states, such as Andhra

Pradesh and Assam, but it has not yet reached across all forest products. Some of the key priorities for reform of market systems include the following:

- *Develop new approaches for market access by communities.* Communities and farmers wanting to sell commercial forest products outside of local markets should have the option of using contract sales or outgrower schemes rather than state institutions. Even where JFM rules provide space for greater direct marketing, little capacity exists among communities to access these markets or obtain fair prices. New approaches can reduce the risk and uncertainty to sellers while ensuring purchasers of a more reliable supply over a specified time. Purchasers may also provide credit support, inputs, storage facilities, and technical advice to producers as part of the contract agreement, factoring these benefits into the negotiated price. Nontimber forest products that are not listed for special harvesting or transit permits offer great potential for these new market options; there are already a growing number of examples from states such as Andhra Pradesh, Assam, and Madhya Pradesh. For timber, bamboo, and fuelwood, the experience has been less positive, yet there is no compelling reason why, after a period of transition and capacity building, new marketing approaches cannot be extended to communities and small farmers as legal suppliers of these products. Opening up markets will require some states to amend forest legislation and possibly Agricultural Produce Marketing Committee Acts. Concerns over potential loss of revenue to forest departments (and states) by communities and farmers selling their timber outside of the department monopoly structures can be addressed by reviewing the current forest fiscal system and developing alternative sources of revenue, such as better collection of downstream sales or income taxes from commercial forest products. Forest sustainability can be improved through a more robust monitoring program in addition to stronger tenure rights for communities. Latin America, particularly Mexico, has had good experience with market liberalization and fiscal system reforms of community forestry.
- *Strengthen the market power of communities.* Producer organizations (associations, federations, cooperatives) at the community level need to be nurtured, based on targeted capacity building. In addition, state-level marketing federations of forest communities should be encouraged to strengthen their market position, facilitate the establishment of storage areas, train for value addition and more sustainable harvesting methods, and allow consolidated consignments of timber, bamboo, fuelwood, and nontimber forest products to be sold directly by communities to large processing or marketing firms through auctions or contract agreements. Producer organizations may need assistance from the state to develop, but within a reasonable time period these institutions should have a fully independent federation at the apex, with elected officials and a board of directors a majority of whose members are not from the forest department.

- *Improve extension and technical services.* Most state forest departments are weak in extension and technical services, particularly for agro-forestry, nontraditional timber species, and nontimber forest products. New models must be explored. Partnerships with the private sector for outgrowing schemes and outsourcing some of this work to the private sector and community support organizations could be considered. Andhra Pradesh and Madhya Pradesh have made reasonable progress toward helping villages improve sustainable nontimber forest production and harvesting, incorporating modest value addition, and building on local knowledge systems.
- *Enhance market information sharing and networks.* States need to strengthen mechanisms for gathering and sharing market intelligence within government line departments and with communities and forest farmers. One policy option to explore is extending the highly successful e-Choupal concept in agriculture to bring Internet-based forest product market information to communities. Another option is to extend the Agriculture Market Intelligence Network (AGMARNET) to forestry, providing Internet-based market information sharing among agriculture produce marketing committees in most states in India. Alternatively, a new forestry network could be established with suitable private sector support. The web site of the Madhya Pradesh Minor Forest Product Federation offers a good example of what kind of information a marketing web site could offer.
- *Create national incentive programs to induce state marketing reforms.* The government of India should consider instituting a forest diversification program similar to the recently announced scheme called Development/Strengthening of Agricultural Marketing Infrastructure, Grading and Standardization. This program could induce large investments from the private and cooperative sectors for setting up forest product markets, marketing infrastructure, and support services, such as grading, standardization, and quality certification.

### ***Developing More Effective and Flexible Institutional Models***

Current staffing constraints in forest departments, coupled with limited, albeit slightly increasing operating budgets, make a strong business case for refocusing staff on narrower core functional areas around the goals of improving rural livelihoods and conserving the forest. Although these goals are posited by Ministry of Environment and Forests, and many state governments, a new partnership model is needed that recognizes inherent comparative advantages and constraints among forest departments, communities, private forestry consultants, and community support organizations. Specific recommendations include the following:

Targeted training and investment programs should be implemented to help forest departments rationalize their roles and focus more on facilitation and technical advisory services.

- *Forest departments need to review and rationalize their role.* State forest departments need to strengthen capacity in five core areas: forest management technical advisory services; R&D and technology transfer; forest monitoring, mapping, and information management; forest marketing technical services; and economics, policy, and planning. This revised focus would support a model in which communities, in conjunction with *panchayats*, gradually assume responsibility for micro-planning, plan implementation, harvesting, marketing, and protection, with technical guidance from the forest department or private consultants. State forest departments should consider a strategic planning process to guide internal organizational transformation and rationalization.

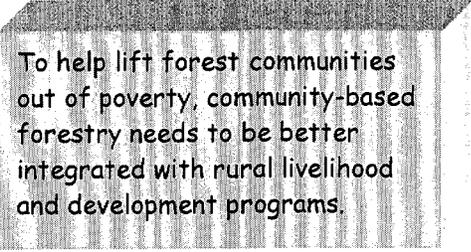
Many communities can assume a greater role in forestry management and marketing, but substantial time and investments will be needed to build strong local capacities and sustainable institutions.

- *Communities and other local institutions must be willing and capable of assuming these new rights and responsibilities.* The proposed transition must be measured and prudent in order to allow communities, local authorities, and other supporting institutions, such as producer organizations, to gain sufficient experience, new skills, and confidence. Capacity must be created to develop group consensus, enduring and capable institutions, transparent rules and procedures, and equity among all groups and to overcome the individual

tendency to free ride. Institution building should consider whether the current JFM model of co-opting all adult villagers into the user committee is more sustainable than establishing a committee made up only of villagers genuinely interested in forest management and with greater dependency on the forest for livelihoods.

Building social capital requires a long-term commitment between the state and communities, often with community support organization partners. This will take time and substantial financial resources, but committing to improved social capacity building will allow state forest departments to rationalize and direct limited resources on internal core business functions with less fear of compromising forest conservation. Valuable lessons in building community institutions and capacities can be gleaned throughout India from watershed programs and District Poverty Initiative projects, among others.

- *Forestry associations need to be established for forest-based communities.* Community forestry associations are needed at the state level to facilitate community empowerment and level the playing field in terms of power relationships with government. These institutions should grow organically, but where interest is shown, a grant from the center or external donors could provide seed funding for a small office, equipment, membership drives, registration, development of a data base, and the production of materials. The associations could then support their apex office through modest annual subscriptions.
- *Information needs to be shared across institutions.* An almost overwhelming level of published and electronic material on community forestry exists in India, but it is widely scattered. Stakeholders cannot easily build their knowledge bases or share experiences India and other countries where community forestry has evolved. The government of India, in partnership with appropriate community support organizations, the private sector, and international organizations, needs to build a strong and sustainable multistakeholder community forestry network. One option would be to strengthen existing national networks, such as the Resource Unit for Participatory Forestry (RUPFOR) could. In addition to written and electronic material, knowledge sharing through a well-funded, multiyear, and coordinated program of national and international exchange visits is needed for people at different levels, including senior policymakers, government officials, and community members. Opening up to other community-based forestry experiences can be a powerful catalyst for change.



To help lift forest communities out of poverty, community-based forestry needs to be better integrated with rural livelihood and development programs.

- *Delivering integrated rural development services to remote forest fringe communities will require new models.* Agencies such as tribal affairs, agriculture, and rural development need to play a more central role in rural livelihood programs linked with community forestry. *Panchayat raj* institutions need to become more integrated into rural development in forest communities within their jurisdiction. To help identify and evaluate

options, a state-level review of rural service delivery programs in forest fringe communities is suggested, led by the chief minister's office. State governments should also consider establishing an advisory body on rural development and forestry at either the chief minister or forest minister level, led by an independent senior chairperson, with senior representatives from key government rural development agencies, tribal leaders, and selected community support organizations.

## Glossary

Adivasi	Indigenous ethnic groups outside of the mainstream of society, often referred to as “scheduled tribes.” The latter refers to a government policy that grants them certain affirmative action rights.
Bidi	Country cigarette in India made with tobacco and rolled in a kendu leaf
Block	A block is an administrative level of government between the panchayat and the district.
Community	A group of habitations or hamlets, managing its affairs in accordance with customs and traditions
Crore	Ten million units
Current Annual Increment	The annual increment of wood for a forest in any given year.
District	India is divided into states and states are divided into districts. Many government development programs operate at the district level under the district collector, who is the top civil servant at the district level.
Gram Panchayat	Village-level elected body
Gram Sabha	Gathering of all villagers within the jurisdiction of a gram panchayat
Joint Forest Management:	A government program in which the state Forest Departments, which officially control all Indian forest land, partner with local communities to protect forests. Community members share the proceeds of timber and other forest products as part of a joint agreement. Specific terms vary by state.
Lakh	One hundred thousand units
Mean annual increment	Average growth rate of a forest, calculated as the total increment of wood from establishment up to a given maturity age, divided by that age
Naxalites	Insurgents operating in some Indian states waging a violent struggle for land rights and political objectives
Nistar	The traditional rights of people living in forest areas to gather products such as fuelwood, fodder, foods and medicines necessary for survival needs.
Panchayat:	A local unit of government covering a small number of contiguous villages.
Scheduled areas	Special areas notified in a series of legislations over the past several decades that provides various protection measures for tribal groups

Scheduled caste (SC)	Low caste groups, also called dalit, untouchable, or Harijan, who traditionally have been at the bottom of the social hierarchy in India. “Scheduled caste” is the official and most socially acceptable term used for these groups. “Scheduled” refers to government policy that grants these groups certain affirmative action rights.
Scheduled tribe (ST)	see Adivasi.
Silviculture	An area of forestry dealing with the methods of establishing and growing trees
Tribal:	see Adivasi
Zilla panchayat	District-level elected body



# 1. Introduction

## Joint Forest Management and Community-Based Forestry Models

**Forestry represents the second-largest land use in India after agriculture, covering about 641,130 square kilometers, or 22 percent of the total land base (FAO 2005).** The sector contributes a little more than one percent to Gross Domestic Product (GDP). Forests also provide a wide range of environmental and ecological benefits. About 275 million poor rural people in India depend on forests for at least part of their subsistence and cash livelihoods, which they earn from fuelwood, fodder, poles, and a range of nontimber forest products, such as fruits, flowers, and medicinal plants. Seventy percent of India's rural population depends on fuelwood to meet domestic energy needs. Half of India's 89 million tribal people, the most disadvantaged section of society, live in forest fringe areas, and a significant percentage of India's 471 million livestock are sustained by forest grazing or fodder collected from forests.

**Joint Forest Management (JFM) is now a principal forest management strategy in India.** In June 1990 the government issued a resolution that made it possible for state forest departments to formally involve people in forest management through JFM<sup>1</sup>. In return for providing improved forest protection, communities receive better access to nontimber subsistence forest products and a share of net commercial timber revenues. The state retains most of the control and decision making over forest management, regulation, monitoring, timber harvesting, and forest product marketing. The government views JFM as a pivotal strategy for addressing the national policy goal of achieving 33 percent forest cover by 2012. The main focus of JFM in India is forest protection and conservation.

**Some states initiated the JFM approach in 1990; others took much longer.** JFM programs currently span 27 states, represent 85,000 village committees, and cover more than 17.3 million hectares of forest land. The program encompasses an estimated 8.3 million families, half of which are scheduled castes and tribes (Bahuguna 2004). Most JFM communities use the surrounding forests mainly as a safety net or for regular or seasonal subsistence production of fuelwood, fodder, and minor nontimber forest products, such as fruits and medicinal plants. Commercial sales of forest products by the communities are very limited and not well integrated into larger urban and national markets.

**JFM represents a model of community-based forestry in which the state engages with communities in forestry.** A variety of community-based forestry models exist. At one end of the spectrum, governments own the land and forests and implement most forest management and marketing functions. At the other end, communities own the land and forests and are responsible for most forest management and marketing functions. The current JFM model in India falls between these two positions and is continuing to evolve. Opinions in India differ regarding how far this evolution should go, the pace at which it should occur, and what the immediate and longer term enabling policy and program priorities should be. The issues are complex, emotionally charged, and highly political; some have resulted in legal challenges brought before the Supreme Court

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<sup>1</sup> Following the National Forest Policy of 1988, the Government of India issued a resolution in June 1990, making it possible for state forest departments to formally involve people in forest management through Joint Forest Management (JFM).

**International experience suggests that when communities are empowered with greater rights and responsibilities, forest conservation and rural livelihoods tend to improve.** Durst and others (2005) provide numerous examples from Australia, Cambodia, China, Nepal, New Zealand, Vietnam, Thailand, and Vanuatu in which communities have successfully managed forest resources to achieve a range of ecological and economic goals. White and Xu (2004) identify a global shift toward community-based forestry models. Many of these models recognize ownership rights of indigenous peoples and traditional communities and are devolving management responsibilities as part of a broader decentralization process.

**Latin America is emerging as a leader in implementing innovative community-based forestry models** (Molnar 2004). In Brazil the government has recognized traditional rights to 80 million hectares of forest in the Amazon frontier. Management and forest conservation are proving as effective as under the old government command and control system—and in many sites much more effective. In Guatemala about 450,000 hectares of forest in the Mayan biosphere area are now under management by communities; remote sensing clearly shows an improvement in forest cover and forest density. In Mexico many communities have been allocated land ownership and most forest management rights. With government and external support to build required capacities, many community forest enterprises have developed technical expertise in forest management, production, and marketing. In the state of Peten, for example, community forest enterprises contribute almost \$400,000 to the state treasury; they also invested \$140,000 in fire control and management and \$136,000 in forest monitoring and protection. Given time, financial and technical support, and the right incentives, many communities can effectively develop and manage forests, reducing government management costs and generating incremental financial gains to the state.

**International experience suggests that further evolution of the JFM community-based forestry model in India may improve livelihood opportunities and conservation.** But four critical enabling conditions must be met in order for it to do so. First, communities must be provided with more secure forest resource tenure and management rights. Second, more effective and flexible institutional models must be applied with communities. Third, better systems for forest regulation, monitoring, and control must be developed. Fourth, communities must be provided with greater access to efficient markets for goods and services from the forest (Molnar, Scherr, and Khare 2004). Addressing these four factors must occur through integrated reforms and programs. The challenge facing Indian policymakers is to create an enabling environment that will improve opportunities for communities to use forests as a means of moving out of poverty while not compromising national forest conservation goals. Although international experience must be viewed with caution, there is growing evidence that movement toward a model with greater community rights and responsibilities over the forest can bring substantial economic and forest conservation benefits. In India a deliberate and well-intentioned process for continuous improvement is needed to support positive and progressive change.

## **Study Objectives and Structure of the Report**

This study aims to stimulate debate on the continued evolution of JFM in India by presenting research conducted within India and providing relevant examples from other regions. The report identifies key questions and constraints surrounding the continued evolution of community forestry in India. It suggests new models for community-based forest management based on realistic solutions to increase forest-based livelihoods and reduce poverty in forest communities while also strengthening forest conservation, and it outlines options for enabling policy reforms at the state and national levels. The work builds on seminal national studies of community-based forestry completed in the past few years, including Khare and others (2000) on forest policy related to JFM;

Khan and Pillai (2001) on national legal and policy frameworks; Saigal, Arora, and Rizvi (2002) on issues and opportunities for private forestry, especially farm forests; and Bahuguna and others (2004), which provides a comprehensive update on JFM at the state level.

The report identifies options for improving local livelihoods in a community-based forestry model through an integrated approach that includes the legal and policy framework, institutions, resource assessment and planning systems, and marketing systems. The study is based largely on background papers developed from detailed analyses of JFM in Assam, Jharkhand, and Madhya Pradesh. All three states are important, because they have high poverty levels and large numbers of rural people who use forests for livelihoods. The three states differ in terms of the scale of the resource base, forest cover types, forest utilization, history and scope of JFM, forestry institutional capacities, and legal, policy and regulatory frameworks to support community-based forestry.<sup>2</sup> In addition, an extensive literature from other states, national studies, national statistics, and research on community forestry in other countries was used to complement the state reviews and develop a broad, national report.

The research focuses mainly on community-based forestry outside protected areas. Although many states have instituted a parallel system of community-based natural resource management for villages inside and adjacent to protected areas (based on ecotourism and limited removals of subsistence products), the differences in approach, legal framework, and benefit-sharing warrant a separate study. The current study focuses on issues and opportunities for community-based forestry rather than farm forestry, which is covered in detail by Saigal, Arora, and Rizvi in their 2002 study.

The report is organized as follows. Chapter 2 provides an overview of the Indian forest resource and forest economy. Chapter 3 reviews the legal and policy framework and identifies key issues. Chapter 4 provides insight into the livelihood patterns of forest fringe communities and offers an evaluation of JFM from the perspective of villagers. Chapter 5 considers the main issues surrounding forest resource assessment and planning systems. Chapter 6 evaluates critical issues in forest product marketing systems and the forest fiscal system. Chapter 7 presents options for policy and program reform. Chapter 8 summarizes the report's conclusions.

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<sup>2</sup> See appendix 1 for a brief overview of the forest conditions in each state and the study methods.

## 2. Overview of the National Forest Economy

### Forest Land Base

A little more than 20 percent of India's land base is classified as forest. India has about 64 million hectare of forest cover (FAO 2005),<sup>3</sup> allocated among dense (59 percent), open (40 percent), and coastal mangrove (1 percent) categories.<sup>4</sup>

**Forest ownership is concentrated in the public sector.** In India, 65 percent of the forest is administered solely by the government and another 27 percent reserved for community and indigenous groups (through JFM) but still largely administered by government. Only eight percent of forest land is managed by private individuals on farms or by large forestry firms.<sup>5</sup> The level of public ownership/administration in India is very high compared with many other developing countries with significant forest areas and community forestry programs (table 2.1).

**Table 2.1 Forest Ownership in Brazil, China, and India (percent)**

Country	Public Ownership		Private Ownership	
	Government Administered	Community Administered	Community and Indigenous	Individual, Private
Brazil	77	13	0	10
China	45	0	55	0
India	65	27	0	8
Mexico	5	0	80	15
Argentina	21	0	0	79

Source: White and Martin 2002, and author

**Forest stocking and productivity are generally poor.** The average stocking level in India is 74 cubic meters per hectare—much lower than the 113 cubic meters per hectare in other developing countries (MOEF 2004). In addition, the average forest mean annual increment of 0.7 cubic meters per hectare per year is significantly below the global average of 2.1 cubic meters.<sup>6</sup> Reasons for low productivity in India include human removal of forest biomass that is not recycled into soil nutrients, grazing pressure, fire, and over cutting (Bahuguna and others 2004). About 41 percent of the country's forest cover has been degraded to some degree in the past

<sup>3</sup> FAO figures are derived from data supplied by the Ministry of Environment and Forests as part of FAO's periodic global forest inventory reporting. The Ministry of Environment and Forests may update these figures later, but the figures usually differ from the previous published figures in FAO reports in only minor ways. In this report FAO figures rather than data from the Forest Survey of India are used to allow global comparisons.

<sup>4</sup> *Dense forest* is defined as land having tree cover with a canopy density of at least 40 percent. *Open forest* is defined as land having tree cover with a canopy density of 10–40 percent. Other categories include scrub forest, with a canopy density of less than 10 percent; mangrove forest, consisting of salt-tolerant forest ecosystems found mainly in tropical and subtropical intertidal regions; and nonforest areas, in which there is no tree cover of any kind (MOEF 2001b).

<sup>5</sup> Figure was calculated by the authors, based on data from White and Martin (2002).

<sup>6</sup> The mean annual increment is the total growth of trees in a stand up to a given age divided by that age. It is often expressed in annual cubic meters of growth per hectare. The mean annual increment changes with different phases in a tree's life. It is highest during the middle years and slowly decreases with age. The point at which the mean annual increment peaks is commonly used to identify the biological maturity of the stand and its readiness for harvesting.

several decades (converted to open or scrub forest, for example), due to intense pressure from a range of human and biophysical causes (box 2.1).

**A regional and global analysis of forest cover provides a mixed message** (table 2.2). India is the only country in South Asia with a positive increase in forest cover between 1990 and 2000 (38,000 hectares). This increase represents only about 0.6 percent of the national forest area, however. Forest per capita of 0.1 hectares in India is on par with other countries in the region, with the exception of Bhutan. The change in forest cover in India is a positive feature, but the per capita forest cover is very low.

#### Box 2.1 Pressures on India's Forests

Pressure on India's forest come from a variety of sources, including the following:

- the increase in population, from 390 million in 1950 to 1 billion in 2001
- the loss of 4.5 million hectares since 1950 through agricultural conversion and other uses
- the high percentage (78 percent) of forest subject to heavy grazing
- exposure of half of all forests to risk from fires
- shifting cultivation, which affects almost 10 million hectares of forest
- encroachment on 1.36 million mean annual increment of forest by 2002, with evictions accounting for only 10 percent of affected land by 2004.

Source: India stat (2005); Bahuguna and others (2004).

**Table 2.2. Forest Cover in India, other Countries in South Asia, and other Regions, 2000**

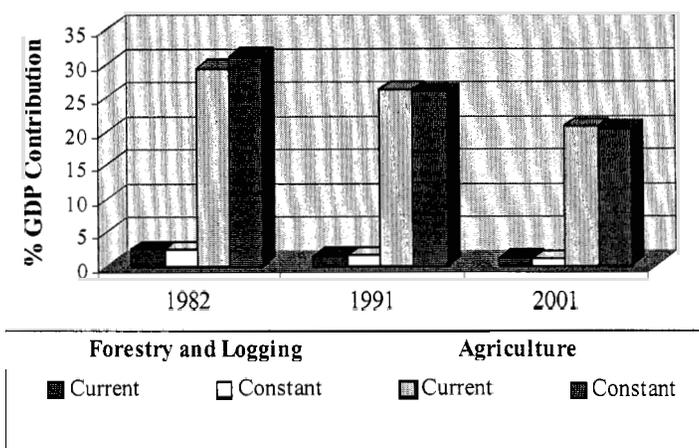
Region	Forest Cover (percent)	Forest per Capita (Hectares)	Annual Change in Hectares (000)	Forest Cover 1990–2000 Percent
South America	50.5	2.6	-3,711	-0.4
Europe	46.0	1.4	881	0.1
North/Central America	25.7	1.1	-570	-0.1
Africa	21.8	0.8	-5,262	-0.8
Asia	17.8	0.2	-364	-0.1
World	29.6	0.6	-9,391	-0.2
<i>South Asia</i>				
Bhutan	64.2	1.5	--	--
Sri Lanka	30.0	0.1	-35	-1.6
Nepal	27.3	0.2	-78	-1.8
India	21.6	0.1	38	0.1
Bangladesh	10.2	--	--	--
Pakistan	3.1	--	-39	-1.5
Afghanistan	2.1	0.1	--	--

Source: FAO (2005).

## Contribution of Forestry to Gross Domestic Product

As a major land use, primary forestry pales with agriculture. Forestry and logging accounted for 1.1 percent of India's GDP in 2001, while primary agriculture accounted for 20.7 percent (figure 2.1).<sup>7</sup> The share of Indian GDP for both sectors has declined slightly in current and constant terms since 1982. However, the percentage drop in forestry and logging is almost twice that for agriculture.

Figure 2.1 Contribution of Forestry/Logging and Agriculture to India's GDP, 1982–2001

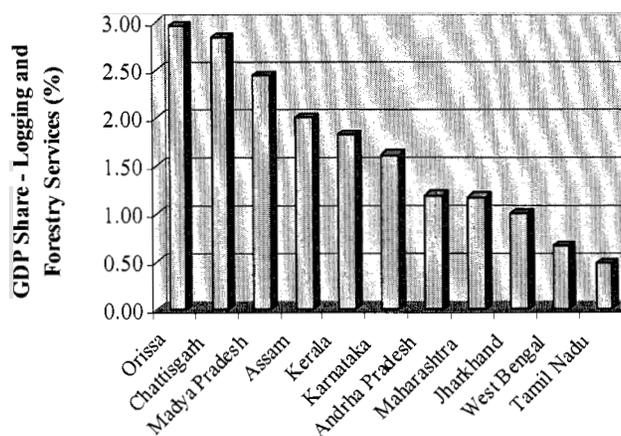


Source: World Bank (2005a). World Bank data bases.

Across selected states, forestry and logging account for 0.48–2.97 percent of GDP in current values (figure 2.2). The strict definition of GDP underestimates the total economic value of forests in India, however, as many goods and services from the forest are not traded in formal markets (examples include subsistence nontimber forest products, fuelwood, and vital ecological service functions, such as carbon sequestration, aesthetic values, and soil stability on steep slopes).

Fuelwood trade in India is estimated to have an annual turnover of about \$17 billion (MOEF 2000b) and is a source of livelihood for more than 11 million people, making it the largest employer (formal and informal) in the Indian energy sector. Ecotourism and carbon sequestration in forest areas have been estimated to increase national GDP share from forests from 1.1 to 2.4 percent (Chopra, Bhattacharya, and Kumar 2002). But even adding these values and

Figure 2.2. Contribution to GDP of logging and forestry services in selected Indian states, 2001



Source: World Bank databases.

<sup>7</sup> Figures are from World Bank database and the Central Statistical Organization. State-level GDP data do not disaggregate secondary forestry activity (sawmilling, pulp and paper, millwork, furniture and milling, and other subsectors) from manufacturing. Thus GDP comparisons are restricted to logging and forestry services.

considering nonmarket fuelwood and nontimber forest products, the share of forestry GDP is still far below that of agriculture.

## Structure of Domestic Forest-Based Industry

**Most of India's processing capacity is small scale.** India's forest-based secondary industry encompasses a wide range of small-, medium- and large-scale firms that process primary timber (logs) into a variety of products for the domestic market (table 2.3). The vast majority of plants and production capacity is small.

Table 2.3 Secondary Forest Industry in India

<i>Subsector</i>	<i>Number of Production Units</i>	<i>Capacity Share of Small-Scale Plants (Percentage of Production)</i>
Pulp and paper, paperboard	406	66 <sup>a</sup>
Wood-based panels	506	80–90
Sawmills	23,000	82
Matches	12,000	82
Doors, woodworking plants	98	25

*Source:* World Bank (2005c). See appendix 2 for more details.

a. Percentage of total capacity.

Several emerging investment constraints impede the growth of the sector. These include shortages of raw material (mainly for logs, due to felling bans in many state forests until forest management working plans are completed and numerous restrictions on log supply from private land and farmers); growing concern over environmental issues (mainly in larger production facilities, such as pulp and paper mills); judicial decisions to close unlicensed mills (particularly in the North East); economic liberalization and competition from imports (especially pulp imports); and poor management and technical skills (in sawmills, for example, less than 3 percent of lumber meets Indian grading standards).

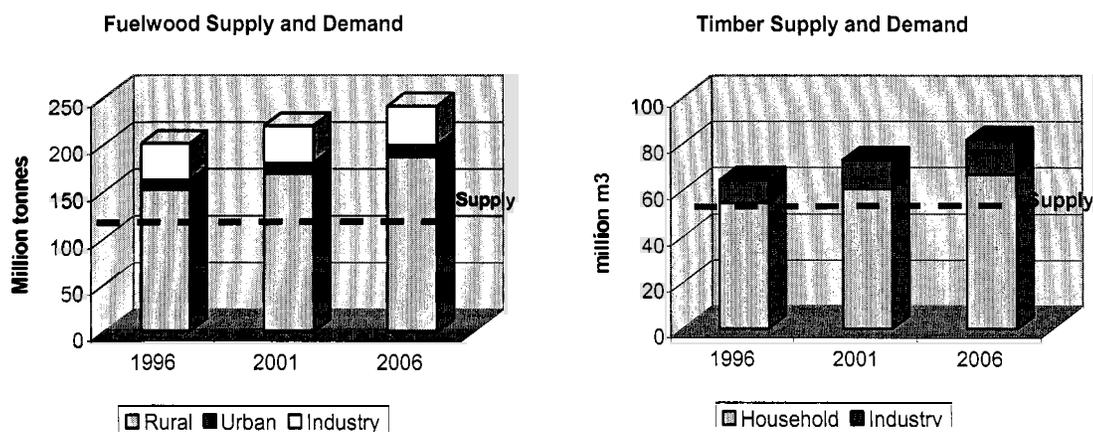
## National Wood Supply and Demand Trends

**India is facing serious imbalances between the supply of and demand for wood** (figure 2.3). Demand for timber (logs) and fuelwood is projected to increase between 1996 and 2006, while supply is projected to remain flat, leading to significant and growing fiber supply deficits (Bahuguna 2004; ITTO 2003). These projections suggest that by 2006, an estimated 139 million metric tons of fuelwood will be harvested above the sustainable supply from regulated sources. Other estimates indicate fuelwood over-cutting of 131 million cubic meters (Saigal, Arora, and Rizvi 2002). Perhaps half of this gap is made up by subsistence collection of deadfall and nondestructive wood sources from natural forests (collecting branches and litter) in rural areas. The balance of the deficit is met through unregulated removal of fuelwood from natural and plantation forests and regeneration on degraded lands or wastelands, with subsequent impacts on forest productivity and sustainability.<sup>8</sup> Driving the fuelwood deficit is the relative high cost of liquid propane gas for lower income households in rural areas and the lack of distributional networks (UNDP/World Bank 2003). Supplies of timber from natural forests have been limited by the 1988

<sup>8</sup> These estimates must be viewed with caution (see Pandey 2001). Much of the supply is not market based and is used for subsistence. Supplies often consist of twigs and forest litter (nondestructive) rather than larger logs (destructive), especially where natural forests are located far from the village and people gather material from wastelands. Most studies do not examine the provenance or form of fuelwood. Moreover, prices (either at collection time or through market prices for commercial fuelwood) are not usually factored into demand estimates. There is an urgent need for a detailed analysis of fuelwood supply and demand at the national level and an assessment of the impact on growing stock. In the interim, most analysts agree that fuelwood consumption is largely uncontrolled and represents a major drain on the forest.

National Forest Policy, which discourages harvesting of natural stands, and the 1996 Supreme Court decision requiring an approved working plan before commercially harvesting green timber in any state forest division.

**Figure 2.3 Projected Supply of and Demand for Fuelwood and Timber in India, 1996–2006**



Source: (Bahuguna 2004; ITTO 2003; Mahapatra 2003, MOEF 2000)

While supplies are likely to increase in the future as management plans continue to be approved and new plantations come on stream, they will not meet rising domestic demand. The projected timber supply deficit for 2006 is 39 million cubic meters. This shortfall will be met partially through imports of logs from overseas suppliers, particularly, Indonesia, Malaysia, Myanmar and Nigeria. Log imports are supported through a favorable tariff regime of 5 percent on logs, compared with 25 percent on sawn wood. On a volume basis, about 95 percent of all wood imports to India are industrial roundwood, mainly tropical hardwoods. On a value basis, roundwood accounts for about 42 percent of total forest products imports (ANU 2003), but roundwood imports were only 2.1 million cubic meters in 2000–01. For products like pulp and paper, alternative supply options, such as bamboo or importing pulp and paper directly, exist. But for timber the current level of log imports does not come close to meeting the supply gap. While available data preclude a detailed analysis of the national timber market, the inevitable conclusion is that much of the log supply deficit is being met through illegal harvesting, putting additional pressure on remaining high-quality dense forests. The supply-demand situation underscores the national government's strong support for forest conservation, manifested through efforts to protect existing forests and grow new plantations under JFM.

## Primary Institutions for Community-Based Forestry in India

**The Ministry of Environment and Forests is the dominant national forestry agency.** It is the lead agency for forestry, wildlife management, conservation, environmental management, and international conservation programs. Forestry is a major unit in the ministry, with direct responsibility and supporting structures for national-level forest management, conservation, and wildlife programs. Forest management is delivered through five business units, responsible for forest cover mapping, policy, protection, regional forest programs, and research and training. Training is supported by four national training centers. Research is coordinated by the Indian Council of Forestry Research and Education (ICFRE), which oversees 10 national research centers.

National wildlife management is delivered through four business units, that handle national parks, other protected areas, and species management Conservation houses the National Afforestation and EcoDevelopment Board, which delivers central financing to states and communities (through JFM) for forest rehabilitation and plantation establishment.

**Forest departments are the lead public agencies at the state level.** The forest department is the predominant state public agency for forest management. Its organizational structure focuses on traditional forest management functions and the emerging community forest program. The forest department organizational structure is similar across most states, with a Principal Chief Conservator of Forests at the apex reporting to a Principal Secretary and managing main business units headed by an Additional Principal Chief Conservator of Forests. District Forest Officers (FDO) are the senior professionals operating at the subdistrict level. Business units tend to focus on planning and inventory, forest rehabilitation, forest production and marketing, protection and enforcement, wildlife management, and social/community forestry. For marketing of high-value nationally listed species, such as teak, many states (including Jharkhand and Madhya Pradesh) have a separate government marketing corporation, usually acting as a legal monopoly.

**Key State-Level Institutions Supporting Community-Based Forestry.** The forest department is the predominant state public agency for forest management. Its organizational structure focuses on traditional forest management functions and the emerging community forest program. The forest department organizational structure is similar across most states, with a Principal Chief Conservator of Forests at the apex reporting to a Principal Secretary and managing main business units headed by an Additional Principal Chief Conservator of Forests. District Forest Officers (FDO) are the senior professionals operating at the subdistrict level. Business units tend to focus on planning and inventory, forest rehabilitation, forest production and marketing, protection and enforcement, wildlife management, and social/community forestry. For marketing of high-value nationally listed species, such as teak, many states (including Jharkhand and Madhya Pradesh) have a separate government marketing corporation, usually acting as a legal monopoly.

**Forest Development Agencies (FDAs) are responsible for several centrally funded forestry initiatives.** FDAs operate in each state at the forest division level. They are designed to improve linkages between rural development, rural employment generation, and forest conservation. The executive body of the FDA is chaired by the Conservator of Forests, with the DFO as Member Secretary. Experts from other line agencies are represented but have no voting rights. JFM committees are represented through 15 nominees from the general body, seven of whom must be women. On average one FDA represents 25–50 JFM committees for the centrally funded forestry conservation schemes. The fund flow is through JFM committees, with villagers hired mainly to plant trees.

**The capacity of community support organizations to support JFM varies across states.** Several community support organizations operate development programs in each state, usually for agriculture and development in health, education, forest management and forest villages. Some community support organizations are affiliated with larger national organizations, others are local in origin. The lack of forest department resources generally precludes a more prominent role for community support organizations in JFM.

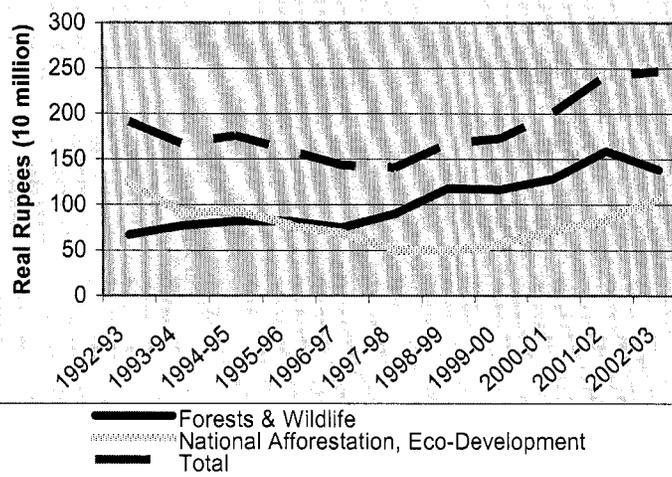
**The private sector plays a small role in community-based forestry.** In most states the private sector actors may act as marketing agents for government marketing corporations, purchasing commercial nontimber forest products from communities. There is very little space for private forest consultants to work directly with communities to assist with management planning or marketing. Private farm forestry has strong potential to help address domestic wood supply requirements, but restrictions on harvesting and transport for certain commercial timber species

are strong disincentives to grow forests. Partnerships between communities and larger processing firms are limited by government policy, which bars private companies from accessing government-owned forest lands. Companies cannot easily work with larger farmers to establish plantations because of legislation restricting the area of land that individual farmers can acquire. Instead, firms need to work with larger numbers of small farmers to develop their wood supplies, increasing their costs.

## Public Expenditures on Forestry

**Real expenditures by the central government are rising to meet timber supply challenges.** At the national level, the Ministry of Environment and Forests allocates central plan financial resource to forestry programs, through both individual states and independent national activities, such as R&D.<sup>9</sup> These funds make up the majority of public resources allocated for capital investment and recurrent costs in forest management in India. In nominal terms, central plan expenditures by the Ministry of Environment and Forests were about Rs990 Crore in 2002–03 (or \$220 million), representing roughly 4 percent of national GDP. In real terms these expenditures increased from just under Rs300 Crore in 1992–93 to Rs543 Crore in 2002–03, representing aggregate real growth of 81 percent, or average annual growth of 8.1 percent over the 10-year period. Within this aggregate envelope, Expenditures on forest management through forests and wildlife and the National afforestation and Eco-Development Board increased from Rs192 Crore to Rs247 Crore between 1992–93 and 2002–03, or about 29 percent over the 10-year period (figure 2.4).

**Figure 2.4 Plan Expenditures by the Ministry of Environment and Forests on Forest Management, 1992/93–2002/03**



Source: National Planning Commission (various years)

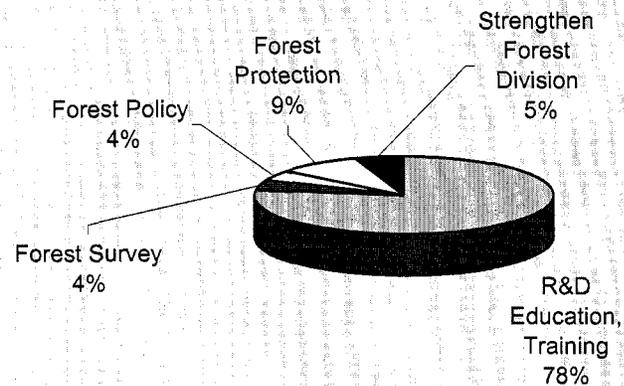
A breakdown of the forestry and wildlife outlays shows that the budget is allocated among five major program areas, with the majority of funds directed to R&D, education, and training (figure 2.5)<sup>10</sup>.

<sup>9</sup> For additional material, refer to appendix 3.

<sup>10</sup> Note: Forest survey: Supports national forest cover surveys by Forest Survey of India in Dehradun  
 Forest policy: Policy development and forest sector information  
 Forest protection: Programs to reduce losses from fire, insects, and disease.  
 Strengthening of forest division supports forest agency infrastructure.

R&D education and training: Supports Indian Council of Forest Research and Education and several national forest research institutes, including those working on genetics, plywood, coastal and marine management, wildlife and forestry. Also supports environmental and natural resource training programs, and curricula development, and the training programs for Indian Forest Service. A relatively small share of the budget is allocated to forest surveys and policy, which are critical to support community forest management programs. In addition to central plan financial support, states also allocate budget support to local forest departments.

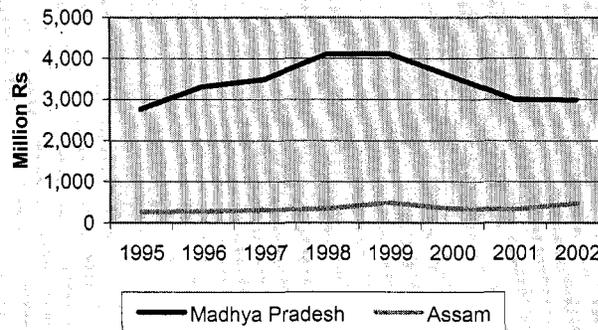
**Figure 2.5 Breakdown of Spending on Forestry and Wildlife by the Ministry of Environment and Forests 2002-03**



Source: MOEF (various years).

The Ministry of Environment and Forests, through Central plan allocations, provides the bulk of finance for capital investment in forest management for plantations (through community programs), recurrent forest research, protection, monitoring, and inventory. While real expenditures are rising, questions remain about how well spending is supporting the evolution of JFM at the state level.

**Figure 2.6 Real State Forestry Expenditures in Assam and Madhya Pradesh, 1995–2002**



Source: World Bank (2005b); TERI (2005)

**Real state budgets are rising slowly, but they mainly cover recurrent costs.** In Madhya Pradesh real forest department expenditures from state allocations increased from Rs2.8 billion (\$61 million) in 1992 to Rs3.0 billion (\$66 million) in 2002 (figure 2.6).<sup>11</sup> But much of the rising trend to 1999 was due to budget support from the World Bank JFM project in the state. After completion of the project, real expenditures were not much higher than they were in 1995. About 75 percent of these nonplan expenditures are for recurrent costs of field operations (territorial and production) and commercial harvesting. Research and training account for less than 2 percent of total recurrent expenditures funded by the state. In Assam real state budget allocations for forestry peaked in 1999 and declined thereafter; they have slowly increased to 1999 levels. Most nonplan expenditures are for recurrent costs and mainly cover salaries. In Jharkhand the allocation of annual state budget for forestry in undivided Bihar forest departments was less than 0.7 percent prior to 2000; this figure

<sup>11</sup> Detailed budget data are available from the forest department.

was 3 percent in 2002-03.<sup>12</sup> Nonplan operating budgets are about Rs.1 billion (\$22 million), with 70 percent spent on forest management. A worrisome feature, common to the other two states, is the relatively small budget allocations to critical supporting forest management functions, such as inventory, planning, and research.

## Extent of Joint Forest Management in India

**Table 2.4. National JFM Characteristics**

State	JFM committees (no)	Forest area under JFM (ha)	Share of JFM area (%)	Forest area per committee (ha)	Population characteristics (families)				Average families per JFM area	Tribal families per JFM area
					Scheduled Caste	Scheduled Tribes	Other Groups	Population Under JFM		
Madhya Pradesh	13,698	5,500,000	32	402	291,000	709,000	641,000	1,641,000	120	52
Chhattisgarh	6,881	2,846,762	16	414	251,012	760,892	348,347	1,360,251	198	111
Andhra Pradesh	7,245	1,886,764	11	260	136,789	188,621	285,685	611,095	84	26
Maharashtra	5,322	1,411,215	8	265	107,409	308,934	505,291	921,634	173	58
Uttaranchal	10,107	859,028	5	85	87,500	15,000	397,480	499,980	49	1
Jharkhand	3,358	847,967	5	253	53,617	76,615	165,903	296,135	88	23
Orissa	15,985	821,504	5	51	0	na	na	na	na	na
West Bengal	3,892	604,334	3	155	113,304	115,836	236,255	465,395	120	30
Tamil Nadu	1,816	445,965	3	246	72,290	11,484	187,160	270,934	149	6
Rajasthan	3,667	376,766	2	103	33,229	152,017	115,049	300,295	82	41
Himachal Pradesh	835	290,922	2	348	62,915	7,024	189,130	259,069	310	8
Bihar	493	267,240	2	542	53,377	31,618	157,644	242,639	492	64
Karnataka	3,470	232,734	1	67	50,465	37,303	155,589	243,357	70	11
Kerala	323	170,712	1	529	3,828	11,371	25,425	40,624	126	35
Gujarat	1,424	160,525	1	113	5,748	123,347	20,096	149,191	105	87
Uttar Pradesh	2,030	112,652	1	55	196,793	7,240	416,152	620,185	306	4
Manipur	205	93,941	1	458	57	13,883	5,511	19,451	95	68
Arunchal Pradesh	308	80,217	0	260	0	20,474	0	20,474	66	66
Assam	503	79,251	0	158	4,145	31,583	21,613	57,341	114	63
Punjab	287	56,243	0	196	20,029	9	17,984	38,022	132	0
Hararyana	875	56,000	0	64	31,000	0	134,500	165,500	189	0
Jammu and Kashmir	935	49,544	0	53	4,789	5,324	38,347	48,460	52	6
Tripura	234	34,154	0	146	2,896	11,291	6,052	20,239	86	48
Nagaland	306	22,930	0	75	0	57,492	0	57,492	188	188
Goa	26	13,000	0	500	36	0	300	336	13	0
Mizoram	249	10,980	0	44	1	32,240	0	32,241	129	129
Sikkim	158	600	0	4	669	835	1,764	3,268	21	5
Total	84,632	17,331,950	na	na	1,582,898	2,729,433	4,072,277	8,384,608	na	na

Source: Bahuguna (2004).

**JFM continues to expand as a community-based forestry model.** It now covers 27 states, 85,000 village JFM committees, and 17.3 million hectares of forest land. Four states (Andhra Pradesh, Chhattisgarh, Madhya Pradesh, and Maharashtra) account for two-thirds of all forest cover under JFM and 39 percent of all JFM committees (table 2.4). Nationally, the average area of forest per committee is 217 hectares. Villages included in JFM programs encompass 8.4 million families. Assuming an average family size of four people per household, this represents almost 34 million people. Tribal families account for one-third of all families in JFM programs.

These numbers represent a remarkable success by many measures. But this progress should be viewed with caution. Using Maharashtra as an example, 10,420 JFM committees cover 65 percent

<sup>12</sup> Detailed budget figures are available only for 2002-03.

of the villages in and around state forests. But only 1,613 villages are actively operating under new FDAs (Dharia 2005). The remainder may have JFM committees that are not fully operational or engaged with the forest department.

## Global Forest Transitions and Community-Based Forestry

The international forest sector is undergoing several transitions—transitions that create opportunities for communities in India. Global demand for forest products is growing, especially in developing countries. Delivered wood costs for small diameter spruce and pine logs in North America, Western Europe, and Eastern Europe are now significantly higher than in South America, South Africa, and New Zealand. The timber industry is becoming more concentrated, with 50 companies processing 41 percent of the world's industrial roundwood. Demand for secondary processed wood products is growing (Molnar 2004). These transitions are creating opportunities for small-scale producers in communities and private farms who can produce various forest products at competitive costs (box 2.2).

### Box 2.2 Opportunities for Small-Scale Producers Created by Global Forest Transitions

Changes in the global forest sector are creating a variety of opportunities for small-scale producers in India. These changes include the following:

- **Increased control of forests:** As a result of recent government recognition of local claims and devolution, nearly one-fourth of the forest estate in the most forested developing countries is now owned (14 percent) or officially administered (8 percent) by indigenous and rural communities. Local ownership offers opportunities to capitalize on forest assets.
- **Growing product demand:** Although demand for forest products in developed countries is growing slowly, demand in developing countries is growing rapidly—and this demand will have to be met mainly by domestic production. New processing technologies are creating demand for small-diameter, lower quality wood, which communities can and do produce.
- **Rising value of natural forests:** The supply of tropical hardwoods from natural forests has declined greatly, due to deforestation, overharvesting, establishment of protected areas, and civil disturbance. As a result, stands of natural tropical hardwoods are becoming more valuable. Local people hold a substantial and increasing share of these stands.
- **Demand for environmental services:** Environmental concerns are creating new markets for certified forest products and ecosystem services. Socially and environmentally aware investors are exploring opportunities to invest in sustainable forest management, including local farm and community producers.
- **Forest intensification:** Demand has prompted intensified forest management. Forest scarcity, increased prices of timber relative to those for grain, expansion of farming into marginal lands, tree domestication, and outgrower arrangements have stimulated extensive tree growing and commercialization on small farms.
- **Globalizing markets:** While globalization often favors highly efficient, lower cost producers, it is also opening opportunities to nontraditional suppliers, as new niche markets are created and buyers become more proactive in seeking and securing reliable sources of scarce forest commodities.
- **More democratic governance:** Investor and consumer demands for socially responsible forestry are beginning to drive improved social protections for forest communities. Democratization is fostering reforms in forest governance that give greater voice to local people. International norms increasingly support indigenous land rights.

Sources: Wunder (2001); Neumann and Hirsch (2000); White and Martin (2002).

Rising domestic demand for timber products and supply deficits from existing natural and plantation forests represent growing opportunities for communities in India. For tropical hardwoods like teak, diminishing global supplies and rising scarcity values should open up opportunities for these products from small-scale producers. Export markets are also expanding for certain kinds of forest products, especially in China, where imports of timber products are 20 times those of India and growing rapidly (White and Xu 2004). Global markets are widening for specialized niche products, such as high-value nontimber forest products. Opportunities appear to exist for forest communities in India to take advantage of these market prospects. For them to do so, however, JFM programs will need to recognize national and international market transitions. To benefit from these transitions, JFM will also need to continue evolving, supported by appropriate policy and program reforms, discussed in the remaining chapters of the report.

### 3. Evolving Legal and Policy Environment

#### National Legal and Policy Framework

**Under the Indian Constitution, national and state governments share jurisdiction for forestry.**<sup>13</sup> The center generally sets the broad national policy and legal framework and supporting statutes. Three major national laws governing forestry have been promulgated over the past 127 years: the Indian Forest Act of 1878, the Indian Forest Act of 1927, and the Forest Conservation Act of 1980.<sup>14</sup> Three key forest policy pronouncements have been made in independent India: the Forest Policy of 1952, the National Commission on Agriculture of 1976, and the 1988 Forest Policy.<sup>15</sup> Another law, the Indian Wildlife (Protection) Act 1972, is also important, since there is interaction and various contradictions between this act and the more traditional forestry acts for communities located in and adjacent to protected areas. A proposed Scheduled Tribes Bill (2005) would recognize historic land rights held by tribal people in scheduled areas to an upper limit of 2.5 hectares per family.

The evolution of the legal and policy framework in India shows a strong initial focus on industrial forestry, a gradual shift to social forestry three decades ago, and a major swing toward conservation and adoption of JFM about 15 years ago. The National Forest Policy of 1988 embodies most elements of sustainable forest management. It concentrates on conservation and strengthening of the role of communities in forestry stewardship, representing a major shift in forest management intentions. The Ministry of Environment and Forests issued a policy circular in June 1990 encouraging state forest departments to involve communities directly in forest management. The 1988 policy has been criticized in some circles for promoting forest conservation, perhaps at some expense to commercial forest use, for not offering practical options for policy implementation, and for sustaining the all-encompassing role of forest departments, including the contradictory functions of being the forest authority and operating as a public enterprise in commercial forest production.

Many of the salient paragraphs governing community-based forestry in national policy have not been reinforced by a new national legislative framework. There are apparent conflicts (in a strict legal sense) between some of the progressive intents of the 1988 policy and the Forest Conservation Act of 1980. In addition, various legal amendments, policy circulars, and guidelines issued by the Ministry of Environment and Forests over the past two decades, while helping support the evolution of JFM at the state level, have added excess complexity and overlaps in the legal framework when interpreted by states. Although many of these minor legal amendments resulted from pressure to follow innovative state practices, there is still a significant gulf between national policy intent and field implementation at the state level.

#### Legal and Policy Framework in Assam, Jharkhand, and Madhya Pradesh

**State forest laws and regulations help implement the national legal framework.** All three of the states examined (Assam, Jharkland, and Madhya Pradesh) apply a suite of state-level laws to govern forests and forest management. A common feature in Jharkhand and Madhya Pradesh is the

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<sup>13</sup> See appendix 4 for additional material on legal and policy frameworks.

<sup>14</sup> The first Act on Forestry was enacted in 1865.

<sup>15</sup> Although the National Commission on Agriculture is not strictly a policy document, its recommendations are considered important in policy discourse on forest management.

strong influence played by the umbrella Indian Forest Act of 1927 and to a lesser degree the 1980 Forest Conservation Act. Madhya Pradesh formally adopted the Indian Forest Act of 1927 and like other states has followed up with other state-level acts, rules, and regulations to provide for more local flexibility. Assam operates under a unique legal framework, because the Assam Forest Regulation Act of 1891, rather than the Indian Forest Act of 1927, is the umbrella operative law. In many ways however, the legal direction of the Assam Forest Regulation Act of 1891 corresponds to the Indian Forest Act of 1927. Various orders passed by state governments since 1927 have contributed to a more restrictive legal framework, although it is largely the interpretation and implementation of these orders by forest officers that directly affect community rights and responsibilities. The main issues include outdated and narrow forest policies, the uncertain legal status of JFM and registration processes, inadequate recognition of historic forest rights in current policy and law, inefficient tenure systems for communities under JFM, and conflicts with national legislation governing decentralization, especially in scheduled areas.

State forest policies are evolving, but they need further strengthening and legal support. Forest policy should guide development of the forest sector and provide a clear indication of the state's goals for community forestry. All three states have an existing policy (as a separate document or through smaller circulars) or have recently drafted a new policy. States have also drafted forward-looking "vision" papers. While many of the articles in these new forest policies and vision statements represent a positive step forward, they are still based on the existing legal framework. Some policy goals still reflect the existing JFM model, with little recognition of how further reforms could empower communities. The policies of Jharkhand and Madhya Pradesh were not prepared with broad public input; as a result, they tend to be narrower in focus toward conservation and rural livelihood goals. They are also weak in terms of economic analysis and market information. Assam's 2004 policy is more progressive and was developed by a multistakeholder body with broad representation from the forest department, community support organizations, and technical experts. The Assam policy also pays attention to the trade- and market-related aspects of forestry to motivate private sector partnerships. Policy documents from all three states suffer from minor conflicts and contradictions with existing legislation, both at the national and state levels. Yet even if policies are strengthened, without legal reforms and additional financial resources they will be very difficult to implement.

**Forest settlement has eroded historic land and forest tenure rights.** Settlement of reserve forests is a controversial issue, because of the wide powers granted to forest departments and the historical conflict it created over traditional land rights. Following the 1878 Forest Act, large-scale designation of reserve forests took place through the settlement process in many states. Informal systems of land rights and forest use privileges that had existed between rural communities and the government for centuries were often rescinded. State appropriation of forest land often involved the dispossession of *adivasi* communities' ancestral land. As an example, in the Singhbhum District of Bihar (now in Jharkhand), many years ago the state dispossessed the Ho tribe from their villages and surrounds in an attempt to demarcate a large reserve forest.

At the national scale, many of the forests declared as reserved areas were uninhabited; where traditional rights existed, they were often recognized and respected—in principle, if not in practice (N.C. Saxena, personal communication 2005). It was mainly after Independence that the most rapid acquisition of forests by government occurred. This constituted a critical turning point, politically, socially, and ecologically (Gadgil and Guha 1995; Liedtke 2003). Legally, channels to contest the reservation of forests existed, but rural people had little experience with legal procedures, and illiterate villagers were often unaware that a survey and demarcation was in process (Poffenberger and McGean 1998).

The settlement process and expropriation of forests is a significant factor contributing to the deep resentments among many forest-dwellers towards government (and the Forest Department in particular) in states such as Jharkhand and Madhya Pradesh where tribals comprise a large portion of the rural population. At the time, settlement of reserve forests shifted forest management authority and responsibility from people to government, and created a highly inequitable power balance. The state also retained significant power over protected and private forests.

**The JFM process needs to acknowledge historic forest resource rights.** Each state appears to have unique and specific historic rights associated with forest dwellers that existed before enactment of forest legislation both at the national and state levels (table 3.1). In Jharkhand, for example, a rich array of historic rights exists. Where JFM has been introduced into these areas, a legal case could be made in favor of the traditional system of land and resource rights. Assam is slightly different, in that councils governing the autonomous district areas maintain the authority to manage forests outside of reserve forests. But as in other states, most historic forest resource rights have been subsumed over time by various laws, rules, and regulations. Although states were encouraged to acknowledge historic rights in a 2000 circular from the Ministry of Environment and Forests, implementation has been slow. Generally, tenure is a question that appears to be quite vague in umbrella JFM resolutions and specific agreements signed with communities. The notion of clear, secure, and exclusive rights assigned to communities for a defined area of forest (box 3.1) is not present in the JFM agreements examined. The JFM regulatory framework in each of the three states does not bestow efficient resource rights to communities.

**Table 3.1. Historic Forest Tenure Rights in Assam, Jharkhand, and Madhya Pradesh**

<i>State</i>	<i>Right</i>	<i>Description</i>
Assam	Autonomous districts	Excluded area rights in three districts recognized under 1891 Assam Forest Regulations, gave local authorities specific powers over allocation and use of forests outside reserved forests.
	Khaira, Uriam, Patadar tree felling	Gave concessions to tribal people to fell trees in selected areas; many concessions have since been revoked.
	Mikir Hills District Forest Act 1959	Empowered executive committee of the district council to convert any land, to the disposal of the district council, into a "village forest" that will be for the collective benefit of the village community.
Jharkhand	Khunkatti rights	Granted villagers rights to forest produce in village periphery, acknowledged in Chota Nagpur area and Chotanagpur Tenancy Act 1908.
	Landlord-resident	Landlords exercised rights to manage forest and sell produce, subject to rights of residents to take wood for their own purposes.
	Khatian Part II	Recorded rights of resident cultivators and tenants where landlords established exclusive rights.
	Concept of Halthorpe	Trees grown in a cultivator's land belong to the cultivator.
	Gairmazarua Am lands	Unsettled land is where community traditionally has access rights.
	Santhal Paragnas lands	Granted village headman right to clear and settle selected arable and nonarable wastelands.
Madhya Pradesh	Nistar forest rights	Granted villagers customary right to graze their cattle in the wasteland of the village and to take other forest produce, such as fuel, wood, timber, thorns, and grass, for their domestic use.

Source: Background studies

### Box 3.1. Crafting effective forest resource rights

What makes for efficient forest rights for communities? Global experience suggests the following characteristics:

- Forest resource rights are clearly defined.
- The duration of the rights is spelled out.
- The rights cannot be unilaterally taken away.
- There is certainty over boundaries.
- The government agency entering into the rights agreement with the community must have the legal authority to do so.
- Rights have legal standing.
- There are accessible and fair avenues for seeking legal recourse in disputes.

Source: Molnar, A., Scherr, S., and A. Khare 2004; and background studies

**JFM has an uncertain legal basis in some states.** The concept of JFM is a central feature of the 1988 National Forest Policy. It has been endorsed and initiated by all state and union territories. However, there have been no accompanying changes in the national legal framework for JFM. Instead, JFM is normally operational through administrative orders (government orders) that have little legal underpinning; this is certainly the situation in Jharkhand and Madhya Pradesh. In the event of conflict with the Indian Forest Act of 1927 or the Forest Conservation Act of 1980, the national JFM circular and state-level government orders may be overridden by these national laws. The fact that these government orders are easy to modify lends flexibility, but it deprives these orders of certainty and legally security. Some states such as Assam, Uttaranchal and Uttar Pradesh have linked JFM policy to state legislation. This is a progressive step but it is not followed by most states.

Another issue is the binding instrument concluded between the forest department and the community participating in the JFM program, the Memorandum of Understanding. While the Memorandum of Understanding sets out use rights for communities, it is not a legal and binding contract, and it is heavily weighted in favor of the state. Furthermore, the time period covered is often either too ambiguous (“for all time”) or too short (five years) to provide a meaningful and clear incentive for community investments and support. In addition, under current JFM resolutions in each of the three states, the District Forest Officer is usually the competent authority responsible for registering the committee with the forest department. Ministry of Environment and Forests guidelines in 2000 suggest registering JFM committees as societies under the Societies Registration Act of 1860. Registration is a legal process. Although registering committees under this act is a positive step, it is unclear if the DFO, who signs on behalf of the government, has the proper legal authority to do so. Registration by a person without the legal authority to do so may be legally invalid.

**Forest boundaries are often unclear.** Confusion over forest boundaries is a recurring problem for JFM committees. Most committees want their forest tract boundaries to be formally demarcated, which corresponds to one of the criteria for efficient resource rights. Informal agreements between villages over these boundaries may work when the resource is degraded, but once valuable products are regenerated, conflicts can emerge in the absence of formal notification. Boundary disputes between neighboring committees are likely to increase as harvesting approaches. Up-to-date forest maps at an appropriate scale are usually not available, which limits any formal agreement of boundaries. A complicating factor is that natural, administrative, and customary boundaries rarely coincide. In practice, under existing customary use, different boundaries apply to different products (grazing and fuelwood, for example).

**Different rules exist for different forest-based committees.** In Assam and Jharkhand, two categories of forest-based committees have been established. Eco-Development committees handle areas within five kilometers of wildlife sanctuaries and national parks (components of protected areas) and reserved forests. A JFM committee is responsible for other forest areas (primarily protected forests and other recorded forests, depending on the state). Madhya Pradesh has created three committee types. Village forest committees are created within five kilometers of degraded forests and where afforestation programs are targeted; forest protection committees are created within five kilometers of good-quality high forests where protection and commercial timber production is the main goal. Eco-Development and JFM Committees have different benefit-sharing schemes. This can cause confusion where protected forests (targeted for JFM Committees) lay within five kilometers of a protected area (where an Eco-Development Committee would normally be established).

The different categorizations among protected areas are legally untenable, because protected forests within wildlife sanctuaries and national parks are elevated to a higher legal category. The legal arrangement governing protected forests within five kilometers of rights holders in reserve forests are not clear. In all cases, the rights, responsibilities, and benefit sharing schemes are slightly different.

**Government rules and restrictions hinder more direct marketing of forest products by communities and farmers.** Certain forest commodities were nationalized in some states in the 1960s and 1970s under national forest legislation, under which listed species can be marketed only to state forestry marketing corporations. One rationale for the policy change was the need to protect the poor against exploitation by private traders and middlemen. Since the state could generate revenues by exercising this monopoly right, the requirement for state marketing was steadily extended beyond key timber species to include several nontimber forest products, such as kendu.

Transit regulations are also applied to listed species, such as sal and teak. These regulations are a primary cause of conflict that has reached the courts and that hinders communities and private farmers from improving forest livelihoods through the production and direct sale of listed forest products from their own land. Transit regulations are specified by state legislation but are strongly guided by the Indian Forest Act of 1927. In general, the export, import, or moving of timber and forest produce is prohibited without a pass from an authorized officer of the forest department. The basis for the law is that unrestricted movement of forest products could lead to illegal harvesting and transport of timber and nontimber forest products. These rules, however, are wide ranging in nature and inconsistently applied in different states. This has given rise to an overregulated framework and often contradictory provisions in different states, which impede smooth interstate transit of many forest products. The transactions costs on the permit seeker are high (box 3.2).

### **Box 3.2. Impact of Transit Rules in Jharkhand**

The marketing of sal logs from private farms is constrained by legal and regulatory requirements. Farmers must first offer the timber to the forest department, which harvests and sells the wood at scheduled prices less a 15 percent marketing commission. Alternatively, the forest department can provide clearance for the landowner to do the harvesting and marketing himself. In either case the farmer must first prove ownership of the land in order to be issued harvesting or transit permits. This process can take several weeks and provides a fertile ground for rent-seeking behavior and middlemen who provide "permit avoidance" services. A number of sawmill owners indicated that without the services of middlemen in the process, it was difficult for private farmers to market their timber.

Source: Background studies - Jharkhand

All three states examined have a long history of transit rules. Earlier laws in Madhya Pradesh listed 13 timber species. In Jharkhand the Bihar Forest Produce (Regulation of Trade) Act of 1984 and the Bihar Timber and Other Forest Products (Control of Transit Rules) of 1973 listed eight timber species. In Assam similar laws pertain to important species, such as teak and sal. States have a legislated marketing monopoly over main commercial nontimber forest products, such as kendu leaves. The situation is slowly changing' states such as Madhya Pradesh are gradually easing transit requirements on various nontimber forest products. Assam has eased the restrictions placed on bamboo by legally defining it and five other species (mostly fruit-bearing trees) as tree species. These are positive developments, which are to be encouraged and supported, but the overall harvesting marketing system is still quite restrictive for communities and farmers.

**Legal enforcement is weak.** Forestry legislation is enforced mainly by state forest departments. Poor field capacities and weak monitoring systems are constraints in each of the three states examined. Through JFM, communities provide limited forest protection (against small-scale illegal cutting by outsiders, for example), but they lack the legal power to make arrests. Instead, forest department officials, who have this authority, must be summoned. For more serious offenses, such as major illegal encroachment or large-scale illegal harvesting on reserved forests, armed forest officers have been called in to respond with appropriate force.

**State forest departments lack legal expertise.** The web of forest-related legislation across different state agencies that can affect community-based forestry is complex and very difficult even for professionals without legal training to fully grasp. In general, forest department officials have a poor understanding of the legal and regulatory framework surrounding forestry and communities, including linkages with traditional forest rights and laws governing decentralization. Fear of acting outside an uncertain legal framework can limit the creative approaches for JFM being tested by progressive forest officers. Knowledge of the penal code and other sectoral legislation is weak, which causes uncertainty over the extent of powers of arrest by forest officers.

## **The Panchayat Extension to Scheduled Areas Act of 1996: Panacea for Community Forestry?**

**The 73rd Constitutional Amendment, passed in 1992, specifies three levels of local institutions: the village level, the block level, and the district level.** The amendment supports the government's goal for decentralization of governance and gives *panchayat raj* institutions a statutory mandate and the potential to raise local finances through taxation.

**Under the Panchayat Extension to Scheduled Areas Act (PESA) of 1996, *gram sabha* (village assemblies) in scheduled areas were endowed with powers over community resources generally and more specifically with ownership of minor forest produce.** The Panchayat Raj Act is based on the Indian Constitution and as such has a stronger legal footing than JFM circulars, government orders, or even legislation that may be in conflict with the act. Where forests within the *panchayat* area are on revenue land, they fall under the purview of the *panchayat*. However, if the communities are growing notified timber or nontimber forest products, the forests are subject to state and national laws governing harvesting and transit. If the forest around the community is designated as a reserved or protected forest, the *panchayat* laws can conflict with forestry legislation.

Each of the three states examined approach the PESA differently. The Assam Panchayat Act 1994 extends to all rural areas except the autonomous districts under the sixth schedule of the constitution (the North Cachar Hills and Karbi Anglong Districts and the Bodoland Territorial

Autonomous District). PESA is applicable only to fifth schedule and not sixth schedule areas, which encompasses the autonomous districts of Assam. The JFM resolution does not distinguish between autonomous districts and other districts. This is bound to create conflict with the district council in the scheduled districts. In Jharkhand *panchayat* elections have yet to take place. In Madhya Pradesh *gram panchayats* are empowered to issue passes for the transit of forest produce, within or outside Madhya Pradesh. While the *gram panchayat* was made responsible for the plantation and preservation of *panchayat* forests, it was subject to the availability of funds within the *gram panchayat*, which in practice have been limited.<sup>16</sup> Under the Madhya Pradesh Act 5 of 1999, the *gram sabha* (the gathering of all villagers within the jurisdiction of a *gram panchayat*) was entrusted with the management of natural resources, including water, land, and forests. In case of a conflict, the specific laws dealing with the natural resource take precedence.

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<sup>16</sup>Act 3 of 2001 was renamed the MP Panchayati Raj Act as “Madhya Pradesh (Panchayat Raj Avam Gram Swaraj) Adhiniyam, 1993.

## 4. Forests as a Source of Livelihood: Perspectives of Forest Dwellers

**Forests have the potential to improve the livelihoods of forest dwelling people, particularly tribal people, who are among the most disadvantaged groups in Indian society.** For JFM to better address the livelihood needs of forest dwellers and contribute to broader rural development, it is important for implementing agencies to understand community and tribal institutions and capacities, livelihood patterns, interactions between JFM institutions and local institutions, and whether or not current systems for rural development address the needs of these communities.<sup>17</sup> Field surveys and literature reviews from the three states studied provide a useful perspective from forest dwelling people and raise a number of issues that need attention. Given the high proportion of tribal people living in forest-based communities and their role in JFM, much of the focus of this chapter is on tribal people as forest dwellers.

### Characteristics of Forest Dwellers in Assam, Jharkhand, and Madhya Pradesh

Assam, Jharkhand, and Madhya Pradesh are poor, and their Human Development Indices are well below the national average. Small average landholdings, the low productivity of agriculture, and limited opportunities to earn nonfarm income from other resources, such as forests leads to migration as an important coping strategy for people in many rural areas.

About 742 million people, or 72.2 percent of India's population, live in rural areas. Of these, 89 million belong to scheduled tribes. The scheduled tribes are concentrated in the so-called Tribal Belt of central India, with a second concentration in the Northeast. The Tribal Belt represents a distinct geocultural region and is home to the main tribal groups in India (the Gonds, the Santhals, the Oraons, the Mundas, and the Khonds) as well as hundreds of subtribes, each with its own dialects, customs, and traditions. Tribal people generally dwell in forested and hilly areas. They depend on forests for their cultural, spiritual, and to varying degrees, economic needs.

The tribal communities in Assam, Jharkhand, and Madhya Pradesh are among the poorest groups in India. The higher incidence of poverty in tribal regions is related to tribal people's low bargaining capacity, their lack of proportional political representation, the poor quality of local governance, and their constrained access to forests, land, and water (Shah and Sah 2004). Regardless of wealth and social position, tribal people are not fully integrated into the community unless they own land in the area; only land ownership and farming seem to give the feeling of a full integration into the community (Van Exem 1991).

Traditional sociopolitical systems extend from the village to the cluster and regional levels. Clusters of 10–20 villages constitute the next level of sociopolitical organization. Tribal people have a long tradition of tribal-governance systems, which conflicts with the conventional wisdom of recognizing them as a homogenous group. Government devolution programs to panchayat raj institutions through PESA or sector-driven programs such as JFM do not usually recognize the unique characteristics of tribal people.

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<sup>17</sup> Livelihoods in forest communities relate to improvements in financial, natural resource, human, social, and physical capital. (see appendix 5).

## Results of Focus Groups and Community Surveys

Focus groups and community surveys of forest dwellers were conducted in eight villages in Assam and six villages in Jharkhand. For Madhya Pradesh, previously conducted case studies and other research were reviewed to obtain the perspective of forest dwellers. (More details on the case studies are provided in appendix 5.)

**Livelihood patterns in the three states vary.** Tribal communities have a strong spiritual and economic relationship with the forest and a strong perception of their historic land and forest rights, even if these are not recognized under current legislative frameworks. Tribal groups have been living in and around the forests for centuries, practicing hunting and gathering activities, fishing, shifting cultivation, and more recently, settled cultivation, as primary means of subsistence. Although farming is now the chief source of livelihood for most settled tribal people, agriculture has not given them a sense of security. The main reasons include the small size of their farm holdings; low productivity, due to inefficient agricultural methods and lack of water for two crops; and the constant threat of wild animals (such as elephants). To avoid starvation, the most destitute may clear forest patches or engage in seasonal cultivation (slash and burn), even though they realize that the size of forest resource upon which they depend for subsistence needs is limited.

**In Assam, smallholder farmers and shifting cultivation are dominant.** The eight villages surveyed include a mix of smallholder farmers, people engaged in shifting cultivation, and landless people. Tribal people live in only five of the eight villages surveyed. The level of infrastructure and development is similar to that in Jharkhand, although villages have only about a third as many people. Across the eight villages, 76 percent of households report agriculture as the primary occupation, significantly higher than in Jharkhand. All eight communities use the forest, primarily for subsistence fuelwood and fodder. Fuelwood supplies an average of 79 percent of energy needs. Fodder from the forest provides about 64 percent of the feed requirements for domestic livestock. Gross values were Rs2,440 for fuelwood and Rs10,992 for fodder per household per year. Poles play a minor role in forest livelihoods; the gross value of bamboo is almost nine times that of poles for domestic construction. Most communities collect a variety of nontimber forest products, mainly for subsistence use.

**In Jharkhand, smallholder farming dominates, with forests serving as a safety net.** Tribal people account for 80–100 percent of the population in all but one of the six villages studied. Inadequate provision of water for drinking and irrigation is a common feature in all the villages. The livelihood system is mainly agrarian, complemented by income from wage labor. On average, agriculture is the primary occupation in 60 percent of all households, and another 32 percent of households work as paid labor in agriculture and elsewhere. In some villages, as a result of the availability of alternative opportunities (particularly wage labor), many people have shifted away from the use of forests as a primary occupation. All of the communities use the forest, but they do so mainly for subsistence fuelwood and fodder. Fuelwood supplies an average of 86 percent of energy needs. Fodder from the forest provides about 55 percent of input requirements for domestic livestock. Gross values are Rs2,356 for fuelwood and Rs8,507 for fodder per household per year. Nontimber forest products are used mainly for subsistence purposes, although some villages report periodic sales of a few products in local markets. Commercial sales of forest products are minimal, due in part to poor access to markets as a result of degraded roads, community isolation, low levels of forest production, and poor awareness of markets outside of local trading areas.

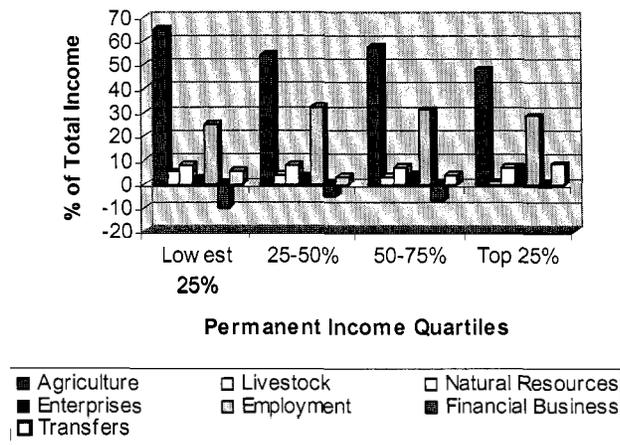
**In Madhya Pradesh dependence on the forest is low across income groups.** Forest-based communities, in particular tribal communities, are among the poorest and least developed in the

state. A survey of 40 villages in Krishna and Kurnool found that tribal people constitute 68 percent of the village population, well above the rate in Assam and slightly higher than the communities surveyed in Jharkhand (Alsop and others 2002). About 55 percent of the villagers surveyed have no education. Agriculture, forests, and labor constitute the primary livelihood systems, with livestock and fish-rearing closely integrated into the farming systems. Service provision, small-scale processing, and marketing also play important roles among a number of artisan castes and tribal groups.

A seminal study by Narain and others (2005) in the Jhabua district measures specific components of annual household income and subsequent dependence on natural resources, including forests. As household income increases, the share of income from agriculture declines, offset by increases in wage employment and home enterprise income (figure 4.1). For the lowest quartile, which includes the poorest marginal farmers and landless people, agriculture accounts for more than 60 percent of permanent household income; employment accounts for another 25 percent. The share of permanent income from natural resources is fairly stable across the four income quartiles, at 7–8 percent. As a percentage of income from natural resources, income from fuelwood declines as household income increases (figure 4.2). This is due largely to the fact that other forms of energy (liquid propane gas, electric generators) become more

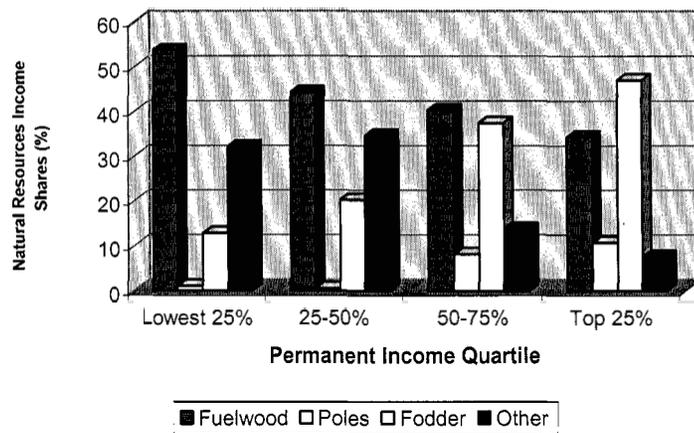
affordable as income increases and the opportunity cost of the time spent collecting fuelwood becomes too high. A similar pattern is found for other natural resources, including nontimber forest products. For the most part, these products require intensive collection efforts to yield what is, in the absence of value addition and access to more efficient markets, usually a low-value product.

Figure 4.1. Sources of Permanent Income in Jhabua 2001



Source: Narain and others (2005)

Figure 4.2. Share of Permanent Income of Selected Natural Resources in Jhabua 2001



Source: Narain and others (2005)

The share of fodder income from natural resource income increases with household income largely because richer families own more assets in the form of livestock.

Vedeld and others (2004) synthesize research case studies on forest dependency in Asia, East Africa, and Latin America. Their results show that the average share of environmental income out of total household income ranges from 5 percent to 42 percent (table 4.1). The Jabhua case study in Madhya Pradesh finds a share of permanent natural resource income from total household income of 7–8 percent, slightly above the lower values suggested in table 4.1. The forest environmental income in the lower case of \$173, equivalent to about Rs7,800, is far above the values found by Narain and others (2005) in the Madhya Pradesh studies.

**The livelihood opportunities in forest communities varies.**

Agriculture, forests, and labor all contribute to rural livelihoods in forest fringe areas in Assam, Jharkland, and Madhya Pradesh. The degree and nature of dependence on forests and livelihood options

differs from one community to another. Villages closer to towns tend to rely less on forests for livelihoods and more on agriculture and wage labor. Villages in more remote areas tend to rely more on agriculture and forestry. Communities examined in this study earn very little cash income from forests. Subsistence products, in particular fuelwood and fodder, are the main contributors to local livelihoods from the forest.

**Sustained and legal timber harvesting could yield significant revenues to some communities** (box 4.1). Timber is not a major contributor to household income in any of the communities studied. In all three states, the livelihood potential of forests remains underutilized, and the forest offers little hope of escaping poverty.

Improving forest livelihoods in most communities in India must be integrated into broader rural livelihood initiatives, such as agriculture intensification and marketing. Lessons can be learned from other Asian countries, such as China, where community/farm forestry has been very successful. In 158 counties in southern China, farmers earn as much as 40 percent of their total income through commercial sales of timber, poles, and pulpwood (People’s Daily Online 2004).

**Table 4.1. Characteristics of households deriving low, medium, and high proportion of income from the forest**

Item	Share of Total Household Income from Forest Products		
	Low (5%)	Medium (19%)	High (42%)
Annual forest income (US\$ PPP)	173	743	837
Education levels (years)	6.4	4.8	4.4
Distance to market (kilometers)	22	7.9	34.7

Source: Vedeld and others (2004).

**Box 4.1. The Unrealized Potential of Timber for Increasing the Income of Forest Dwellers**

Given a high-quality sal forest under sustained management and a selective harvesting system, a community could likely remove five cubic meters a year of sawlogs, even under conservative assumptions about forest productivity. With just 20 hectares under production, a community could earn annual gross revenues of Rs750,000, based on an average market price of Rs7,500 per cubic meter. Shared among 100 households, this represents additional income of Rs7,500 a year.

Source: Background studies, author’s calculations

## Community-Based Forestry Institutions in India

**Community-based forestry in India is characterized by three broad types of institutional approaches** (Ghate 2003). The first is based on self-initiated or self-governed traditional community institutions, which manage surrounding forests without government interventions. Tribal communities often have a long-standing traditional body that responds to external threats to the local forest. These institutions normally encompass the major users of local forest resources in making and adapting rules concerning inclusion or exclusion of community members, appropriation strategies, obligations of participants, monitoring and sanctioning, and conflict resolution (Ostrom 1997). This approach is based on a common understanding of forest conditions and sustainable forest use. The second approach is based on community support organizations, organizations from outside the community that work with a community to build on local institutions to improve sustainable forest management. Before formal JFM programs were established, community support organizations worked with many communities through various donor-funded programs to build social capital through social mobilization, group formation and training. In some cases, the community support organization could act as an intermediary with government. The third approach is JFM, under which the government engages with communities to improve forest conservation. Local leadership appears to be a strong factor to support institutional change under JFM.

While no “best” model exists, lessons can be learned from studies of community institutions associated with forest management in India (see appendix 6 for details). Self-initiated groups can increase understanding of rules and regulations, particularly if the rules and regulations are developed by the group and not by outside interests. Assistance from community support organizations seems to be critical in building local institutions and confidence to deal effectively with government over local forestry matters. Technical and financial assistance may best be provided by government.

Of the 14 communities surveyed in Assam and Jharkhand, 8 had a registered JFM committee. Of these, three JFM committees replaced an existing self-initiated committee. The six communities without JFM committees were managing local forests through a traditional governance system, often led by a headman or village head, in some cases with the support of a small committee or village council. Some of these institutions had been working for more than two decades. These findings complement a number of global studies that have found examples of effective self-initiated community forest management through internal institutions, with equitable allocation of benefits over long time periods (McKean 1992; Ostrom 1992a, 1992b; Agrawal 1999; Tang 1992; Baland and Plateau 1996; Sunderlin and others 2005; Wade 1994).

**Not all cases of self-initiated community management have been successful.** Traditional community institutions can break down in the face of economic change, rent capture by elites, and external pressure on the forest. In villages in which a traditional tenure system is still prevalent (no JFM), villagers are often reluctant to share the management of forest resources with the forest department. Under JFM traditional village heads may not retain their perceived traditional power if the forest department exercises effective control over the committee and most forest management decisions. Defining community forest boundaries is another critical factor. Where boundaries are not clear, encroachment issue can more easily arise. Lack of contact with forest department field staff may also contribute to failure. In a recent pilot survey of service delivery in Jharkhand, only 34 percent of respondents in rural communities had interacted with a forest guard or ranger in the past two years (Public Affairs Foundation 2004). Where the traditional self-initiated forest management system has become less effective over the years due to various factors, people often look for support and resources from outside agencies to help protect their forests. In the case of state-controlled land, improved access of forests, either through self-initiated efforts of the village

or through subsequent recognition in the JFM, has been a common motivator for people to protect forests. This is not a reflection on the status of forests or their management, as it was found that self-initiated protection institutions originated primarily in response to the degraded state of the forests, in both state-controlled and community-managed forests.

Forest management with communities in India will remain a huge challenge (Ghate 2003). Although JFM offers one approach for improved forest management—and on many counts has been successful in fostering forest conservation—it appears to be overly rigid in terms of addressing social and institutional conditions across different communities. The uniform application of a single JFM model that fails to account for geographical variations, tribal people, social and economic inequalities, decentralization, traditional community institutions and governance systems, and differing cultural backgrounds among communities is not likely to succeed in addressing long-term forest sustainability and poverty reduction. More flexible models based on general guidelines are needed that allow for significant decentralized approaches in actual field implementation with communities.

## **Local Perspectives on JFM in the Three Focal States**

**Forest dwellers in Jharkhand have several serious concerns about JFM.** Community members cite the lack of involvement of the tribal population in JFM meetings and activities and the lack of awareness by villagers about JFM guidelines, rules, and regulations and development work being implemented in their villages. Tribal-dominated communities expressed a number of concerns about the process through which JFM committees are formed. There is a common perception that JFM creates rules that neglect existing and prudent uses of natural resources, local knowledge, and cultural contexts. There also appears to be a lack of consultation with tribal people in the process of JFM formation. Many villagers view JFM as a top-down, nonparticipatory process. Participation in the micro-planning process is weak, with villagers' needs not fully acknowledged in the preparation of micro-plans. In some villages surveyed, people had no idea that a micro-plan had even been prepared, let alone any knowledge of what was in it. Villagers were aware of the lack of legal status of JFM committees, which can, in theory, be dismantled at any time by the forest department. Suspicion prevails with regard to sharing of information, sharing of benefits, and maintenance of minutes, records, and accounts. In mixed villages, tribal people fear that the process of restricting access to "outside" users and regulating forest use among a defined group of people will further marginalize them. The process of JFM formation can exacerbate existing social tensions between tribal people and nontribal people, among tribal people, and between JFM and non-JFM villages. In general, the case studies seem to confirm Kumar's (2002) finding that JFM may reflect the preferences of nontribal people.

**Villagers in Assam are more positive about JFM.** JFM is new to Assam and is being implemented in only a few divisions. Support for JFM in the villages surveyed is strong. Villagers believe that the program will facilitate participation, collaboration with the forest department, and a greater degree of resource ownership. They also believe that youth employment and income generation options will reduce the illegal harvesting of forest resources and improve sociopolitical conditions. Villagers note the need for mass awareness campaigns to facilitate participation and support for JFM. Also needed is coordination among stakeholders (local people, the forest department, the district administration, and community support organizations). Villagers believe the program is effective in reducing intervillage conflict, as conflict resolution requires the presence of a key leader and appropriate support structure. JFM would facilitate and strengthen the collaboration between the village headman and the forest department, thus forming the basis for effective collaboration with sufficient authority to resolve conflicts. In villages in which micro-

plans are being formulated and entry point activities are being carried out, there seems to be high degree of support. Villagers, however, have a low level of understanding about benefit-sharing mechanisms and management of the JFM committee fund, probably because the system was in its initial stages at the time of the interviews. They expressed the need for forest conservation with government assistance to counter the impact of smugglers and timber mafia.

**Institutional processes and transparency in Madhya Pradesh are mixed.** In their study of 40 JFM villages in Madhya Pradesh, Alsop and others (2002) found that only half of committee members attended meetings regularly. Primary reasons for the low turnout included lack of advance information about the meeting and lack of time to participate. Among people who did regularly attend meetings, more than 90 percent indicated that they had opportunities to participate in discussions. The majority of members were unaware of how group funds were used. More than two-thirds of respondents had no awareness of the availability of funds through JFM, the amount of funds available, or what they were spent on. More than half of members surveyed indicated that they had no knowledge of JFM rules governing group business. Respondents also expressed concern about the equitable distribution of forest benefits. They noted that many villagers participated in user groups in order to receive individual benefits, not as a means of facilitating collective action for conservation or development. This raises the question of whether the JFM model of co-opting all adult villagers rather than creating a user group made up only of interested and committed villagers leads to sustainable local institutions. The study suggests that there are significant differences in the social capital value of organizations depending on whether the organizations are externally motivated or evolve locally. Social capital is a complex concept; formal government-sponsored organizations such as JFM committees often do not make up the appropriate mix of community associations and networks.

A World Bank study (2005b) of 30 JFM villages in two districts supports some of the findings of Alsop and others. Focus groups suggest that information availability and awareness of JFM is low, particularly about funding arrangements and transparent accounting. Singh and Sinha (2004) surveyed legislators for their perceptions of JFM as expressed by rural constituents. The legislators found that among villagers who were aware of the JFM committee, less than half attended meetings regularly, due to lack of time or information. Women tended to be marginalized in meetings and decision making processes. A fairly high proportion of people were aware of the JFM program in their community, however, particularly where the Bank had been providing support.

**There are no state-level institutions to represent communities involved in JFM.** In the three states surveyed, communities did not have a state-level association that could represent common interests with government agencies and legislators. A broad and effective association could help level what is clearly an uneven playing field with government agencies with respect to JFM as it continues to evolve. Tribal groups are represented to some degree; a tribal association exists in Jharkhand, for example, but it represents communities in scheduled areas rather than people in all forest fringe communities.

**These results are not unique to the three states studied.** Pingle (2004) reviewed communities and JFM in one forest division in Andhra Pradesh. The author found notable successes, such as some sharing of timber revenues, empowerment of women, and creation of community assets such as check dams. But the program also suffered from lack of transparency of accounts, lack of trust between villagers and the forest department, and excessive control by the forest department.

## **Forest Livelihoods and Linkages with Rural and Tribal Development in the Three Focal States**

**Forest-based communities are not benefiting from integrated rural development.** Most forest-fringe communities depend primarily on agrarian-based economies, with forests playing an important supporting role by providing subsistence fuelwood, fodder, and limited nontimber forest products on a seasonal basis for some people and serving as a safety net for others. Until communities are able to access better quality forests for timber and commercial nontimber products, either from standing forests in the short term or as degraded forests mature in the intermediate term, agriculture development will be vital to lifting the poorest segment of the population out of poverty.

**Agriculture and forest development initiatives in remote forest fringe communities must be complemented by infrastructure development (roads, electricity); health and education improvements; and development of social capital in communities.** Field surveys suggest that rural development agencies other than the forest department do not always reach remote forest fringe communities or provide service in an effective manner. While state forest departments do have a field presence (albeit thinly spread) in remote forest areas, they lack the mandate, resources, and training to deliver broader rural development programs. Field evidence suggests that forest departments are gradually building trust and respect in more remote forest areas through FDA programs that include modest entry point development activities. Villagers participating in JFM expect some tangible economic returns from the forests in the near future. Most villagers do not distinguish between organizational boundaries; they see the local forest officer as the representative of the government and expect him to help in local development needs (Tiwary 2004). State agencies with a clear mandate for rural development have the required expertise and larger budgets than forest department, but they do not provide effective service in remote areas.

**Two parallel systems exist for rural service delivery, with forest communities in the middle.** Compounding the service delivery issue is the sometimes poor integration between forest departments and more traditional rural development agencies. Forest development to remote forest communities (on state forest land) is handled through the FDA system. Agriculture and rural development funds flow to communities on revenue land in less remote areas mainly through the District Rural Development Agency system. In the Forest department, staff expressed concerns about the limited involvement of rural development agencies within the FDA structure. Rural development agencies express similar concern that collaboration with the forest department is not as strong as desired. Having in essence two parallel systems for rural development imposes major transactions costs and limits communities from accessing investment funds and expertise for broader rural development that includes both forestry and nonforestry initiatives.

## 5. Forest Management Systems and Community-Based Forestry

### Resource Assessment and Planning Systems

**Effective management planning and inventory are critical features of sustainable forestry.** Sustainable forest management depends on a strong underlying policy and legal framework, efficient property rights, clear management goals with provision for stakeholder consultations, competent management institutions, and effective long-term planning. Long-term planning requires a good understanding of the state of the forest resource for a specific area and how and why it is changing over time. Basing forest policy and management planning decisions on weak resource inventory information can result in unsustainable resource use, with long-term consequences on forest health, biodiversity conservation, and the socioeconomic welfare of forest-based communities, both large and small.<sup>18</sup> Studies in the three states identified a number of resource assessment and planning issues that hinder communities from assuming greater responsibility for forest management and at the same time, providing sufficient information and confidence to state forest departments to allocate more responsibilities to communities.

**Poor inventory data are limiting planning effectiveness.** Assam, Jharkhand, and Madhya Pradesh are at different stages of development with respect to their forest resource assessment and management planning systems and the working plans that must be approved by the Ministry of Environment and Forests.<sup>19</sup> Madhya Pradesh has 97 percent of its working plans approved, Jharkhand has 52 percent, and Assam has 25 percent (table 5.1). Without an approved working plan, harvesting of standing timber is prohibited under past Supreme Court rulings. The higher level of plan approval in Madhya Pradesh reflects the forest department's progress in establishing forest resource assessment systems and engaging in forest management planning relative to the other two states. Management plans in Madhya Pradesh are supported by reasonably adequate forest inventory. By contrast, Jharkhand is constrained by weak forest resource data and information management systems. Robust growth and yield data, essential to estimate current and longer term forest structures and sustainable timber harvests are almost nonexistent in the working plans. There are no functioning permanent forest sample plots in the state that provide ongoing and reliable stand-level data to develop local growth and yield models. Consequently, the forest department is unable to provide robust estimates of the forest age class structure, spatial distribution across tenure types, site index, growth and yield, stocking, regeneration, or mortality at division levels, which could then be aggregated to a state-level inventory. The lack of data makes it difficult to make accurate estimates of current and projected resource supply, even for the main timber species, such as sal. Assam is in

**Table 5.1. Working Plan Approval In Focal States**

State	Number of Divisions	Plans Approved by Ministry of Environment and Forests		Pending or under Revision
		Number	Percent	
Madhya Pradesh	62	60	97	2
Assam	28	7	25	21
Jharkhand	25	13	52	12

*Source:* Background studies

<sup>18</sup> See appendix 7 for attributes of effective forest management planning and the general approach in India.

<sup>19</sup> Working plans are the primary mandated management plan for states. They operate at the division level and are revised every 10 years.

a similar position, but it is encouraging to note that the forest department sees a way forward despite its severe financial constraints. The Assam forest department is making good (albeit limited) use of new technology to establish a good inventory baseline.

**Resource assessment systems at the community level are weak.** Micro-plans associated with JFM programs do not provide communities or local forest department staff with sufficient information for effective management and regulation of JFM forests to meet multiple demands and livelihood opportunities.<sup>20</sup> Inventory work undertaken by forest department field staff as part of the micro-planning process generally consists of one or two short transects for visual surveys to note major forest cover types and general condition (good quality, degraded, and so forth). Measurements taken as part of a more systematic inventory process, in which sample plots (random or spaced along transects) are used and key species in each plot are recorded for trees of different ages, diameters, heights, numbers of stems, and quality, are not taken. Silviculture prescriptions are based on broad working plan prescriptions, which are often based on poor inventory and growth and yield models. While more intensive inventory systems for JFM are costly, better quality resource information is critical. Given the low quality of resource information generated by the current system, it is difficult to see how micro-plans can properly guide local management decisions for either timber or nontimber products.

**Nontimber forest product inventory systems are very weak in all three states.** Field surveys for micro-planning do not routinely gather nontimber product data, even for products that are significant sources of revenue, such as kendu leaf in Jharkhand and Madhya Pradesh. In some ways, this is not surprising. Many nontimber forest products are short lived and seasonal; for others, the supply is highly irregular from year to year. Fruit and flower crops on trees are difficult to estimate even in sophisticated orchards. For some commodities, such as exudates bled from trees, vines, or agarwood, the available stock can be estimated only by destroying some crops. Perhaps more important, in all but a few cases, no production or yield models are available as a guide for measured performance. Each state has small amounts of data for certain nontimber forest product species, but in many cases the data are old, are fairly site specific, and have not been replicated.<sup>21</sup> While periodic biophysical studies have been conducted for various species in some states, such as Assam, there is no systematic approach to collating this information or collecting new field data.

**Plans lack sufficient attention to markets and economic analyses.** Although working plans provide estimates of resource supply (with varying degrees of reliability), there is a serious deficiency in market information and demand forecasts for key timber and nontimber forest product species. A major contributor to the problem is the fact that state forest departments do not as a rule have a policy and economics unit, which could potentially provide management planners with market intelligence from a variety of sources for state, national, and international markets, at least for key species. Micro-plans appear to lack any kind of market analysis. This is unfortunate, since it is market access that will largely determine whether or not the community will be able to increase productivity and generate increased income from the managed forest.

**Poor mapping constrains more effective forest management planning** in the three focal states, particularly in Jharkhand, local cadastral and topographic maps used to develop forest base maps for working plans are 20–30 years old. Soil maps are also often outdated. The lack of reliable maps causes serious problems. Forest tenure cannot be determined with any accuracy in each division, putting long-term investments in forest stocks at risk in areas where boundary uncertainty exists. It

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<sup>20</sup> Micro-plans are the community-level management plan. They have a 10-year outlook and are implemented through annual operating plans.

<sup>21</sup> In Assam several surveys were undertaken of nontimber forest products in the late 1970s, but the surveys were not conducted on a regular basis. They have not been updated in many years.

is difficult to link existing site-specific forest resource data, such as data from micro-plans, with precise geographic locations in each division. To address this issue, the forest department has established a small central Geographic Information System (GIS) unit in Ranchi, but the system remains in the prototype stage.

In Assam the development of GIS is one of the stronger points of the inventory program. For several years all maps attached to divisional work plans have been derived from GIS systems, and a number of officers are moving up the learning curve. Some of the initial digitizing has been subcontracted to another state-owned but semi-commercial agency, to which an experienced forest department working plan officer has been seconded. Financial constraints are limiting progress, however.

In Madhya Pradesh existing stock maps are kept reasonably up to date through the ongoing working plan effort. A program is currently underway to combine all necessary geographic information into a GIS for the forest lands in the state.

In all three states, assuming GIS capacity increases, developing efficient mapping capacity to support JFM will be a much bigger job than work at the divisional scale. Serious capacity and funding constraints undermine efforts to transition to more modern forest management support systems.

**Management information systems (MIS) need significant upgrading.** A well-structured computerized database of inventory information is essential to compile inventory, production, market, and financial data for queries, reporting, and analyses. MIS for forestry is complex because of the long rotation period for some species, the need to build in predictive models for various silviculture regimes, the requirement for evaluating management approaches, and the need to ensure non-declining forest yields. The forest departments in Assam and Jharkhand are at the beginning of the MIS development curve but lack sufficient internal financial resources and specialized expertise to move forward. Madhya Pradesh made progress through previous World Bank support programs but still has some way to go to be able to quickly provide information, such as the breakdown of forest types and forest production in JFM and non-JFM areas. Even in Andhra Pradesh, where a sophisticated GIS is operational in the forest department, the development of MIS has not progressed much beyond simple aggregation of the most recent stock-taking in each compartment. This restricts answering “what-if” queries to evaluate management alternatives.

**Poor monitoring systems limit the ability of forest departments to track changes in the forest.** Deficiencies in forest resource assessment systems, mapping, and MIS make it difficult for state forest departments to effectively monitor how the forest is changing in response to ongoing pressures from people, fire, insects, disease, and altered land uses. In particular, there is a serious information gap related to JFM-related data (forest production, removals, value of production, employment, income). Forest departments are not well equipped to gather, manage, analyze, and disseminate community-level forestry information in a systematic way. As a result, the impacts of forestry programs on livelihoods and poverty are not monitored, making it difficult for forest departments to readily respond to public criticism that JFM is not improving community livelihoods or addressing poverty. Instead, forest department performance tends to be measured against inputs and targets, such as the number of communities registered for JFM, micro-plans completed, or hectares of new plantations. There is a need to move beyond inputs and targets to measure outcomes and impacts.

## Forest Management Systems

**The capacity of forest departments to model forest stand development is weak.** Forest management prescriptions for core timber and nontimber species in both JFM and non-JFM areas must be guided by more robust silviculture models, based on high-quality resource information and research. Forest departments at the state level in the three states studied employ a number of standardized silviculture models for high teak and sal forests and coppice in various states of understocking. Generally, the better stocked areas are slated for rehabilitation, using protection against grazing and natural (coppice) regeneration; gaps in more depleted areas are restocked by artificial regeneration, using presprouted stumps. These models are very traditional, aiming at restoring even-aged forest architecture, with few innovations to meet changing livelihood needs of communities. Developing commercial teak plantations on degraded forests can affect nontimber forest products. Kendu leaf production can decline as the canopy cover increases (Hill and Shields 1988). Defining the optimal mix of teak or sal overstory and nontimber product understory is critical to developing JFM and meeting local needs. Strengthening capacity in yield modeling will require better growth and yield information. While the Madhya Pradesh Forest Research Institute at Jabalpur has an ongoing program of growth and yield data collection, the methods employed are geared toward classical forest architectures. Both the layout of permanent plots and the methods for analysis and modeling need to be strengthened to better predict the outcome of new silviculture regimes. Similar exercises should be extended to yield regulation techniques for nontimber forest products that will guide management practices that are locally appropriate, cost-effective, simple to use, and reliable (Maharjan 1998).

**Micro-plans are still driven largely by general working plan prescriptions.** Broad “rule of thumb” prescriptions for major forest cover types from the division-level working plans provide a quick reference for forest department field staff to identify silviculture treatments for the JFM forest, but they may not always be the best site-specific prescriptions to manage secondary local species for community livelihood needs. A study in Orissa suggests that a traditional focus on managing a sal dominant monoculture for timber or the adoption of inappropriate management practices for other nontimber forest products can endanger the longer term sustainability of the forest (Bhattacharya and Prasad 1998).<sup>22</sup>

**Private sector space for JFM planning needs expansion.** All three states lack opportunities for private sector forestry consultants to engage directly with communities in the forest management component of micro-planning. This puts added pressure on limited forest department field staff to undertake this function in addition to their other duties.

## Forest Department Capacity and Community-Based Forestry

**Human resource capacities at the field level vary across the three states.** Service delivery usually begins with the range forest officer, who is normally in charge of organizing JFM committees, helping prepare the micro-plans, and overseeing their execution. Range officers may be secondary school graduates with two years of technical forestry training or individuals with slightly lower standards of education who have been promoted over time. Each range officer usually supervises four to six beat officers (also called foresters), who assist in the production of

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<sup>22</sup> Sal is a dominant species in Jharkhand and Madhya Pradesh. Although it is not the dominant tree species in Assam, it is the main source of sawlogs. The lessons of the Orissa study could relate to other forest stand types, such as teak, where certain nontimber forest products grow in the understory of mature and semi-mature stands. See appendix 8 for more details.

JFM micro-plans and annual work plans. In current JFM models, the forester is the member-secretary of the JFM committee, operating the JFM savings account jointly with the president of the committee and keeping and maintaining monthly receipt and expenditure accounts. Foresters are secondary school science graduates. They receive one year of training at departmental training institutes in each state. Forest guards are the department's field presence in the community. In addition to assisting the village committee and forester in the execution of their duties in JFM, they are also supposed to focus on enforcement. They will normally have at least a grade seven education plus six months of technical forestry training.

The numbers of field staff (deputy range officers, foresters, forest guards) in each of the states ranges from 950 in Jharkhand to 16,550 in Madhya Pradesh (table 5.2).<sup>23</sup> The higher echelons (from principal chief conservator of forests down to DFO) in the forest department are Indian Forest Service graduates and in state Forest Service categories.<sup>24</sup> These

professional groups are reasonably well staffed. The largest staffing gaps occur in field positions of forester and forest guards. In Jharkhand 34 percent of positions are vacant; in Assam the figure is 10 percent (data are not available for Madhya Pradesh, where the department is restructuring). Each field officer is responsible for a large block of forest and a wide range of management and oversight functions in the current JFM model. The data and field interviews suggest that one forest department officer cannot effectively cover such a large area for all the broad functions currently mandated, including inventory, monitoring, protection, oversight of JFM planning and implementation, enforcement, particularly given the lack of field equipment, maps, and transport.<sup>25</sup> Overcoming these issues at the field level by trying to establish new positions is difficult, due to general restrictions on state government recruitment or, in the case of Madhya Pradesh, staff reductions in response to fiscal pressures. None of the forest departments had undertaken a comprehensive strategic planning process to guide internal organizational reforms in response to the changing biological, business, economic, social, and political environments. Very few women hold field positions, making it culturally difficult for the department to work with village women involved with forestry activities such as collecting fuelwood and nontimber forest products. In Uttar Pradesh, for example, only 8 of 200 Indian Forest Service officers are women; at the forest ranger/forest guard level, there are no women officers on staff.

**Table 5.2. Field Staffing of Forest Departments in Assam, Jharkhand, and Madhya Pradesh**

<i>Item</i>	<i>Assam</i>	<i>Jharkhand</i>	<i>Madhya Pradesh</i>
Number of field staff	5,089	950	16,550
Recorded forest (millions of hectares)	2.6	2.3	7.5
Field staff vacancy rate (percent)	10	34	—
Forest area per staff (hectares)	514	2,421	453

*Source:* Background studies— Not available.

<sup>23</sup> Madhya Pradesh is in the process of reducing staff numbers as part of government structural reforms.

Current posts have been reduced from about 38,000 to 21,000. The proposed goal is about 18,000 posts.

<sup>24</sup> Indian Forest Service officers represent a national service, with extremely competitive recruitment from across India. They are deployed by the Ministry of Environment and Forests in Delhi and in state forest departments in senior positions (graduates may also be appointed to public service posts outside forestry). State Forest Service (or Department) staff are not Indian Forest Service graduates; they tend to occupy lower level positions in the state forest departments.

<sup>25</sup> Forest Guards, for example, usually provide their own bicycles for transport. They normally do not have a field kit, consisting (at a minimum) of a local forest cover map, compass, measuring tape, notebook, and pencil. Field offices also lack basic inventory equipment, such as a survey chain, a diameter tape and clinometer for measuring tree size, and an increment corer for measuring tree age.

**Many field staff lack advanced forestry knowledge and skills for JFM.** The average field staffer is about 50 years old. Most have not little, if any, training in modern techniques of community-driven development, such as participatory planning, social mobilization, and group formation. Many forest department staff does not fully understand new concepts of rural livelihood development and how forests can address poverty (box 5.1). Extension service delivery is quite poor in most cases, due to lack of transport, overstretched field staff, and the fact that practical research results are rarely geared to community problems.

**Box 5.1. Field Realities and Operating Constraints Facing District Forest Officers**

- Most lower level field staff have an enforcement mindset that makes it difficult for them to adjust to a new role as facilitator/negotiator of JFM activities. They perceive JFM as an erosion of their authority. They therefore often mechanically go through the motions, in the hope that JFM is yet another fad that will disappear in a few years. Motivating staff to break out of their traditional mindset is very hard and takes time. There is no incentive for officers or staff to work on JFM activities, since their performance assessment does not depend on the success of JFM.
- Even for honest lower level officers, enforcement activities offer a sense of power and status. For others enforcement offers an opportunity for rent-seeking behavior. It is natural that over time, a distortion of priorities has taken place in favor of risk-free enforcement-related activities.
- Lack of fresh recruitments, poor opportunities for career advancement, and little improvement in technical and management skills have contributed to low morale and development of a passive attitude among many field staff.
- The impact of JFM can be felt only after several years, while the tenure of a DFO is usually less than three years. There is no guarantee that the officer's successor will sustain the work with the same tempo and spirit. The fact that officers may not see the fruits of their labors reduces their motivation to implement JFM .
- In many places, field staff work under extremely hostile conditions, without adequate resources. Low-level officers protect thousands of hectares of forests without any arms or vehicles.
- Boundary demarcation is one of the major factors leading to increased encroachment and litigation over the ownership of the land. Old forest maps do not coincide with current revenue maps; the forest department's initiation for joint inspection of disputed areas usually meets with a lukewarm response from the revenue administration, mainly because they remain overburdened with other pressing problems (for example, many revenue officials also function as the territorial executive magistrates).
- Most villagers or tribal people have no documentary evidence of their existing rights on the forests. This makes it difficult for DFOs to set objective criteria for sanctioning tenure rights, and it leaves them vulnerable to political pressures.
- The micro-plan is an important planning document whose preparation requires care and attention. In practice, however, because of lack of time and technical expertise and the resistance of some field staff to seek external assistance or collect data, the plan is just another routine document rather than a real planning tool. DFOs are generally busy with other departmental activities and are not given enough time to scrutinize plans. (On average up to 40 percent of a DFO's work time can be spent on forestry-related legal problems, including attending court.)
- The working plan, which is the basis for micro-plan prescriptions, should be an important strategic planning document for the department. In general, however, working plan officers do not have independent resources. They are required to share the division resources and are totally dependant on the local territorial DFO. Naturally, officers are not motivated to work as working plan officers and can view doing so as a punishment posting.
- In general, the forest department lacks technical knowledge and information regarding recent developments in agro-forestry, nontimber forest products, marketing, and other areas.

*Source:* Personal Communication from a forest department field officer.

## Social Capital Building Processes and JFM

**Current processes in JFM for building social capital are weak.** The current JFM registration and micro-planning processes give insufficient attention to social mobilization and group formation within the community. In some cases the entire process of community engagement, committee registration, and micro-planning can take as little as two weeks. As indicated in the previous chapter, local institutional and governance structures in forest fringe communities are complex, particularly among tribal groups, where informal systems for managing local forests may exist. Community capacities are often very weak, given high levels of illiteracy.

Assam is just beginning to climb up the JFM learning curve, building on forestry experience in states such as Andhra Pradesh and Madhya Pradesh, as well as other sectors in India in which community-driven development is a central feature.<sup>26</sup> Jharkhand has gained limited exposure to better approaches using community support organizations to integrate JFM communities with larger donor-funded development projects. Madhya Pradesh has gained useful experience in social and institutional development through World Bank-funded programs. With limited budgets, it has tried to build appropriate skills in field staff.

The forest departments in Andhra Pradesh, Jharkhand, and Madhya Pradesh recognize that a more comprehensive social capital building process would be beneficial. However, they are hindered from applying a more robust approach by limited staff, inadequate social and institutional training, and above all inadequate financial resources. While a process lasting several months and partnered with community support organizations may build highly empowered and enduring community institutions, it may not be realistic given current budget allocations to JFM social development. A better approach is needed that provides for more comprehensive institutional assessment in each community and strengthens social mobilization, group formation, appropriate training, and confidence building. Stronger up-front investment in institutional development will reduce the risk that JFM benefits are captured by village elites and poorer groups in society become marginalized (Hill and Shields 1988). What is clear from the previous chapter and field examinations is that imposing a one-size-fits-all JFM model on all communities, especially where multifaceted traditional tribal institutions exist, is ill advised and will not build sustainable local institutions that can support national and state forest conservation goals in concert with improving rural livelihoods and equity. Such an approach also fails to provide interested communities with the skills and expertise to gradually assume greater management and marketing responsibilities.

**Conflict resolution under JFM needs to be more equitable.** Conflicts always arise in natural resource management; different groups in society often disagree over objectives and values associated with forests, how the forests are allocated, how they are used, who benefits, who bears the costs, and so forth. These disagreements are exacerbated in India, where population density is high; some rural groups, such as tribal people, have strong links to the forest; and emotional and political issues surround land and forests. Formal mechanisms under JFM for resolving conflicts between communities and forest department are heavily weighted in favor of the government. In general, the local forest department officer has the authority to arbitrarily resolve conflicts between the community and the department, in the extreme by disbanding the JFM committee. Field examinations in all three states indicate that many field officers work very hard to resolve conflicts informally and fairly through dialogue, usually with positive results. However, an underlying system that ensures a balanced and equitable resolution of conflicts between a community and

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<sup>26</sup> A small team visited Karnataka to learn from the Bank-funded Karnataka Watershed Development Project, a major initiative in five districts that focuses on soil and water conservation and livelihood improvements through community-driven development.

forest department is not in place. Furthermore, conflicts between communities are common, but JFM does not provide a simple mechanism to address these conflicts. As noted already, unclear boundaries lead to chronic conflict and court actions, all of which consume considerable staff time.

**Decision making processes regarding alternative land use are weak.** Conflicts occur between communities and alternative economic land uses, such as mining, particularly in states, such as Jharkhand, that are rich in subsurface minerals. Forests have multiple values; in some situations nonforest uses may be more economic. Field interviews with communities in Jharkhand indicate deep frustration in some areas where small mining interests or other forms of industrial development have encroached with impunity on what villagers perceive as their forest. This raises questions about how decisions regarding alternative land uses are made in forest areas, the efficacy of environmental assessment processes, and how communities are compensated for loss of forest livelihoods. It also brings to question to how well inform villagers may be about their legal rights over local natural resources and compensation processes.

## Economic Incentives for Community Participation in JFM in India

**Communities may not have strong incentives for making greater commitments to JFM.** The participation rate of communities in JFM is strong nationally, but many JFM committees may not be fully functional. Moreover, many communities involved with JFM feel little sense of ownership of the resource or the program. The main community benefits are minor forest produce. Although JFM legitimizes and provides increased security and access to these resources, many communities would be harvesting subsistence production without JFM. Without investments to improve collection rates and value addition, JFM thus does not provide a true incremental benefit. Timber harvesting and marketing, especially for nationally listed species, is managed solely by the forest department, with the community providing labor for commercial harvests and ostensibly receiving a share of net revenues through current and rather opaque benefit-sharing schemes. Coupled with the lack of efficient resource use rights, communities tend to lack strong incentives to assume greater responsibilities and make greater commitments toward long-term forest management as capacities are improved over time.

**Immediate incentives may also be weak for agro-forestry and homestead forestry.** What are the relative financial returns to villagers from using land in alternative uses? A villager in Assam with homestead land faces difficult choices (table 5.3). Forests would not be the crop of choice unless the land is unsuited for agriculture. Reasons identified for low adoption of agro-forestry include inadequate technical expertise within the Department of Agriculture and the forest department, poor service delivery, poor coordination between agriculture and forest departments, and lack of transport.

**Table 5.3. Returns to Alternative Land Uses in Assam**

<i>Crop</i>	<i>Years to First Revenues</i>	<i>Net Revenue at Full Production (Rs)</i>	<i>Accumulated Costs before Revenues Accrue (Rs)</i>
Rice	1	6,000	10,000
Vegetables	1	23,000	47,000
Patchouli	1	32,000	30,000
Bamboo	5	28,000	28,000
Poles	20	23,000	23,000
Teak	60	4,000,000	67,000

*Source:* Background studies

## **6. Forest Marketing Systems, Benefit Sharing, and Community Forestry**

**To sell their commercial production at fair prices, communities need access to an open and efficient market.**<sup>27</sup> Creating such a market would generate higher revenues and offer a strong incentive for communities to take on increasing responsibility for forest management and promote more efficient forest utilization. A number of impediments currently restrict more open marketing by communities. These include highly bureaucratic transit permits for many species, a legal requirement to sell certain species only to state marketing monopolies, and a lack of information about markets channels and prices.

A related issue is how revenues are shared. All state forest departments use a benefit-sharing scheme as one means of retaining commercial revenues and returning a portion to communities for rural development and forest conservation. This may not be the most efficient approach, especially if communities are able to build internal capacities and increasingly engage in more direct marketing of forest products.

### **Marketing of Specific Forest Products in Assam, Jharkhand, and Madhya Pradesh**

#### **Timber**

Timber is a relatively undifferentiated commodity in India, with competition for domestic markets from overseas log suppliers in Indonesia, Malaysia, and Nigeria. The domestic industry is characterized by low vertical integration, with small and inefficient sawmills processing a mix of local and imported logs. State monopolies on high-value timber marketing provide effective barriers to private sector log supply through legal harvesting. In Madhya Pradesh the primary timber product is teak, marketed through auction at 38 major commercial depots across the state. Interviews with sawmillers reveal general acceptance and satisfaction with the auction system. Over the past three years, teak log prices have remained relatively stable and competitive with imports. In Jharkhand field data show that administered prices from logs supplied from department depots are significantly higher than the market price of logs imported from other states or even overseas suppliers such as Malaysia or Nigeria. Government harvesting and marketing structures carry high overhead costs, which need to be covered by log prices.

In Madhya Pradesh about 76 percent recurrent of the nonplan budget (or \$65 million) is supporting commercial timber production and harvesting structures. A critical point with the Madhya Pradesh system is whether an approach accounting for Rs2.7 billion in operating costs, financed by state budget allocations (yet generating Rs3.8 billion in gross revenues), is the most efficient approach from a public policy perspective. In Jharkhand and Assam, the same questions about the efficiency of state production and marketing organizations apply, but on a much smaller scale.

Two important issues need to be addressed with respect to improving community livelihoods through timber market systems. First, as communities gain experience and capacity in forestry, they

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<sup>27</sup> This chapter draws heavily on the field work undertaken by the consulting team in each state. See appendix 9 for abbreviated case studies.

will require more space to engage in direct timber marketing. This is currently hampered by weak community capacity, lack of enabling structures and institutions to provide effective market intelligence, and poor access to marketing channels within and outside the state. Second, the legal framework restricts potential sales and movement of nationalized/listed products. This issue affects timber supply from both communities and private farms. The laborious permitting system to remove privately grown high-value trees, such as teak, provides a strong disincentive to private commercial growing of trees on private land.

### **Kendu Leaves**

**Kendu leaves are of high economic value, because of their use in rolling *bidi* (country cigarettes).**<sup>28</sup> Throughout India kendu leaves and *bidis* are estimated to provide 106 million person days of employment in collecting activities and 675 million person days in secondary processing. Kendu is a nationally listed nontimber product, which means that all marketing must be done through state forest departments, associated forest marketing corporations, or licensed traders operating on behalf of the state.

The kendu market structure in Jharkhand involves interaction between the Jharkhand State Forest Development Corporation (JSFDC), licensed traders who operate as middlemen between JSFDC and communities and manufacturers, and insurgents. The first main payment along the value chain is to the primary collector (village/ household collectors) by the trader. This payment is set by the JSFDC annually in advance for the whole state as an averaged fixed amount per bag, irrespective of quality. In 2003 this fixed collection cost was Rs425 per bag. The second main cost component is the royalty payable by the trader to the JSFDC, which in 2003 was Rs168. In between the initial purchase of kendu leaves in the field and the final sale to *bidi* manufacturers, a number of formal and informal taxes exist, ranging from state taxes of Rs40 per bag to extortion payments to Naxalites of about Rs60 per bag.<sup>29</sup>

In contrast, the Madhya Pradesh State Minor Forest Produce (Trading and Development Cooperative Federation) is a nonprofit organization overseeing a structure of cooperative unions and primary cooperative societies that handle collection and storage of leaves. Cooperative societies receive Rs518 per bag from the apex federation, of which Rs400 is paid to collectors. The remaining Rs118 is used to offset society costs, 20 percent of which are for administration and overhead. Since 1995 the federation has been returning 20 percent of its net income to societies, which pay out the amount as a bonus to collectors after deducting administration expenses. In 2003 this payment was equivalent to Rs40 per standard bag. The federation also underwrites a life insurance scheme for collectors, and it sets aside 20 percent of net income into a local forest development fund and 30 percent into a fund for local infrastructural projects.

**Six critical inefficiencies hamper the kendu marketing system in both states.** First, the current market system does not allow market forces to operate at all points along the value chain, where quality would be rewarded with higher prices. Although JFM rules specify community member as co-managers, for nationalized species such as kendu, sales must be made through state marketing corporations; collectors are simply paid a wage per bag as pure price takers in a monopsony rather than the revenue share specified in the JFM agreement. In Madhya Pradesh the bonus paid to collectors at the society level can be differentiated based on quality, but the bonus is paid only the next year after collection. Second, only very limited technical advisory services are available to villagers on how to improve product quality and yield. Third, in some years a proportion of the crop

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<sup>28</sup> In some states kendu is also known as *tendu*.

<sup>29</sup> In some insurgent areas, traders are “asked” to pay an additional surcharge per bag to collectors for high-quality leaves. This charge can be as much as Rs175 per bag.

goes unsold by traders to *bidi* manufacturers due to poor quality. In 2003 an estimated 51 percent of all kendu lots (about Rs170 million, or \$3.8 million) in Jharkhand remained unsold by traders. The problem also exists in Madhya Pradesh, on a smaller scale. Fourth, both the JSFDC and the Madhya Pradesh Federation generate almost 100 percent of their total revenues through kendu marketing. This narrow product line brings risks of collapse should markets decline due to changing social perceptions about smoking and competition from prerolled tobacco cigarettes. Fifth, the current system employs too many people. In Jharkhand the JSFDC employs 600–700 staff throughout the state for a work program of only a few months. In fiscal 2003 it generated net profits of only Rs300,000 (\$6,700), less than 1 percent return of sales revenue. In Madhya Pradesh at the union and society level, a forest department range officer or forest guard is signatory to all bank accounts and a member of the union/cooperative management committee. The current collection and marketing system in the eastern *tendu patta* (or kendu) belt of the state deploys virtually all department field staff during the six-week collection season—a questionable use of department field staff. Recent changes in the tendering system will likely reduce direct involvement by department staff, but even after these changes the structure leaves primary collectors with only a passive role in the collection and marketing system and few direct incentives to improve product quality. The market structure appears to be dominated by forest department staff with no clear plan to further empower and ultimately let community producers manage their business affairs. Sixth, village collectors often earn less than the daily wage rate. In Jharkhand an adult collector can earn about Rs2,000 per season.<sup>30</sup> Surveys in communities suggest that the average net returns, after allowing for time for collection and carrying the leaves to depots, ranges from Rs70 to Rs150 per bag, or 16–35 percent of the farmgate price.

## **Bamboo**

**Bamboo is a major forest product in Assam, where the annual harvest is estimated at 7.5 million green metric tons.** Some 2.5 million households are engaged in producing bamboo, providing 55 percent of the input for two government-owned pulp and paper mills. The mills operate a complex collection and buying system for farmer-grown bamboo through private agents. The pricing system is aimed at securing an adequate volume of bamboo to meet production targets at the lowest weighted average cost. Cross-subsidization is used to purchase private bamboo; higher cost supplies from more distant parts of the state are subsidized by growers closer to the mills. In this case, a uniform price is a mechanism for rural income equity from bamboo. Based on actual grower costs, including transport, and the average mill price, growers close to the mills are losing Rs296 per metric ton (relative to what they would earn given open market prices) as a result of cross-subsidized prices. Although new product and market opportunities are emerging, they are proving difficult to exploit because of the high costs of piloting new products and market resistance in India to bamboo substitutes for wood products such as paneling and flooring.

## **Medicinal Plants and Aromatic Oils**

**India has 16 agro-climatic zones, 45,000 different plant species, and 15,000 medicinal plants. The domestic market for Indian systems of medicine and homoeopathy has been estimated at about Rs40 billion (\$890 million).** There is also growing domestic and international demand for natural products, including pharmaceuticals and other products with medicinal value, food supplements, and cosmetics. According to ICS-UNIDO (2004), the international market of herbal products is estimated at \$62 billion. India's share in the global export market for medicinal plants is just 0.5 percent. Aromatic oils are another potentially important forest product, with expanding

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<sup>30</sup> The average person can collect 100–200 small bundles a day, depending on the supply of the leaves (Prasad and Bhatnagar 1990). Whole families are usually involved in leaf plucking; on average they can earn up to Rs100 a day during the season. For a 20-day season, this represents about Rs2,000.

global markets and limited supply. The market structures for medicinal plants and aromatic oils in most states of India are weak and focused largely on local trading. As unlisted species, medicinal plants and aromatic oils have not historically received much attention from forest departments. With growing market demand and high potential revenues, many states are considering developing more state-controlled market systems for these products.

**Of the three states examined, Madhya Pradesh has made the most progress in developing better market systems for medicinal plants.** The Madhya Pradesh State Minor Forest Produce (Trading and Development) Cooperative Federation assists primary collection societies in selling nonnationalized nontimber products by offering fixed purchasing rates for a small selection of plants with market potential, including aonla, mahul patta, mahua seeds, and achar. Over time, both collector prices and the range of nontimber products have gradually improved. The federation is initiating a number of actions to enhance market access and incomes, including financing the development of specific areas for nontimber production in 10 districts, facilitating commercial financing for farmers to cultivate nontimber products, establishing local market outlets and branding, promoting local value addition, and disseminating market intelligence to growers.

Assam has had success with patchouli, a perennial herbaceous plant of the *Lamiaceae* family. The dry leaves of the species can be distilled to yield aromatic oil used in perfumes, medicine, and processed food. Worldwide consumption of patchouli is about 2,000 metric tons a year. The largest market is the United States, which consumes about 500 metric tons a year. In India consumption of patchouli oil has reached 300 metric tons a year, 290 metric tons of which is imported. India's production level is less than 20 metric tons.<sup>31</sup> Once in production, one hectare of patchouli can generate an average Rs44,000 a year in net revenue for three years.

A strong partnership between the state and the private sector has been developed to plan and strategically develop patchouli production and marketing. The Northeastern Development Finance Corporation (NEDFI) is financing start-up capital for small farmers to cultivate patchouli and facilitating market linkages. NEDFI also has its own research facility. The AMJAL Group has established local processing facilities. The forest department provides limited research on silviculture, and a local community support organization works with farmers to build capacities. Plans are underway for NEDFI to work with communities in forest nontimber forest products with high market potential.

## **Fuelwood**

Fuelwood is a source of livelihood for more than 11 million people in India, making it the largest employer (formal and informal) in the Indian energy sector. An estimated 59 percent of rural households obtain their wood from home-grown sources or free collection; only 21 percent pay for all of their wood (Kholin and Ostwald 2001).

Markets are generally of two forms. One is a semi-commercial market through forest department channels, in which forest department plantation or other larger-scale supplies (from farmers, for example) are sold to large commercial buyers. In the second and more common approach, individuals (usually women) from communities engage in small-scale fuelwood trading with other households or middlemen for low returns. Data on trade volumes, prices, and general market performance are not available at the state level. But forest department officials suggest that meeting local fuelwood demands and improving livelihood opportunities is a critical issue that requires innovative production and marketing solutions. The lack of organized community institutions,

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<sup>31</sup> Source: Background studies for Assam

particularly for women, means that collection and sales are left to individuals with little market power when dealing with commercial collectors, who transport the wood to urban markets. There is virtually no private sector investment in fuelwood plantations with communities as partners for a state like Assam, the need for investment is overwhelming. It is estimated that it will take up to 1 million hectares of fuelwood plantations in Assam alone to satisfy domestic demand and completely eliminate the pressure on natural forests for fuelwood. Financing these investments, incorporating plantations into a community forest model, and developing market solutions for excess production are pressing needs.

## **Summary of Product Marketing**

**Market systems vary widely across the three states in terms of local empowerment and access to efficient markets.** One end of the spectrum is represented by the marketing of patchouli in Assam, where the private sector leads marketing and the forest department serves as facilitator, not interfering in market structures. The other end of the spectrum is represented by kendu leaf marketing in Jharkhand, where villagers are little more than collectors operating as pure price takers in a monopsony, with no bargaining position and no incentives to improve quality above minimum standards. Significant welfare losses occur through the distorted pricing systems along the value chain. The forest marketing corporation has high fixed and variable costs that require huge margins to cover. This in turn limits the price that can be paid to collectors. Timber marketing of listed species also falls into this lower end. Even in Madhya Pradesh, where the state auctioning system sells high-quality teak to the private sector at internationally competitive prices, generating significant state revenues, communities are still engaged in the production and marketing system mainly as labor only. In between, a range of models are evolving. The kendu marketing system in Madhya Pradesh uses a cooperative system and federation that provides more coordinated supply to the private trading companies, facilitates some technical inputs from the forest department on supply enhancement, and provides benefits, such as life insurance, to collectors. However, the farmgate prices for collectors plus the federation profit share are no higher than what collectors receive in the more restrictive Jharkhand model. There is no sign of increased market power from the cooperatives reflected in higher incomes for collectors. In terms of social capital, the apex federation, with its strong linkages to the forest department, makes all major decisions regarding pricing and final sales to manufacturers. Communities are still largely insulated from market signals that should influence quality and volume, and they are not yet fully empowered to manage the financial affairs of the societies. Market distortions are also caused by a serious lack of awareness and information on the market environment.

The marketing of nonlisted, nontimber forest products in Madhya Pradesh represents further evolution. It is regarded as a good example in India of a government-oriented federation trying to be a catalyst to develop local production and marketing of medicinal and aromatic plants through planning, collecting, processing, packaging, and marketing initiatives. Policy questions arise, though, about the forest department's long-term role with the federation and district unions. A central issue to be addressed in all these cases is the appropriate role for the government in marketing primary forest products from communities.

## **Benefit-Sharing from Community Forestry in India**

**Closely tied to marketing is the capture and distribution of forest revenues.** Governments can capture and distribute a share of initial resource revenues in a variety of ways, such as levying various taxes, fees, and royalties on the resource or on the underlying forest land. Revenues can also be captured further along the value chain as primary products are transformed and value added. As an example, mature saw timber on government land could be harvested by a private contractor or community under some form of license or permit in return for a royalty on every cubic meter cut and hauled to the roadside. The royalty or any schedule permit fees would capture a portion of the economic rent on the primary resource. The logs would then be sold to sawmills, which would transform them to lumber and sell it to distributors or tertiary producers, such as furniture manufacturers. Along the value chain, governments could assess various sales, value-added, and income taxes or additional permit fees to generate further public revenues from the wood products. Experience shows that a well-designed and effectively implemented forest fiscal system can be a more progressive instrument to increase forest sector contributions to growth and development than a narrow regulatory-based approach (Oksanen 2004).

**India's JFM program generates initial revenues through a benefit-sharing scheme.** For listed commercial timber species, the forest department handles harvesting and marketing and returns a share of the net revenues to the community after deducting costs for production, marketing, overhead, and other expenses. The forest departments also collect revenues from fines and rental of guest houses. All revenues collected by the forest department are forwarded to the state government treasury. State governments levy sales taxes on downstream processing, after logs are turned into lumber by private sawmills, for example. Corporate income taxes are collected from forest industries at the state and national levels.

**The current system of benefit sharing is inefficient.** The benefit-sharing scheme for primary forest output from communities in India is highly regulated, has high transactions costs, and focuses on a narrow range of revenue generation. Benefit-sharing schemes are promoted by forest departments in every state as an incentive for communities to participate in the JFM program. In some ways, the system is similar to a traditional calculation of stumpage. However, there are a number of anomalies. First, the states do not try to derive stumpage estimates to charge the resource user; the principal goal appears to be to try to recover operating costs and distribute part of any surplus back to communities in return for assistance with forest management and rural development. Second, costs used in deriving the net returns to communities are based on administered forest department averages rather than actual costs by division or block, which would normally vary by timber size, operating conditions, transport distances to the log yard, and other factors. Third, costs are based on government production and marketing systems, which may be more inefficient than comparable operations in the private sector. Fourth, subsistence products are provided free of charge to communities without benefit-sharing (see appendix 10).

**Benefit-sharing schemes need to be more consistent and transparent.** Most states are gradually increasing the share of net revenues from commercial forest production to communities over time, but in the absence of a national policy, individual states apply different share ratios (table 6.1). Field surveys indicate that many villagers are not clear on the actual sharing ratio or how the actual revenue share is derived. The process for deriving net shares tends to be very complex and opaque. Providing better and more transparent information to communities would allow villagers to judge the merits of any benefit-sharing scheme. Communities are largely isolated from market signals in the current benefit-sharing scheme and have few opportunities to gain experience or learn to market their own products outside of government monopolies or state-led associations.

**Evaluating benefit-sharing annually may not make sense.** For major timber species, Assam and Jharkhand pro rate the share of costs and revenues to communities annually. Madhya Pradesh calculates net revenues to communities on an aggregate district basis. These approaches may yield questionable results, because costs and revenues accrue over the entire rotation period rather than one year. If, for example, a forest is established on degraded lands and both, the community and the forest department bear costs for several years, until initial revenues begin to flow. Revenues from timber thinning and poles could take as long as 20 years to start to flow, and the final timber harvest could take 60 years or more. Evaluating benefit-sharing over one year ignores initial capital investments and subsequent maintenance costs. An alternative approach is to estimate the present value and distribution of revenues

**Table 6.1. Benefit sharing Schemes in Assam, Jharkhand, and Madhya Pradesh**

State	Community Share	
	<i>Subsistence Poles, Fuelwood, Nontimber Forest Products</i>	<i>Commercial Timber and Bamboo Products</i>
Assam	<ul style="list-style-type: none"> <li>• Free access and consumption</li> </ul>	<ul style="list-style-type: none"> <li>• 50% of net revenues for thinning revenues and 25% of net revenues from timber on existing high forest to individual community</li> <li>• 100% of net revenues for second rotation to individual community</li> </ul>
Jharkhand	<ul style="list-style-type: none"> <li>• Free access and consumption</li> </ul>	<ul style="list-style-type: none"> <li>• 90% of net revenues to individual community</li> </ul>
Madhya Pradesh	<ul style="list-style-type: none"> <li>• Free access and consumption</li> </ul>	<ul style="list-style-type: none"> <li>• Village Forest Protection Committee in degraded forests: 100% of net revenues at district level shared by all JFM communities in district</li> <li>• Forest Protection Committee in high forest: 80% of net revenues at district level shared by all JFM communities in district</li> </ul>

Source: Background studies

and costs over the full rotation. Using data from Assam, an analysis over one rotation shows that the current benefit-sharing ratio used by the forest department for commercial timber and thinning is not being attained.<sup>32</sup> Instead, communities reap a higher level of net benefits than the forest department. The share of net benefits changes as forest management shifts from existing high forest to the establishment of new forests on degraded areas. This analysis, based on rough data and assumptions, suggests that a blanket benefit-sharing scheme, while conceptually simple, may not be economically efficient or represent the wide range of forest conditions in a state.

**Direct forest revenues captured by state forest departments are low.** National data for 1999–2000 suggest that the average revenue-generating capacity of primary forest resources is low in India (table 6.2). The data represent revenues collected by forest departments on behalf of state governments; expenditures are state nonplan outlays. These figures reveal that direct revenues collected by forest departments are not covering expenditures, which appears to be an implicit goal of the current benefit-sharing model. Revenues are low mainly because of low average productivity across all forests in each state, low commercial output from the forest outside of high-value plantations, and the small proportion of forest output that is actually part of commercial benefit-sharing programs (subsistence values of fuelwood and fodder are not included, for example). It also reflects the low number of approved working plans in some states (such as Jharkhand), which limits

<sup>32</sup> See appendix 11 for more details on the economic model and assumptions.

legal timber production.<sup>33</sup> If the analysis were done only for high- quality plantation forests, the average revenue per hectare would be significantly higher.<sup>34</sup>

**Table 6.2. Mean Revenue and Expenditure in Selected States, 1999–2000 (Rs per hectare)**

<i>State</i>	<i>Revenue</i>	<i>Expenditure</i>	<i>Net Revenue</i>
Gujarat	150	1,570	-1,419
Jharkhand	69	847	-778
Goa	74	798	-724
Karnataka	243	777	-534
Tamil Nadu	465	866	-401
Assam	54	277	-222
Andhra Pradesh	133	307	-175
Jammu and Kashmir	224	386	-162
Rajasthan	70	208	-138
Kerala	1,009	1,137	-127
Manipur	4	127	-123
Madhya Pradesh	404	525	-121
Nagaland	19	127	-108
Arunachal Pradesh	30	59	-30
Meghalaya	65	72	-7
Orissa	164	160	4
<i>All India</i>	277	388	-111
<i>Mean for states above</i>	199	515	-317
<i>Median for states above</i>	103	347	-150

Source: MOEF (2001a); [www.indiastat.com](http://www.indiastat.com); Forest Statistics of India.

It is important to emphasize that the negative net revenue figures in table 6.2 are neither good nor bad: they depend on each state's policy goals for revenue generation by forest departments. These policies are not clear. They could encourage forest departments to be revenue neutral (zero net revenue), to maximize direct revenues through higher charges against primary production, or to charge communities no fees or royalties in order to encourage local development and recognize the role played in conservation of timber and nontimber forest values.

<sup>33</sup> This issue reflects the poor capacity in many states to produce working plans for all districts in a timely manner based on solid inventory and growth and yield information that is subsequently approved by the Ministry of Environment and Forests.

<sup>34</sup> The analysis also omits revenues captured by state forest marketing corporations/federations that operate outside the forest departments.

## 7. Unlocking Opportunities for Forest-Dependent People: Policy and Program Options

### Introduction

A central thrust of the government's strategy for meeting forest conservation goals has been the adoption of the JFM model of partnerships with communities. The program has had a positive impact on increasing national forest cover and improving the ability of many forest communities to meet their subsistence requirements, but the direction and scope of reform is uneven across states. Furthermore, this evolution is not keeping pace with the challenges posed by a domestic and global environment that is rapidly changing, both. India is enjoying high rates of economic growth, increasing industrialization, and shifts in agriculture to a more market-driven model. The rural nonfarm sector, which includes forestry, has great potential for economic growth, employment, and improved livelihoods. But encroachment, unsustainable grazing and fuelwood collection, fires, and shifting cultivation are contributing to serious timber and fuelwood deficits.

**States with high levels of forest cover tend have large populations of forest dwellers, including tribal people, many of whom are among the poorest groups in society.** Forest-based communities tend to rely on marginal agriculture systems and wage labor as the primary source of livelihood. Forest resources contribute to livelihoods mainly as a safety net during lean times. They also provide a seasonal source of income through the collection of subsistence fuelwood, fodder, and other nontimber products, such as medicinal plants, fruits, and flowers. Forests are not a major contributor to cash livelihoods in most of these communities, but the potential exists to increase commercial forest-based activities as one step along the pathway out of poverty, going beyond subsistence and seasonal production.

**Many mature natural forests already have high market and nonmarket values.** Degraded forests, which tend to be allocated to communities through JFM, have the potential to generate higher values as their productivity increases. But turning these potential values into measurable livelihood improvements will require further evolution of the JFM model along the community forestry continuum.<sup>35</sup>

### Options for Reform

**A suite of policy and program reforms has been identified for consideration by the government** in addressing four critical enabling factors under the broader development goals of improving natural, physical, social, human, and financial capital in communities (box 7.1). Forest sector reforms around these enabling factors require a gradual transformation in which communities are more empowered and both willing and capable of capturing the potential livelihood opportunities from forests.

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<sup>35</sup> See appendix 12 for more information on the community forestry continuum and how forests can be a better pathway out of poverty for communities.

### **Box 7.1. Critical enabling Conditions to Unlock Forest Values for Forest-Dependent People**

To support continued evolution of JFM into a model of community forestry where people are more empowered and livelihoods improved in concert with forest productivity, four key enabling conditions need to be met:

#### **1. Secure forest resource tenure and management rights for communities**

- Operate within the space provided by existing legal frameworks.
- Respect historic tribal rights over forest resources.
- Where historic rights do not exist, provide communities with stronger resource tenure.
- Provide communities that are willing and able the opportunity and incentives to assume greater responsibility for sustainable forest management, in both degraded and good-quality forests.

#### **2. Provide robust support systems for forest management regulation, monitoring, and control**

- Provide communities, forest management agencies, and the public with accurate and cost-effective baseline and change data on forest resources and livelihood changes.
- Develop silviculture systems based on robust growth and yield data that support effective management of key timber and nontimber species by communities and forest departments.
- Establish computer-based mapping systems to underpin forest management planning requirements at the community, division, and state levels.
- Create a computer-based information management system to support management planning, forest policy, and reporting.
- Establish a participatory micro-planning system that addresses the broader rural development needs of forest fringe communities.
- Make investments that improve forest productivity.

#### **3. Increase access to more efficient markets**

- Establish marketing systems based on open and direct community and private sector participation.
- Provide fair returns to communities for commodity and specialized timber and nontimber forest products.
- Generate higher revenues to communities and government for forest management and local livelihoods.

#### **4. Establish effective and flexible institutional models**

- Adopt models that reflect the reality of limited state resources and the growing numbers of communities participating in forestry programs.
- Adopt models that position forest departments as key partners to communities, with sharper focus on strong technical advisory, facilitation, and monitoring functions rather than on ineffectively addressing a wide mandate in a command and control environment.
- Ensure that models recognize tribal communities' unique cultural links with the forest and traditional institutional structures.
- Integrate models with the evolving local authority and other relevant institutional structures.

*Source:* Adapted from Molnar, Scherr, and Khare (2004).

**Reforms will require significant increases in public investment**, primarily to build institutional capacities and structures, in both communities and in public forest agencies with a more focused mission. Increased investments to improve forest productivity are also necessary. Although a number of progressive national and state policies and guidelines have been developed in the past two decades, implementation has been weak and uneven across states. The fundamental challenge is to move from a JFM model in which communities are helping the forest department implement important public conservation goals to a model in which forest departments and other stakeholders help communities achieve their own development goals, subject to rational conservation safeguards. Conservation and improved forest livelihoods are not mutually exclusive goals.

## STRENGTHENING THE FOREST RESOURCE TENURE AND MANAGEMENT RIGHTS OF COMMUNITIES

**National legal reforms should be guided by the National Forest Commission report.** The legal and policy issues surrounding forestry and interactions with communities are not new.<sup>36</sup> One of the greatest challenges is supporting the 1988 National Forest Policy with a more efficient legal framework for implementation. The main enabling legislation, the Indian Forest Act of 1927 and the Forest Conservation Act of 1980, is not in full concordance with the 1988 National Forest Policy or subsequent initiatives, such as JFM. A myriad of smaller legal and policy issues arise at the state and even community level from national policy and legal incongruities. Recognizing the magnitude of these legal and policy challenges, in 2003 Ministry of Environment and Forests constituted a National Forest Commission to address a fairly broad term of reference (box 7.2). The National Forest Commission has sought input from a wide range of stakeholders. Recommendations in the draft report, expected in early 2006, should help set a much needed national vision on forestry and guide national legal and policy reforms.

### Box 7.2. Terms of Reference for National Forest Commission

The Prime Minister, Shri Atal Bihari Vajpayee, on 21st January 2002 recommended that a Forest Commission be set up to look into restructuring, reform and strengthening of the entire forest setup and affiliated institutions in the country. The terms of reference for the Commission are:

1. Review and assess the existing policy and legal framework and its impact in a holistic manner from a ecological, scientific, economic, social, and cultural viewpoint.
2. Examine the current status of forest administration and forestry institutions at the national and state levels to meet the emerging needs of civil society.
3. Make policy recommendations for achieving sustainable forest and wildlife management and development, biodiversity conservation, and ecological security.
4. Suggest ways and means to make forest administration more effective, with a view to achieving the above policy options.
5. Establish meaningful partnerships and interfaces between forestry management and local communities, including tribal people.

Source: MOEF 2003

**Individual states need to examine practical options for legal and policy reform.** In some cases this may mean amending existing law. In others it may mean drafting a new Forest Act that consolidates various acts and amendments into a single piece of law, incorporating needed reforms. Legal reform must also be supported by a more effective regulatory framework for field implementation. Regardless of the approach selected by state governments, a number of key priorities should be addressed to help communities unlock increased livelihood opportunities from the forest while continuing to provide for effective forest conservation.

**State policymakers need to review and strengthen state forest policies.** States need to strengthen their forest policies, using a participatory process that allows for broad public input. State forest policies should reflect national policy goals, be better integrated with other state policies (such as industrial development and tribal development), and incorporate local goals and objectives expressed by a range of stakeholders, including government technical specialists, forest dwellers, tribal groups, and community support organizations. A revised policy must also acknowledge historical tenure-based forest resource rights. The 2004 Assam Forest Policy is a good model to examine. It is progressive, innovative, and based on a reasonable level of public input. The recent "visioning" work conducted in Orissa with assistance from the Department for

<sup>36</sup> See, for example, Khan and Pillai (2001), Upadhyay and Upadhyay (2002), and Bahuguna and others (2004).

International Development (DFID) is another positive approach worth replicating that can feed into new state forest policies.

**Stronger forest resource rights for communities need to be established.** Globally, more than 100 million indigenous people live near forests, yet most do not enjoy secure access to natural resources or recognition of historic rights to use these resources. The global situation is changing rapidly, as governments recognize the forest sustainability and livelihood benefits of providing stronger resource rights to communities. Over the next decade, the area of global forest under actual community ownership is forecast to double to nearly 500 million hectares. The area of forest being administered by communities on behalf of government is forecast to double to 260 million hectares (Molnar 2004). In India state governments have devolved limited management responsibilities and modest usufruct rights to communities through JFM, but they have not appreciably strengthened security of tenure over resources. Without more secure and efficient tenure over natural resources such as forests, communities lack incentives to invest in long-term management and have little recourse to fight powerful interests from exploiting these resources (Ellsworth and White 2004). As Molnar, Scherr, and Khare (2004) note, “secure tenure and resource access rights are crucial for the success of community-level conservation initiatives.”

New approaches in three broad areas need to be considered for tenure arrangements with forest dwellers in India:

- *Tenure arrangement where historic forest resource rights already exist.* Various historic forest rights exist, especially in tribal areas. Some of these rights may be acknowledged in old legislation that has been eroded over time or is not recognized in practice. These historic rights should be reviewed, acknowledged where justified, and codified in current law.<sup>37</sup> Any moves to legally acknowledge historic forest rights should be linked with ongoing land policy reform in India and new legislative developments, such as the proposed Scheduled Tribes (Recognition of Forest Rights) Bill.<sup>38</sup>
- *Tenure arrangements where no historic forest resource rights exist.* While clear, inheritable, and transferable title to forest land may be a desirable long-term economic and policy goal, as an interim measure resource rights could be significantly strengthened without directly addressing land title. A number of countries enhance resource rights without granting land ownership (table 7.1). One option for India would be to specify a fixed-term lease during which the community would have rights and responsibilities over the assigned forest.<sup>39</sup> This approach is being used in China for individual households for periods up to 99 years for commercial production (Xu 2004). Such long-term leases are a step forward, but they create uncertainty over tenure as the termination date nears, and they limit options for sanctions if forest management performance is poor. At the other extreme, short-term leases of a few years offer little incentive for the tenure holder to invest in sustainable practices. A third option, used in a number of countries, including Canada, is a 20- to 25-year management agreement for a specified area of public forests, renewable in regular, periodic increments (for example, every five years) based on the community meeting clear performance standards for forest

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<sup>37</sup> Where villagers do not demonstrate good land and resource management practices, a case could also be made to extinguish these rights (N.C. Saxena, former head of Planning Commission, personal communication, 2005).

<sup>38</sup> The proposed bill seeks to address historic land rights held by a number of tribals in forest areas. It is designed to allocate 2.5 hectares per family through a long-term lease arrangement with legal backing.

<sup>39</sup> For example, a period of 10–30 years could represent the time period during which various forest trees could mature into commercial products. With faster growing species and small poles, the period could be 10 years; for slower growing species and larger poles, the period might be closer to 30 years.

management.<sup>40</sup> Tenure holders gain secure resource use rights, while the state retains land ownership.<sup>41</sup> Forest officers or independent forest consultants can compare performance against management standards. If performance is satisfactory, the contractual agreement is extended five years, so that the community always has a renewable 20- to 25-year planning horizon and security of specified rights over the assigned forest resources. Failure to meet specified performance standards could constitute just cause to remove the forest rights or, in less serious cases, require closer supervision and control by forest department or other designated agents for a defined period. This approach is similar to community forestry in Nepal, where forest user group are established as autonomous and corporate bodies with legal and statutory perpetual rights to develop, conserve, use, and manage the forest and to sell all forest products independently of the state (Subedi 2002; Centre for Civil Society 2003).

**Table 7.1. Forest Rights Regimes Without Land Title in Selected Countries**

<i>Country</i>	<i>Community Tenure Description</i>
China	Long-term contracts for 30–100 years are issued to farmers on former collective land; tenure is transferable, and it can be inherited and used as collateral for loans.
Ethiopia	Groups of 200-400 farming families can organize into peasant associations with clear usufruct rights for up to 10 hectares per family. The peasant association is responsible for soil, water, and forest conservation.
Honduras	Communities can become legally registered cooperatives and enter into a contractual agreement with government that assigns management and production rights to the forest.
Senegal	New forest code transfers responsibility for forest management and exploitation to communities, but ownership of land remains with state.
Tanzania	Village council becomes land manager for allocated nonreserved forest land (forest, farmland, commons), held under collective title by the village in perpetuity. Villages can become co-managers of reserved forest land through a legal joint management agreement.

Applying this approach for community-based forests in India would require amendments to the Forest Conservation Act of 1980. For scheduled and autonomous district council areas (as in Assam) and communities holding historic land or resource rights, similar performance standards could be used to guide communities and local authorities in sound forest management. The use of these forest resources and tenures as collateral for loans needs to be investigated, possibly through a task force comprising the Ministry of Environment and Forests, the Ministry of Finance, commercial banks, and state lending agencies, such as the National Bank for Agriculture and Rural Development. Countering these alternative approaches is the reality that in many JFM forests, traditional use rights—for grazing, for example—may be held

<sup>40</sup> Criteria could include no net loss of forest area (or increases in the area under forest cover), specified levels of loss of forest-growing stock from fire of human origins, number of fires per year, verified harvesting of forest products within 5–10 percent of the maximum sustainable levels identified in the management plan for major species, and adherence to silviculture prescriptions agreed to in the micro-plans.

<sup>41</sup> One constraint might be Indian culture, which does not distinguish between land and resource tenure. This is one reason the tree patta scheme was not as successful as planned.

by people located in distant villages. Strengthening the tenure rights of one local village (through a community users group) and restricting access by other villages (to avoid market failure through open access issues) could easily lead to intervillage conflict. One way of addressing this issue is by following examples from West Bengal, where communities holding rights to the local forest resource negotiate resource access and user fees with more distant villagers, often with the assistance of local *panchayat* leaders.

- *Tenure rights for nomadic tribal people.* A third, and likely minor, case is that of nomadic tribal people living in remote forest areas as low-impact hunter-gatherers. As a starting point, governments, assisted by tribal leaders, could identify the nomadic tribes and areas within the forest estate. Governments then need to determine if there is sufficient unencumbered forest in these areas to demarcate a form of protected forest for nomadic tribal people.

**Options for tenure reform need to be seriously considered.** A continuum of options exists for strengthening resource tenure for community forestry, depending on the particular context, presence or absence of historic land or resource rights, nature and strength of community institutions, broader land policy reforms, and political will. New tenure regimes must respect forest rights and use a transparent process for decision making on alternative land uses that lead to loss of forest livelihoods, such as mining. Land and resource rights are a complex and politically charged issue that requires extensive national debate and political will to address. State governments may consider establishing a high-level forest rights review body, chaired by the chief minister's office, with appropriate representation from line ministries, communities, and tribal groups living in areas where historic forest exist are known to exist. Tenure reform, while a critical element of broader legal and policy reform is only one of four enabling factors to improve forest livelihoods through community forestry. On its own, it cannot improve forest livelihoods and rural development.

Communities holding either acknowledged land rights or proposed renewable use agreements need to be fairly compensated when their forest livelihoods are affected by changes in land use, such as mining. Discussions currently taking place in Orissa, in which the owners of firms engaged in new land use activities would issue nonvoting shares to community members as compensation in addition to resettlement and rehabilitation entitlements, offer promise. These steps would likely reduce the number of issues escalating to the courts, which take an inordinate amount of forest department staff time.

**The registration process for communities needs to be reformed.** Although the Ministry of Environment and Forests has issued a policy directive on this issue, implementation has been slow in most states. Registration of communities under proposed renewable PFMAs must be a legal process. This process could be handled under the Indian Registration Act, the Societies Registration Act, the Cooperative Society Act as a subcommittee of local authorities, the trust acts, or amendment to the Indian Forest Act of 1927. The Mutually Aided Cooperative Societies Act in Andhra Pradesh may also provide a good model. Another option could be modeled after that used in Assam, where communities are grouped under the FDA and registered together through the Societies Registration Act. There are similarities between the Assam model and watershed programs, where groups of communities establish a registered society with a common bank account (to receive project funds) and facilitate landscape level planning. It is important that whichever act is used, the field officer signing on behalf of the government (forest department) has the legal right to do so.

**Processes need to be established for strengthening community resource tenure.** Recognizing historic and legitimate resource rights for specified forest communities and improving security of tenure for communities without historic rights can be a lengthy and sensitive process. Global experience suggests actions to support these processes (box 7.5). Brazil has made good progress settling legitimate land claims of indigenous forest peoples. In 1988 constitutional changes recognized the historic rights of many tribes in the forest interior. By 2001 more than half the land claims had been settled, mostly in the Amazon basin. These claims accounted for 12 percent of the country's landmass (Ellsworth and White 2004). The government of India can encourage these processes and opportunities at the national and state level as separate policy initiatives or link them to ongoing activities, such as land policy reform and land recording.

**Box 7.5. Opportunities to Advance Community Tenure Security**

Community tenure can be secured in a variety of ways:

- supporting anti-corruption and justice reform
- supporting tenure mapping and legal process
- convening stakeholders to discuss specific tenure issues
- supporting emerging community leaders and organizations
- building successful field models of improved tenure
- mobilizing civil society through networks
- creating a global learning network including field visits
- supporting federations and marketing associations.

*Source:* Ellsworth and White (2004).

**Mapping forest and land tenure is critical.** Historic and new tenures must be recorded and mapped (box 7.6). Much of the fieldwork, initial digitizing, and mapping could be contracted to a neutral third party from the private sector to provide objective, impartial, and cost-effective services. The model used by Assam's forest department for contracting out basic GIS services has merit and could be applied in other states. Forest tenure mapping would increase clarity over boundaries between forest area and revenue area records. Both the forest and revenue departments would need to be involved in new tenure and mapping programs, using readily available local technology and expertise.

**Box 7.6. Mapping customary land tenure in Canada and Indonesia**

Canada and Indonesia have used community mapping for many years. With the assistance of NGOs, rapid appraisal methods are applied to develop field maps with indigenous tribes. The map is then used as a basis for negotiating tenure rights with the government. The accuracy of the mapping process can be improved with GPS-GIS technology. The community participates fully in this process, which may be conducted by a neutral third party, such as a community support organization or research institute.

*Source:* Ellsworth and White (2004)

**The linkages between state forest legal frameworks, community-based forestry, and *panchayats* need to be strengthened.** Some states have made efforts to modify JFM to account for PESA legal requirements. But the reality in the field suggests that implementation is weak, due to a number of contradictions with the existing forestry legal framework. In watershed or community-driven development projects throughout India, village user group committees (similar to JFM committees) are registered as subcommittees of the *panchayat*. But although these solutions may provide a veneer of concordance, PESA will not be fully implemented until the broader forestry legal and regulatory framework is reformed. Even with these legal reforms, local authorities would require significant investments to build capacity for administration and finance and to strengthen knowledge and understanding of forest management and marketing with communities. A national review should be considered to better understand the issues and opportunities surrounding decentralization, PESA, and forestry legal and regulatory frameworks for scheduled areas; identify

a roadmap for reforms; and develop a program for appropriate capacity building and education in local authorities, communities, and relevant line agencies.

**The harvesting and transit permit regime for forest products needs to be reformed.** Although some states have made progress in relaxing these rules, further reforms are needed. A detailed review of all state harvesting and transit permit regimes should be considered as a precursor to national policy and legislative reform of this issue. It is important not only to relax these restrictions but to eliminate the wide regulatory variation between states. As part of a national reform process, state governments could consider input by an independent panel of stakeholders, including forest departments, private forest farmers, community forest committee members, local sawmill owners, nontimber forest product buyers, local development banks, and interested community support organizations. Consultants with forest regulatory experience could be contracted to work with the Ministry of Environment and Forests to develop a new system that provides a mechanism for monitoring product flows from farms and communities, while at the same time reducing needless delays and transactions costs. A recent study in 18 countries, including India, suggests that there is usually a major gap between regulations and the government's capacity to effectively deliver service (Contreras-Hermosilla 2004). Command and control systems tend to reduce democratic participation and create an environment that is conducive to corruption. The 2004 study recommends that governments relax the command and control regulatory system and allow incentives, participation, and market forces to regulate forest management. Coupled with broader market and tenure reforms, these reforms would offer stronger incentives for communities and farmers to invest in forests.

**Education, information, and awareness need to be improved.** It is imperative that communities have access to all relevant legal documents in local languages and a clear sense of their legal rights over the resource. Beginning with the existing JFM model, at a minimum each community should have copies of the resolution, the Memorandum of Understanding, and the micro-plan. This is being done in some states but on a very limited basis, due to financial constraints. Field research reveals that many officers in state forest departments lack an understanding of the legal and policy framework for forestry and the broader penal code. New programs are needed to provide legal education and increase awareness of officers at various levels, from basic rules and procedures for forest guards to more complex training for senior managers. Lack of legal knowledge means that forest officers do not know what is allowed under existing law. This prevents them from testing creative solutions for fear of operating outside the law. Police and state judiciary would benefit from sensitization on specific forestry legal and policy issues. As tenure structures with communities are gradually reformed, stakeholders will need updated information in local languages on their new rights and responsibilities over forest management and marketing.

**Legal and policy reform will need significant financial and technical support.** All three states reviewed are contemplating legal amendments. The draft proposals examined represent positive thinking and a move toward greater forest rights for forest-based communities, especially tribal people. But these developments are hindered by a lack of agreement on important legal questions, particularly with respect to addressing historical land and forest rights systems, providing a stronger legal basis for community-based forest management, strengthening community resource use and marketing rights under PESA, and dealing with more efficient transit of forest products. Although recent draft legal reforms are to be commended, more comprehensive reforms and capacity building are still needed. These will require time, significant financial resources, technical inputs (national and international), further research, and appropriate public input.

## **STRENGTHENING SUPPORT SYSTEMS FOR IMPROVED FOREST MANAGEMENT, MONITORING, AND CONTROL**

To facilitate the gradual transfer of rights and responsibilities over forest management to interested communities, a number of reforms are needed in underlying forest management, monitoring, and control systems. These include strengthening resource management and planning approaches, developing better mapping systems, upgrading inventory systems, and refocusing R&D to better match species and products that are important to communities.

**A comprehensive forest sector strategy needs to be developed.** At the national level, the Ministry of Environment and Forests could consider developing a national forest sector strategy that outlines a common vision for forest development, including community forestry, building on the National Forest Action Plan and the National Forest Commission's forthcoming report to Parliament, which was based on extensive public input. As part of strategy development, a comprehensive review of supply and demand for major forest products is needed, including timber and fuelwood, long-term trends relative to forest sustainability, pricing patterns, and spatial analysis. This review would clarify questions about long-term forest health, particularly for fuelwood, and provide guidance for investment programs. In addition, it would be useful for the Ministry of Environment and Forests and other land-based ministries, such as the Ministry of Agriculture, to undertake a preliminary national land assessment to identify lands best suited to forestry, agriculture, and conservation.

This information would help states develop forest sector strategies by identifying land classes, best suited for forest production. The three states reviewed have a forest strategy or vision document that sets out a framework for forest sector development. But much more work is needed to transform these documents into comprehensive forest sector strategies, particularly for community forestry and rural livelihoods. Better information is needed on supply and demand forecasts for key forest products, secondary processing capacity and market demand, pressures on the forest, rural livelihood issues, and economic analyses of policy options. Input from other rural development agencies and civil society would broaden the scope of analysis and increase plan relevance. Developing these strategies will require significant investments in information and analyses that most forest departments currently lack. Recent work by DFID with the government of Orissa and the state forest department offers a good example of developing a common vision and comprehensive forest sector strategy.

**Working plans need to become more strategic and flexible.** The working plan and its 10-year cycle are generally appropriate for the current planning model at the divisional level, but over time these plans should shift to a more strategic focus that will provide a stronger foundation for community-level forest planning. As more forest in each division is allocated to communities through evolving models of forest tenure,<sup>42</sup> the concept of a top-down working plan as the basis for controlling decisions in these forests becomes less relevant. Outside of state plantations, forest management at the division level would be implemented increasingly by individual micro-plans meeting specified standards for forest sustainability. Working plans could evolve into a broader strategic document to guide, rather than control, field-level management in community forests.

A balance is needed between the state's responsibility to ensure overall forest sustainability and allowing communities to make rational decisions about managing forest lands, including conservation. As an example, in steep areas with fragile soils, the state has a responsibility to ensure that community forest practices maintain vegetative cover for conservation values and reduce

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<sup>42</sup> As an example, Jharkhand plans to eventually have all its forest under co-management

negative externalities by management guidelines that either exclude harvesting or limit it to selective felling for example. In other areas, people may want to manage their forests for multiple returns and set aside areas for conservation, which has important and positive biodiversity and watershed implications. This could eventually bring significant conservation benefits for community forests near protected areas. In the longer term, protected area boundaries or zoning could be redefined based on the inclusion of conservation areas under community management. This new working plan approach requires improved division-level forest resource information from a combination of remote sensing data (from the Forest Survey of India) and more intensive field surveys from micro-plan inventories that extend beyond traditional timber species.

Better information is also needed on communities, rural development priorities, biodiversity values, and options for forest management to meet local needs. Socioeconomic information is available through the national census (to the village level), other state departments, and local community support organizations. Improved information is also needed on how resource supply meets subsistence and market demand and how supply could be modified through appropriate management inputs to meet future requirements. More economic analysis is required on silviculture and forest management strategies to inform micro-planning and implementation. It is also recommended that state forest departments consider a public consultation process for more strategic working plans, possibly through the FDA structure. A balance is required, however, between completing the division-level plans within a reasonable time frame and allowing interested parties an opportunity to contribute input.

**The integration of working plans and micro-plans needs to be improved during a transition phase.** The challenge facing forest managers and policymakers is dealing with the transition phase, as community-managed forests gradually cover increasing areas of divisional forests. New working plans would benefit from a more complete summary of key inventory data derived from community forest micro-plans and linked to key forest cover types in the division. A spatial overview could be provided with a map showing the location of all community forestry operations in the division (by block), overlaid on the block or division-level forest cover maps. An agreement between state forest departments and the Ministry of Environment and Forests may be needed that new micro-plans prepared after the working plan is already approved can proceed with implementation as long as they fit within the broad goals and objectives of the working plan. A short report could be sent to the Ministry of Environment and Forests each year listing the new micro-plans and providing a summary of key data for information and filing purposes. This kind of approach is imperative to avoid having the Ministry of Environment and Forests review hundreds of new micro-plans each year. It would also put more responsibility for management plan review and approval at the state level, where it logically belongs. Where community forestry covers most of the forest area in some divisions, working plans could be converted into more a strategic planning and summary documents as they are revised every 10 years.

**Micro-planning should be guided by an operational manual.** An operational manual is needed to guide all parties in community-based forestry. Good examples from other sectors are found in the District Poverty Initiatives Project in several states, the Karnataka Watershed Development Project, and the India EcoDevelopment Project. The operational manual covers a range of steps to build social capital and an integrated plan for livelihood improvement (box 7.7).<sup>43</sup> It is important that the manual reflect a planning process that is sustainable once donor funding ends. The end goal of the process should be creation of a simple micro-plan that addresses broader rural development and livelihood activities beyond forestry, such as livestock, grazing, energy, agro-forestry, fish ponds, and agriculture intensification. The operational manual should present criteria and processes for

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<sup>43</sup> Madhya Pradesh recently developed an operational manual for JFM. Policymakers could build on this manual and on examples from watershed programs.

developing a local forest management plan to a minimum standard, including resource inventory measurement, definitions, and sampling intensities for timber and key nontimber forest products; common silviculture systems and treatments based on best practices to manage sustainable flows of products desired by communities for subsistence and commercial sales; simple models and methods for sustainable harvesting regimes for key species; and methods for monitoring and reporting. The Ministry of Environment and Forests should actively participate in the development of forest management plan criteria with each state in order to achieve consistency. Other rural development agencies and experienced community support organizations also have a role to play in compiling operating manuals. The plan criteria and operating manual should be available in local languages, and simplified versions should be available to all community members.

**Box 7.7. Social and Institutional Elements of an Operational Manual**

**A good operational manual for social and institutional development would provide guidance on a number of important steps:**

- Contact community to raise awareness.
- Assess current institutional structures.
- Help establish a resource users committee and executive with wide representation across community groups and gender that accounts for traditional community institutions.
- Create self-help groups for future income-generating activities.
- Provide training in key areas, such as running effective meetings, bookkeeping, decisionmaking, and gender.
- Sign an agreement to register and participate.
- Identify development needs and gather baseline natural resource inventory and socioeconomic information through processes such as village mapping and participatory rapid appraisal.
- Develop a micro-plan that addresses broader livelihood needs on all lands in the community area.

*Source: Background studies*

**In some areas forest communities could be consolidated.** Many watershed development projects in India are consolidating communities in order to facilitate planning on a broader landscape or watershed basis. A consolidated approach could have a number of advantages with respect to forest planning and conservation (box 7.8). Specific forest management needs and interventions and broader rural development activities for each community would be identified through the micro-planning process; these could then be combined into a single consolidated plan for as many as four or five communities. Each community would still implement an annual work plan. This approach

**Box 7.8. Why Consolidate Forest Committees?**

Consolidating forest committees could serve several purposes:

- It is more economical to produce field maps at a scale smaller than 1:20,000, and smaller scale maps allow all land uses to be identified.
- Development issues common to all villages, including road upgrading, health and education, service delivery of agriculture and forestry extension, and minor irrigation, could be addressed in a more efficient, coordinated, and economic manner.
- Dealing with common forestry problems would be easier.
- Development of marketing cooperatives or federations could be promoted, based on economies of scale for product sales and improved market positions.
- Training of communities would be facilitated by covering a larger but similar group.
- Landscape-level forest planning would be supported that addresses conservation and economic goals.
- Scope would be provided for zoning community forests into areas conducive for timber and pole production, nontimber forest products, grazing and biodiversity conservation (with limited access).

*Source: Background studies*

may be well suited to many tribal groups, which already have village clusters as part of their traditional institutional structures. But it is important to let communities themselves determine if they want to cluster, how doing so would work, and what structures should be used.

**Silviculture systems need to be reviewed and revised to meet local needs.** Further shifting the focus of forest management away from commercial high-forest plantations and clear-felling of traditional timber species such as sal and teak toward multiple-use forest management by communities will require commensurate changes in silviculture practices. Where communities are managing forest types dominated by teak and sal, silviculture systems need to support selective felling regimes through uneven-aged management for subsistence production. Where market potential exists, this approach should also support commercial timber production that also allows intermediate products, such as fodder, nontimber forest products, nontraditional tree species, and fuelwood from branches, litter and shrubs, to be sustained. This approach requires better knowledge and understanding of relationships between crown closure and nontimber forest product production in the understory. For degraded lands, economic analyses suggest silviculture regimes favoring the management of natural regeneration rather than plantations. Information is therefore needed on appropriate silviculture practices that will develop these natural forests into an architecture that yields multiple products, including timber, fuelwood, fodder, and trees, such as *neem*, *mahua*, and *arjun*, that will provide nontimber forest products.

Agro-forestry also offers potential short- and intermediate-term economic returns. Mixing lower value subsistence agricultural crops, such as paddy rice, with higher income horticulture, poles, or nontimber forest product trees planted along field boundaries or through intercropping could increase average annual net revenues per hectare for rice only from Rs6,000 to Rs15,000 or more after 10 years (Pandey 2003). With agro-forestry, farmers continue to partially satisfy household nutrition requirements from subsistence rice production. Pressure is also reduced on neighboring forests for domestic fuelwood and poles. Agro-forestry is not suited for everyone; farmers with very small holdings will be hard pressed to give up valuable food production land for tree crops that take several years to mature. Rather than a simple either/or approach, efforts to improve agricultural livelihoods of small-scale farmers should provide higher crop yields and increase confidence in investing in trees for part of their holdings. Expanded agro-forestry will require capacity building and better coordination between forest departments and the Department of Agriculture.

**Forestry research needs to focus more on community livelihood requirements and agro-forestry for small farmers.** Applied R&D is critical to support further transitions of JFM in India and ensure that community forests achieve higher productivity in a range of species. Although some states, such as Andhra Pradesh and Madhya Pradesh, are gradually reorienting R&D to nontraditional timber and nontimber forest product species, in general the linkages between scientific research, development and dissemination, and uptake by communities are weak across India (Khan and Pillai 2002). These results are consistent with those of Hedge (2000), who finds poor linkages between forest research and extension agencies, limited resources allocated to forest research, and weak technical support. The Indian Council of Forest Research and Education (ICFRE), the Ministry of Environment and Forests, and state forest departments should consider developing a new national strategic plan for R&D that is more focused on community-based forestry. It should propose options for rationalizing limited R&D capacity around key priorities related to silviculture, growth and yield, harvesting and marketing in community forests and small farmers, and the identification of institutional partners that can assume lead responsibilities on specific topics. It should also identify opportunities for increased private sector involvement in R&D to ensure a more market-driven planning framework for appropriate species. The plan needs to examine new approaches for disseminating research findings to both communities and state forest managers in the field. It should also include a research agenda that can capture community

knowledge about improving the growth and yield of selected nontimber forest products. The new concept of establishing village “ethno-botanists,” as in Andhra Pradesh, is worth exploring in more detail.

**Resource assessment and monitoring systems need to be improved.** The underlying forest resource assessment and monitoring system must be significantly strengthened to support further evolution of JFM and enhance the ability of state forest departments to monitor overall forest stewardship. A more effective resource assessment and monitoring system could be based on six pillars:

- *Let communities assume greater responsibility for basic forest inventory.* Communities could use simple inventory methods (box 7.9), the basics of which can be learned in a few days. These methods would provide better information than the approach currently used by forest departments. As experience is gained, some communities could eventually incorporate portable GPS units to geo-reference cover types in order to provide better spatial information, linked to the broader division-level and then state-level resource inventory. Community-oriented inventory processes need to

**Box 7.9. Options for Conducting a Community Forest Inventory**

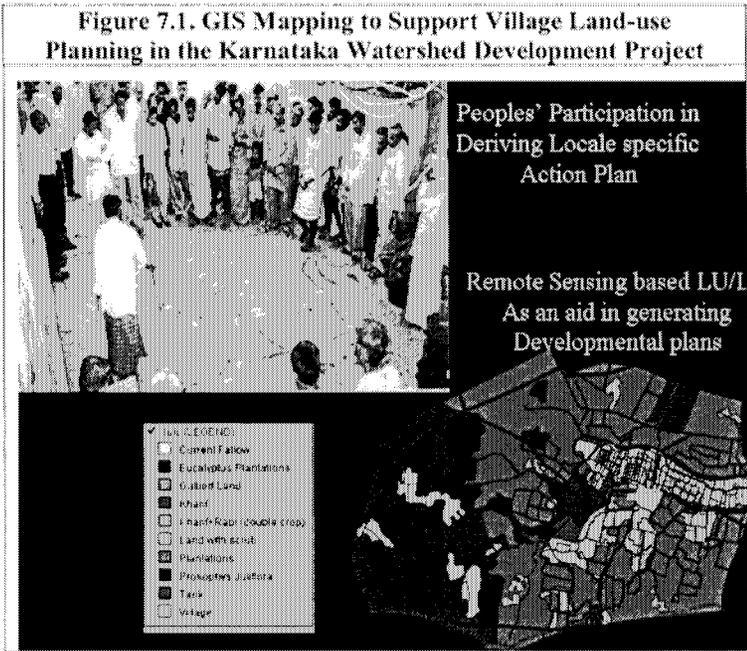
A timber inventory could be conducted by laying out square inventory plots of a 0.25 hectares in random locations and tallying the trees on it by diameter class and species. The inventory crew would measure diameter at breast height. On a subplot (25-100 square meters), the seedlings and saplings could be counted. The crew needs to be able to recognize the various species with some degree of reliability.

Another method is to use circular plots, marked by drawing a circle from a center point with a short rope. A 1–5 percent area might be sufficient for baseline and regular stock monitoring. The only equipment needed by the community would be a 50-meter measuring tape; a diameter tape; increment calipers borer (to measure tree age) or tree fork to measure tree girth; a simple hand compass, preferably with a clinometer (to estimate tree height); a clipboard; pencils and paper; and perhaps preprinted tally forms. The cost of this equipment would be less than \$100.

*Source:* Background studies

- be extended to nontraditional commercial species, important nontimber forest products, and biodiversity values in relevant forest cover types. A number of methods are emerging for inventorying nontimber forest products that hold promise for India (Poffenberger and others 1992; Peters 1994, 1999; Wong, Thornber, and Baker 2001).

- *Make increased GIS mapping capability a higher priority.* The development of GIS in forest departments is



making slow progress in the states examined, constrained by limited financial, technical, and human resources. A longer term goal should be to have individual micro-plans for communities, or clusters of communities, prepared with higher quality maps, based on GIS technology. This approach would lend itself to including digitized thematic data on soils, water potential, topography, and basic cadastral information. The technology for this level of mapping already exists in India and is being used in other sectors, such as watershed development (figure 7.1). Significant increases in capital investment and operational budgets will be required by both the center and the states for several years to accelerate progress with initial digitizing and mapping systems for forestry.

○ *Strengthen division- and state-level inventory processes.* At the state level, the biannual Forest Survey of India reports provide satisfactory reporting of forest cover at the state and district level for broad planning purposes. This information is not sufficient to support broader division level management planning, however. States need to invest in more intensive continuous inventory at the division level on a five-year cycle. Andhra Pradesh provides a practical model to replicate that would complement improved community-based inventory data.

○ *Improve computer-based management information systems (MIS).* Computer-based MIS should ultimately link the department's GIS, inventory information from division and community levels, more general forestry data, and information from other sectors, where appropriate. Forest management is a dynamic process; all data, including map-based information, must be regularly updated and stored in a system that allows open sharing to support policy, planning, analyses, and reporting. A possible model for integrated application of GIS and MIS to both micro-planning and divisional planning is being developed by the forest department of Andhra Pradesh. Headquarters could be linked with district offices to share inform through computer connections via land line phones, a wireless system, or the Internet. Both Assam and Madhya Pradesh already have functioning Web sites that could be used for this purpose. The Ministry of Environment and Forests also has a Web site with useful forestry information that offers a model for states to study and build on.

○ *Establish permanent sample plots for growth and yield measurement.* Growth and yield studies require long series of field observations from plots established and maintained in a range of forest cover types. They tend to be expensive and generally involve complex statistical analyses. However, as community-based forestry continues to evolve, it needs to be based on the design and evaluation of innovative silviculture systems, for which no precedent exists. One essential element of improved growth and yield information is field data. State governments should consider working in partnership with communities to establish and maintain permanent sample plots to provide ongoing data for new growth and yield models for tree species identified as important in a survey of micro-plans. Communities could be paid an annual maintenance fee to protect the plots from illegal harvesting and provide regular data collection. Potentially useful methods exist for extending growth and yield to nontimber forest products, but these methods will have to be prioritized according to the economic importance of the crop and partnered with appropriate research institutions in India and in other countries.

○ *Build a strong monitoring system.* Monitoring is a critical element for greater empowerment of forest management to communities but progress is hindered by a practical dilemma. Unless communities can demonstrate effective forest stewardship for the small areas under their responsibility, it will be difficult for state forest departments to allocate more forest management responsibilities. Currently, however, communities cannot easily demonstrate forest stewardship, because systems are not in place for them to monitor performance. New approaches are needed to break this impasse, perhaps based on small pilot projects by

communities showing strong interest and ability to assume a higher level of responsibility. Local monitoring could be done by communities, beginning with a set of clear management responsibilities, good baseline data, simple indicators, and achievable performance targets. Periodic site visits by forest department field staff or private consultants would facilitate field checking as well as provide an opportunity to offer technical advice. In addition, the forest department, in collaboration with other relevant line departments, needs to adopt a method for ongoing livelihood and poverty impact monitoring of forest communities (box 7.10).<sup>44</sup> This would help track progress toward improving forest livelihoods and poverty, act as a learning tool to help community forest programs evolve, and provide valuable information for stakeholders. Local information can feed into division-level reports that could be aggregated at the state level. A parallel task is to develop the capacity in the Ministry of Environment and Forests to collect state-level monitoring information to generate national reports and support national-level analyses. This kind of monitoring would also help shift the focus of forest departments from financial and input targets (such as planting so many ha of trees within budget), to targets related to outputs (how many trees survive?), impacts (potential contribution to wood supply), and outcomes, including measurably demonstrating improvements in livelihoods.

**Box 7.10. SMART Indicators for Monitoring Forest Livelihoods**

According to the Centre for International Forestry, indicators for monitoring forest livelihood should be SMART (Simple, Measurable, Adapted to local conditions, Relevant and reliable, and Time-scale appropriate). Indicators can monitor changes in forest-based communities with respect to financial, physical, natural, human, and social capital. The monitoring system should use communities to gather much of the information, with technical assistance from government or community support organizations.

*Source:* Pandey (2005).

**Community-based forest management needs much more guidance from economic analysis.** There is a serious lack of capacity for economic analysis in both the Ministry of Environment and Forests and the state forest departments. More focused economic analyses would support policy reform, particularly to identify and evaluate incentives for communities, in the following five areas: reviewing the costs and benefits of alternative tenure options, assessing the economics of silviculture options for community forests, evaluating community incentives by allocating good-quality forest along with degraded land in JFM, analyzing the costs and benefits of farm forestry, and reviewing benefit-sharing schemes. A simple analysis suggests that commercial timber and pole production as part of mixed forest architecture can offer high returns to communities (see appendix 11). Moreover, augmenting timber production with subsistence nontimber forest product in part of the forest under-story can increase returns significantly.

This finding corroborates that of Manoharan (2000), who claims that managing multi-species forests for timber and nontimber forest products can increase annual revenue flows by 20–32 percent compared with forests managed solely for timber. When faced with degraded lands, the most efficient option is to manage the existing natural regeneration rather than undertake expensive forest planting operations. Bamboo is a lucrative investment on degraded lands, but overall a mixed forest with timber and poles, bamboo, and nontimber forest product appears to offer the highest returns. These results suggest that during micro-planning, communities should consider putting at least some of the allocated forest area into bamboo and nontimber forest product species, depending

<sup>44</sup> The work currently undertaken by the Centre for International Forest Research (CIFOR) in Jharkhand is financed by the World Bank and PROFOR. CIFOR is developing and testing simple tools for monitoring the impact on livelihoods and poverty (see appendix 13 for background information).

on market access. Partnerships between the Ministry of Environment and Forests, state forest departments, and national institutes, such as the Delhi University Institute for Economic Growth, could be explored for contract research and training programs in forest economics. The Institute already operates an economic training program with several central government agencies. The Ministry of Environment and Forests could explore the benefits and costs of joining this partnership. Together with state forest departments, it needs to build better links with existing environmental economics networks, such as the South Asian Network for Development and Environmental Economics (SANDEE). In the longer run, forest agencies would benefit from stronger internal capacity in economics and policy analysis.

**Providing more immediate revenues and subsistence products is an important incentive for communities.** As Kumar (2002) notes, having to wait for financial returns over a long gestation period from regenerating commercial forests on degraded land provides little immediate incentive for communities to actively engage in management and protect the forest through a formal community forestry program. Where possible, a positive incentive would be to allocate a small portion of healthy or semi-mature forest to communities in addition to degraded lands that are subsequently rehabilitated. This approach is already acknowledged in recent Ministry of Environment and Forests policy circulars on extending JFM to nondegraded forests, but it is not being widely implemented. One hectare of high-quality teak-dominant forest harvested for timber could easily yield immediate net revenues of Rs50,000–Rs60,000 a year with a conservative selective felling approach. These revenues would provide the community with financial capital to invest in the forest and contribute to other local livelihood opportunities in the community. Based on likely micro-plan outcomes, investments must also be expanded in degraded areas adjacent to communities to promote natural regeneration for fuelwood and grasslands for grazing as subsistence products.

## **IMPROVING THE MARKET SYSTEM FOR FOREST PRODUCTS**

Major challenges lie ahead to enable those communities wishing to move beyond subsistence production to engage in more commercial opportunities. The preoccupation of state governments and forest departments on maintaining legislated monopoly marketing structures for certain forest products, especially the most lucrative timber species, has hindered the introduction of more open, efficient, and transparent marketing systems. A major obstacle in reforming forest product market systems is to change the prevailing mindset that forest products are different from specialized agricultural commodities and that marketing therefore has to be managed by the forest department. This view is slowly changing in some states, particularly for unregulated nontimber forest products, but it has not yet reached across to timber or regulated nontimber forest products in any meaningful way. Given the forecast deficit in domestic wood and expanding opportunities for various nontimber forest products both in national and international markets, many communities can play a more substantive role as low-cost producers for commodity wood (fuelwood, construction grade timber, poles); higher quality timber, such as teak and sal; industrial pulpwood and bamboo; and nontimber forest products (Scherr, White, and Kaiomowitz 2002). This strategy would rest on several key marketing policy thrusts, similar to ongoing agriculture reform in India (World Bank 2005a). It must be accepted, however, that not all forest-based communities will benefit equally from market reforms. Local forest quality, distance to urban markets, the condition of access roads, and the capacity of community institutions will all influence the potential of any community to expand into commercial forestry production. Where conditions are conducive to greater commercialization, the benefits may not be shared equitably among all community members unless strong local institutions are in place. Greater commercialization with more valuable products, such as teak, raises the risk of increased local corruption, exploitation from private buyers, and capture

of income gains by local elites. Global studies suggest that higher valued products tend to be managed intensively by specialized producers in the community and yield higher incomes than lower value products managed by less specialized producers (Ruiz-Perez and others 2004). For nontimber forest products, this means that incomes may rise as a result of a shift toward intensive cultivation inside or outside the forest and a move away from simply gathering products in the natural forest. This has equity implications, as marginal farmers and landless may not be able to participate in cultivated production. For motivated and enabled communities to capture higher commercial values from at least part of their forest, what are the options for market reforms?

**Contract growing schemes should be explored.** Communities and farmers wanting to sell commercial forest products outside of local markets need access to major buyers or processors. Outside of state controlled monopolies, contract sales see communities enter into a forward agreement with processing and/or marketing firms, usually at negotiated prices for a specified sales volume. This approach reduces risk and uncertainty to sellers, while purchases are assured of a more reliable supply over the specified time. Purchasers may also provide credit support, inputs, storage facilities and technical advice to producers as part of the contract agreement. There is growing experience with this arrangement in India for agriculture (box 7.11) that can and should be extended to forest products through partnerships (Kumar 2005).

**Selected nontimber forest products should be promoted with these new market options.** Many nontimber forest products could be marketed through agricultural marketing systems, although doing so might require states to amend the Agricultural Produce Market Committee Acts. This change would facilitate contract marketing, organized retailing, flows of raw materials to agro-processing industries, more competitive trading, and adoption of innovative marketing systems and technologies. For nonlisted nontimber forest products,

#### **Box 7.11. Contract Farming in India**

Lessons for ITC, Tata, and Mahindra are three of India's largest conglomerates. All are becoming more involved in contract farming to help farmers move up the value chain, boost yields, and increase incomes. Good examples of contract farming are found in Punjab (dairy, rice, vegetables, groundnuts, seeds); Madhya Pradesh (wheat); Tamil Nadu (rice and cotton); Haryana (vegetables); and Andhra Pradesh (poultry).

Royal Cotton Mills is helping organize farmers to participate in a buy-back program. It provides farmers with genetically improved seeds. The farmers then sell their raw product to the company at negotiated prices on long-term contracts. If market demand falls, the Cotton Company of India underwrites the purchases, so that farmers receive income on a continual basis. Crop insurance is also used for the crop and cotton price to provide greater security for farmers.

*Source:* World Bank. 2005a; unpublished Bank reports

#### **Box 7.12. Lesson from Andhra Pradesh for Improving Forest Livelihoods**

The Andhra Pradesh Rural Poverty Reduction Project has helped support rural development by mobilizing 450,000 self-help groups, 29,000 village organizations, 800 federations, and 5 million households. These institutions and their members have cumulative savings of more than \$20 million and are mobilizing more than \$150 million of bank a year. The program is supporting development of market linkages in many commodities, including several nontimber forest products. It is also supporting investments in local value addition and development of market linkages with the private sector.

The project has developed innovative institutions, including a "partnership cell" that facilitates linking community organizations with a range of private sector organizations. Areas in which partnerships have been developed include commodity trading, local value addition, buy-back arrangements, rural retailing, a livelihood business school that develops skills among rural men and women to access service sector jobs, and the development of organic cotton brands. This integrated approach has many valuable lessons for improving rural livelihoods in forest fringe communities.

*Source:* Kumar (2005).

communities are generally free to sell excess production in open markets, outside of the state legislated monopolies. The patchouli aromatic oil model from Assam is a good example of contract growing. Andhra Pradesh has also demonstrated innovative approaches to nontimber forest product marketing (box 7.12). In addition to increasing quality and prices, villagers in Andhra Pradesh have reduced losses from deliberate underweighing, receive full cash payments at point of sale, save time previously spent taking products to local markets, eliminated price uncertainty, and improved incomes of women, who normally engage in marketing.

**Supplying specific nontimber forest products to organic markets is another lucrative option to explore.** Returns from organic produce are generally higher, depending on the premium the consumer is willing to pay. According to some estimates, the global organic market, worth \$17 billion in 2000, may reach \$31 billion by 2005. India's current share of this market is just 0.001 percent (Scialabba and Hattam ).

Most wild nontimber forest products are by default organic, but organic certification is required to receive a premium price. A number of certifying agencies are operating in India. A multitude of nontimber forest products have been certified in other countries according to organic standards, including berries (Finland), hearts of palm (Brazil), chicle (Mexico), maple syrup (United States), cohune palm (Guatemala), and mushrooms, medicinal plants and plants used by the cosmetic industry (Walter 2002). Global experience suggests that simple steps taken to improve the quality of nontimber forest product can have significant financial benefits for communities. Communities need technical and financial assistance to improve quality control during and after harvesting, follow better grading practices, gain access to storage facilities to allow sales in off-peak times, and improve availability of market information. They also require better access to commercial credit, to help finance small business development around nontimber forest products and other forest products.

**Bamboo, timber, and fuelwood also have strong potential for contract sales.** The experience with farm forestry and nontimber forest products such as patchouli in Assam and other nontimber forest products in Andhra Pradesh offers useful lessons for greater market access by communities for bamboo, nonlisted timber, and fuelwood (table 7.2). Farm forestry saw a period of initial growth in the 1970s, followed by a decline in the 1980s, as farmers in many states failed to receive expected returns (Saigal, Arora, and Rizvi 2002; Saigal 2002). Primary reasons included inappropriate silviculture, poor-quality seedlings, lack of capacity building to farmers for plantation

**Table 7.2. Economic returns from improving the efficiency of nontimber product production**

<i>ACTIVITY</i>	<i>BENEFIT</i>
Improve harvesting methods.	Increases income by 10% or more.
Reduce postharvesting losses through: <ul style="list-style-type: none"> <li>• improved forest storage and/or transport</li> <li>• improved local warehouse/storage</li> <li>• better transport to processing plants</li> </ul>	Reduces product loss by 5% or more. Reduces product loss by 25% or more. Reduces product loss by up to 35%.
Improve transportation through <ul style="list-style-type: none"> <li>• volume shipping</li> <li>• backhauling</li> <li>• processing product to reduce water and waste</li> </ul>	Reduces shipping costs by 10% or more. Reduces transport costs by up to 50%. Reduces costs by up to 70%.
Hold product in storage and sell in off-season.	Increases gross income by up to 200%.
Add value through local processing.	Increases gross income by up to 500%.
Obtain better pricing information.	Increases income by 10% or more.
Improve credit terms.	Reduces credit costs by up to 75%.
Negotiate income sharing deals with processors.	Increases income by 10% or more.

*Source:* Clay (2004).

maintenance, poor organization of farmer producer groups, oversupply of production, and restrictive laws and regulations governing transport for some species.

**Farm forestry and contract marketing are re-emerging, benefiting from lessons of the 1980s and generating interest among processing firms.** There is no reason why, after a period of transition, this approach cannot be extended from farmers to many communities as legal suppliers of commercial timber, bamboo, and fuelwood from both existing high-quality forests and rehabilitated stands on degraded lands. This is particularly true in states such as Assam and Jharkhand, where legal timber harvests are quite small as working plans are being prepared and approved. When working plans are approved, trade licenses could be issued by the forest department or *panchayats* to communities that successfully demonstrate sustainable forest management on reserved or protected forests. The license would allow the community to negotiate contract agreements with private buyers for the sustainable harvest of different products as per the micro-plan. The contracts could be for standing timber (where the buyer does the selective harvesting) or for roadside sales (where the community does the felling).

There is keen interest by private processors, such as sawmills, for these simple and direct arrangements for timber procurement. One potential issue is subsidized competition from state plantations. In Uttar Pradesh the state forest department is supplying major wood-based industries with plantation wood at 20 percent less than the prevailing open market rate (Saigal, Arora, and Rizvi 2002). Giving communities a choice of production and marketing options (through the forest department or contract sales to processing firms) may be a logical starting point. Forest departments often raise two concerns about opening up timber, bamboo, and fuelwood sales. One is the loss of revenue to the department (and ultimately the state) as communities sell their timber outside of state marketing corporations. This issue can be addressed through a review and reform of forest fiscal systems. Alternatives to the cumbersome and opaque JFM benefit-sharing scheme, such as royalty charges or downstream value-added, sales, or income taxes, are available. A second issue is ensuring forest sustainability. This issue can be addressed through a more robust monitoring program.

**The government should support producer organizations.** These organizations can improve networking and access to more efficient markets. They can strengthen sellers' market position and allow larger, consolidated consignments of timber, bamboo, fuelwood, and nontimber forest products to be sold directly to large processing or marketing firms through auctions or various contract agreements. Producer organizations can also help overcome the countervailing power of middlemen and money lenders. They can pool resources for storage facilities and make it easier for communities to receive training on quality control and value addition.

Producer institutions can consist of a few communities grouping together informally as a cooperative for marketing around geographic or tribal clusters, or they can be part of larger community-led state associations that focus on specific commodities. There is considerable scope to link nontimber forest products with existing and emerging agriculture cooperatives. These kinds of institutions may need initial assistance to develop, as the Madhya Pradesh nontimber forest product federation did, but within a reasonable time period these institutions should have a fully independent federation at the apex, with elected officials representing communities and a board of directors that includes a minority of forest department members. Andhra Pradesh, where milk cooperatives have been operating successfully for many years, also offers a model that could be replicated in other states. A reason often cited for their success is the power-sharing arrangement and democratic structure, which helps ensure management integrity. Experiences in Mexico with community-managed timber also offer positive lessons for India (box 7.13).

### Box 7.13. Strengthening producer organizations in Mexico

In the 1980s a number of indigenous communities in the poor southern states of Mexico formed a regional organization. With initial assistance from the government and the World Bank in the late 1990s, these organization established forest enterprises. About 256 communities are now members and have completed land use and forest management plans that encompass community forests and protected areas. Training courses have been implemented on silviculture, management, and marketing of wood and nonwood products. Private sector consultants are often used to provide technical expertise. The area under forest management increased from 500,000 to 600,000 hectares, and total sustainable wood production increased from 400,000 to 600,000 cubic meters a year. More than 13,000 hectares of old-growth forests have been protected in biological reserves, and 90,000 hectares of commercial forests have been certified by the Forest Stewardship Council. Wood production generates \$10 million a year in revenues. About 1,300 jobs have been created in wood production and another 175 jobs in nontimber forest products. The state government increased its tax revenues by \$1 million a year, and the communities have contributed about \$1 million a year to internal social development.

*Source:* PROCYMAF (2003); DeWalt, Olivera and Betancourt-Correa (2000)

**It is important that producer organizations be led by communities and be demand driven. Their goal should be to facilitate marketing by communities (and farmers) rather than to replace a pure state monopsony with a quasi-public monopsony requiring government subsidies to survive.**<sup>45</sup> Many local organizations may fail, due to corruption, rent capture by elites, and other problems. As Saxena (2001) suggests, social stratification and internal inequity can affect producer organizations, and these problems may become worse with commercialization. This finding strengthens the argument that communities need substantial investments to build social capacities and strong, inclusive institutions as part of reforms of tenure and markets. These institutions need to develop organically and be strong enough to function without government subsidies. Only then will communities truly be empowered.

**Market information sharing and networks need to be strengthened.** Mechanisms for gathering and sharing market intelligence within government line departments, communities, and farmers must be strengthened. One policy option to explore is extending the e-Choupal concept to forest product marketing (box 7.14). Forest products could be added to this network, or a new network could be established with private sector support. The Internet is a powerful tool for sharing information. The Madhya Pradesh Minor Forest Products Federation Web site lists the kind of information a market Web site could offer people and organizations with Internet access.

### Box 7.14 Extending the e-Choupal concept to forestry

The e-Choupal concept opens opportunities to access expert knowledge to the smallest individual farmer in India. More than 3.5 million farmers in India are connected to markets through local solar-powered Internet access, with network support from ITC. Farmers can check market prices for various commodities and then either choose to sell through ITC or in local markets. Providing easier access to market intelligence through this network allows farmers to counter the market power of middlemen, who monopolize information, input sales, and commodity purchases.

*Source:* [www.itcportal.com](http://www.itcportal.com)

<sup>45</sup> Examples of poorly performing quasi-public cooperatives include the Tribal Development Cooperative Corporation (TDCC) in Orissa, Large Areas Multi-purpose Cooperative Societies (LAMP) in West Bengal, and Tribal Cooperative Marketing Development Federation (TRIFED) in Chhattisgarh (N.C. Saxena, personal communication, 2005).

Another option is to expand the Agriculture Market Intelligence Network (AGMARNET) scheme in most states to encompass various forest products.<sup>46</sup> In the longer term, state forest departments should strengthen information sharing and networking by providing ongoing product monitoring service to collect market prices; providing quality and volume information, possibly as part of an e-Choupal network; undertaking market analyses for specific products to share with communities; and maintaining a list of active traders to help communities, farmers, and producer organizations contact traders to get competitive open market prices.

**The role of the forest department in marketing needs to be refocused.** The evolution of marketing away from inefficient, high-cost, and restrictive state monopsonies toward a system in which the state is more of a facilitator and provider of information and high-quality technical support should be encouraged and gradually extended to a wider range of products. For some marketing corporations, such as those in Jharkhand, a strong case exists for eventual liquidation once more efficient market channels and institutions for communities and farmers emerge. By contrast, the timber marketing system in Madhya Pradesh is competitive and is returning positive revenues to the treasury, but it absorbs a significant share of the state budget's allocation to the forest department.

**Policymakers need to evaluate the opportunity cost of maintaining these structures versus adopting alternatives outlined earlier in this report.** States should retain an important role in marketing by facilitating greater private sector competition in local markets, strengthening technical services to communities and cooperatives to facilitate value addition, promoting direct market access and sharing of market intelligence, offering technical services in silviculture, providing credit for storage facilities, and monitoring market performance. Technical services must deliver knowledge founded on sound and relevant applied research.

The forest departments and marketing corporations in Andhra Pradesh and Madhya Pradesh have made satisfactory progress toward helping communities improve sustainable nontimber forest production and harvesting, adding value, and building on local knowledge systems. The state may also provide a valuable function in supporting remote communities and farmers as buyers of last resort for forest products at a minimum price, where market failure occurs due to distance, poor roads, or other factors.

This type of government role may be well suited to kendu, because of the scale of operations (mobilizing Rs15–Rs20 billion in financing to purchase the leaves in a short 40- to 50-day season) and wide geographic range in many states. Eight reforms should be considered:

- Collectors (and people with kendu on private land) should have the right to market their product directly to the private sector at higher market prices.
- Marketing federations and corporations should be led by community representatives and return all profits to collectors.
- Prices paid to collectors should reflect at least minimum daily wages.
- Villagers should assume responsibility for managing collection centers after appropriate capacity building.
- Prices from federations should reflect quality standards rather than a uniform average price. Quality should be acknowledged at the point of sale rather than a year later, when profit shares are distributed.

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<sup>46</sup> The scheme provides Internet-based sharing of market information among agriculture produce market committees in most states in India.

- The group insurance scheme initiated in Madhya Pradesh should be replicated in other states as a welfare measure.
- All records of local people employed, payments, and deliveries should be posted in villages and on a central Web site as public records.
- An independent commission or community-led cooperative association should be constituted to review kendu marketing performance at the state level and suggest practical measures to continually improve transparency, reduce corruption, and increase local incomes.

**National incentives should be established for market liberalization.** The government of India should consider instituting a forest diversification program similar to the recently announced Development/Strengthening of Agricultural Marketing Infrastructure, Grading and Standardization scheme. That scheme is designed to induce large investments from the private and cooperative sectors for setting up agricultural markets, marketing infrastructure, and support services, such as grading, standardization, and quality certification. The new budget announced the launching of the National Horticulture Mission, with an allocation of Rs6.3 billion in FY 2006 to promote backward and forward linkages in the horticulture sector. States that amend their agricultural produce and marketing committee acts will be eligible for the new scheme. There are many parallels between the needs this scheme is addressing for agriculture and the issues identified for diversifying community forest production and marketing.

**The forest fiscal system should be reviewed.** The government should consider conducting a national review of the forest fiscal system. The review could be undertaken by the Ministry of Finance or the National Planning Commission, with a significant supporting role by the Ministry of Environment and Forests and state governments. As JFM gradually transforms into a model in which communities have greater rights to harvest their forest products based on an approved management plan and more flexibility to choose private marketing channels, the current benefit-sharing system will become less relevant. A fiscal system review should identify national and state government goals for revenue collection from communities managing state forest land. These include rural development and allowing communities to keep most if not all primary forest revenues, with the state capturing some or all of the economic rent on primary commercial outputs or collecting enough revenues to cover department operating costs; identify and evaluate options for fiscal revenue instruments such as assessing royalties on farm gate prices for various commercial forest products, sales or value added taxes levied on primary or secondary producers, downstream income taxes; permit fees for communities, or a general land rent; and consider how to develop a more transparent fiscal system with greater accountability among different actors.

Experiences in other countries could be used to generate ideas for consideration (table 7.3). If communities have more management responsibilities, there is less merit in levying royalties on primary production. In this case, more emphasis could be placed on downstream taxes through value-added taxes or income as primary products are transformed and value added. The fiscal system should

**Table 7.3. Nation Fiscal Systems in Selected Countries**

Cameroon	50 percent of rent goes to federal government, 40 percent to local councils, and 10 percent to communities.
Brazil	All revenues except a forest recovery fee go to the federal government.
Cambodia	20 percent of revenue goes to forest department.
Canada	On crown land owned by provincial governments, large forest leaseholders pay a stumpage fee on a per cubic meter basis and in many cases a forest protection land tax.
Indonesia	Tax and nontax revenues are differentiated, with nontax revenues used for reforestation.

Source: Oksanen (2004); World Bank team.

examine linkages between state expenditure on forest management; the level of economic activity generated (income, GDP, poverty reduction); and revenue generation downstream along the value chain. At the same time, it is critical to emphasize the concurrent need to strengthen community capacities for production and marketing.

While exploring new fiscal systems for community-based forestry, a number of experiences and cautions must be accounted for. Karsenty (2000) provides a summary of economic instruments for tropical forests, based on a case study in the Congo Basin. He cautions:

“Wherever possible, market mechanisms should be introduced in place of administered systems, auctions in place of royalties, marketable permits in place of taxes. Care must be taken, however, not to confuse efficiency with ideology: a mechanism may be theoretically efficient, but the economic, political or institutional conditions may not be right for it to work and serious prior study will need to be undertaken to determine whether it will be feasible in one country or another. All the same, market mechanisms are, and should always be, overseen by a regulatory policy defined and implemented by government, and administrative regulation is still necessary to oversee management practices. Government intervention must be aimed at organizing competition where it is needed to encourage innovation and economic efficiency and to establish the operating procedures of markets set up to allocate rights to exploit and export forest resources. This means that governments must acquire the ability to use these economic instruments effectively, which is not currently the case. It would be a tragic misunderstanding to think that depends on rolling back the state and privatizing its main functions. The organization of competitive markets, and of fair, transparent procedures for allocating resources, implies that the public authorities must genuinely control the mechanisms.”

The fiscal system can give strong signals to forest managers, be they government, communities or the private sector, in terms of putting a value on the resource and providing incentives for sustainable management. Wherever possible, market mechanisms should be used. Government systems, particularly those in developing countries where forest monitoring and statistics are weak, are usually unable to provide the correct signals.

## **EFFECTIVE AND FLEXIBLE INSTITUTIONAL MODELS**

Constraints in forest departments with field staff and pressure to downsize, an overly broad mandate, and limited, albeit slightly increasing operating budgets suggest major repositioning is required to provide more effective and focused service delivery in key functional areas in order to improve rural livelihoods and conserve the forest.<sup>47</sup> A new partnership model is needed that recognizes inherent comparative strengths and weaknesses by forest departments communities, private forestry consultants, and community support organizations. A range of options is available for new roles and responsibilities (see appendix 14 for details). Some of the main points for consideration include the following:

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<sup>47</sup> Constraints include the number of staff (which is either fixed or declining); the high average staff age, which implies large-scale retirements in the next decade; and inadequate field equipment and transport to carry out even basic forest management support to communities.

- Moving toward a system of private forestry consultants has several merits. First, it would gradually build up a private market for these services. Second, sharing some of the field responsibilities with consultants would allow forest department to focus limited field staff on other core functional roles. Third, it would provide employment opportunities for technical graduates and retired foresters. Governments or donors would need to subsidize these services until communities began to generate sufficient revenues to cover these costs. The net revenue from 1 cubic meter of sal sawlogs could cover the cost of two days of a local consultant's time. The Lok Vaniki program in Madhya Pradesh offers a good model to study and possibly extend to JFM communities (Box 7.16)

**Box 7.16. The Madhya Pradesh Lok Vaniki Initiative**

Madhya Pradesh is encouraging forestry on private and degraded revenue land. Chartered foresters help prepare management plans and silvicultural operation in these forests. The M.P. Lok Vaniki Act 2001 (M.P. Act No. 10 of 2001) provides an opportunity for willing landholders to manage their own forests.

The law encourages owners of private forests and other tree-clad areas to manage their natural resource on scientific lines, in order to optimize both economic and environmental returns. The act provides for active involvement of village *panchayats* and *gram sabhas* in preparing, implementing, and monitoring management plans prepared for private areas. Chartered foresters provide technical assistance to people willing to take up forestry on their private holdings.

Source: <http://www.mp.nic.in>.

- Local authorities have a growing role and mandate for forestry that needs nurturing. *Panchayats* have a strong legal and constitutional mandate for specific forestry functions on lands within their jurisdiction. Assuming that contradictions between the PESA and forestry legal frameworks are resolved, *panchayats* will need to establish stronger internal capacities and awareness about forestry and build stronger partnerships with forest departments for technical services. New national legislation being proposed by the Ministry of Tribal Affairs would assign 2.5 hectares of state forest land to specified tribal households under long-term leases on land on which they have been living for generations. The *gram sabah* would be the competent authority in recognizing vested rights of forest-dwelling tribes. Much of this land is not forested but is used for agriculture. If promulgated into law, the bill would require new partnerships, and working relationships would need to be established between tribal agencies, forest departments, tribal communities, and local authorities.

**What are the potential implications of these shifts?** Further evolution of JFM will require transforming the roles and responsibilities of key players in the forest sector. By focusing on core business functions and sharing more responsibilities with other actors, state forest departments should be able to reduce current staffing levels (as Madhya Pradesh is trying to do) and free up more financial resources to support critical core functions and better technology for inventory, mapping, monitoring, and knowledge sharing.

Some 195,000 permanent staff currently is employed in the central and state forest departments. The density of field staff in the three states examined ranges from 453 hectares per officer in Madhya Pradesh to 2,421 hectares per officer in Jharkhand. By contrast, the figure in the United States is one forest officer per 2,200 hectares; in Honduras under new reforms it is one officer per 2,100 hectare (Molnar 2005). A more effective system in the longer term might reduce staff densities, assign fewer responsibilities, and support staff with better equipment, transport, and

monitoring systems. The objective is to move away from a system in which the state tries to provide detailed oversight over every hectare of forest (with resulting poor service delivery) toward a system in which implementing agencies have more focused oversight and broader responsibilities are gradually allocated to communities, the private sector, *panchayats*, and community support organizations. The first step is determining which jobs must be performed by state forest departments and which can be done by other actors. This report provides options for beginning a dialogue, leading to gradual reforms of roles and responsibilities. Appropriate capacity building program need to be developed for forest departments to help with this transition, and for communities, especially those demonstrating high levels of awareness and interest in testing new approaches and taking on greater responsibilities for forestry.

**Private sector investment is needed in production and marketing.** Lack of adequate internal savings or access to formal capital markets means, that forest fringe communities are usually unable to finance major investments in forest resource development. Both government and the private sector can help finance the initial forest crop to build a sustainable forest products supply that can be marketed and generate revenues. Partnerships involving large industrial leases are not recommended without careful study of the impacts on small-scale producers. Global evidence suggests that industrial leases often supply low-value commodity timber products at costs below those of communities due to economies of scale and in many cases indirect state subsidies, such as below-market stumpage costs. At the same time, large processing firms are moving away from managing their own forest resources toward partnership agreements with farmers and communities as suppliers. These approaches have huge potential in India, where imbalances between the supply of and demand for fiber are conducive for developing new partnership models in which communities supply large timber processing mills or fuelwood markets.

The International Finance Corporation (IFC) is working with clients in Africa and Latin America to develop emerging opportunities for strategic partnerships between forest industries and communities for commercial timber (box 7.17). One precondition set by IFC is that communities must have the right to market their timber independently of state marketing corporations or forest Departments.

**Box 7.17. International Finance Corporation Support for Partnerships Between Communities, Farmers, and Industry**

The International Finance Corporation is supporting partnerships in the forestry sector in many ways. These partnerships will:

- Provide technical and financial analysis of small and medium-scale forest industries to identify ways to upgrade equipment and improve their competitiveness with imports.
- Pilot test partnerships between government, processing enterprises, and communities, with support of the IFC's Corporate Citizen Facility.
- Provide technical assistance for development of business models, financing, and training in small-scale forest enterprises.
- Promote improved market access for small-scale forest enterprises through collaboration with the World Wildlife Fund's Global Forest and Trade Network.
- Build the capacity of the forest industry, related NGOs, and relevant associations of communities or farm forestry owners for independent monitoring and possible certification
- Finance commodity-based research to identify issues and opportunities.

Unpublished Bank reports

Carbon financing represents another option for generating finances and drawing the private sector into forestry production and marketing (box 7.18). The challenge for policymakers in India is to find the right mix of policies and incentives to attract private investment that can partner with communities. Out-grower schemes and contract growing, noted earlier, represent innovative approaches.

**Box 7.18. Carbon Financing in Community-Based Forestry in India**

A new World Bank-funded project in Andhra Pradesh and Orissa proposes to mobilize and encourage small and marginal farmers to raise plantations of tree species with high rates of carbon sequestration in their farmlands. The project will:

- Provide advice and training
- Use clonal seedlings to establish high-density plantations.
- Promote partnerships between farmers and local paper companies to purchase wood.
- Encourage farmers to adopt agro-forestry practices such as intercropping during the first year to meet their subsistence costs.
- Provide short-term financing to farmers from an upfront payment by the global BioCarbon Fund.
- Arrange long-term credit to small and marginal farmers to meet the cost of plantation and maintenance.
- Involve local communities in the protection of plantations.
- Generate additional income from carbon credits to farmers.

*Source:* World Bank documents.

**Fuelwood supplies need to increase, with the private sector playing a role.** Village fuelwood plantations in Orissa have the potential for significant welfare improvements, especially for women, through increased biomass consumption, decreased collection time, and reduced pressure on natural forests. Kholin and Ostwald (2001) estimate the willingness of the average village household to pay for community fuelwood plantations at Rs5,500 per hectare per year. This willingness reflects the desire by women to collect fuelwood closer to home rather than foraging for branches and windfall from forests several kilometers away.

Fuelwood plantations would also reduce inter-village conflicts. To augment limited government resources, opportunities for private sector investment need to be explored that would help establish village plantations (on protected forests or wasteland) to meet subsistence needs of villagers while generating excess production for commercial sales to urban markets, hotels, hospitals, and companies, such as tea companies. Partnerships between the state (which would provide wasteland or degraded forest land to communities under secure and legal tenure); people (who would establish and manage the stands; and the private sector (which would provide the financing and marketing channels) have potential, but they require careful economic, market, and social analysis.

**Delivering integrated rural development services to more remote forest fringe communities requires new models for service delivery.** To help identify and evaluate options, a state-level review of rural service delivery programs in forest fringe communities is suggested, coordinated by the chief minister's office. Options that could be evaluated include transforming state forest departments into broader rural development agencies for remote communities outside revenue lands, supported by additional financial resources and training; strengthening mechanisms for more collaborative rural development planning, budgeting, and program implementation at the district

and community level among relevant line agencies such as forestry, rural development, tribal affairs, agriculture, minor irrigation, water, and *panchayat raj* institutions (box 7.19); and merging the functions of the FDA and the District Rural Development Agency at the district levels, chaired by the district magistrate.

**Box 7.19. Options for Delivering Rural Development Service in JFM**

The World Bank–financed Assam Agricultural Competitiveness Project is improving rural development in communities through a wide range of livelihood options. Participating line agencies are represented through project and district coordinating bodies. The World Bank–funded Gemidiriya Community Development and Livelihood project in Sri Lanka established a People’s Company to manage a Village Development Fund. Allocations were 10 percent to capacity building; 45 percent for an infrastructure development fund; and 45 percent for a livelihood improvement fund, split up among a savings and credit fund (85 percent), skills development for youth (10 percent), and a one-time grant for the poorest people in the village.

New community forestry projects financed by the Japan Bank for International Cooperation in India provide villages with Rs100,000–Rs1 million for rural livelihoods and forestry development. New project designs may have three phases (preparation, implementation, consolidation). Coordination with other line agencies is effected through a district level committee headed by the district collector.

*Source:* World Bank reports

Whatever model is chosen, government agencies such as tribal affairs, agriculture, and rural development need to play a stronger role in rural livelihood programs linked with forest-based communities. A study based on community “report cards” of local government service delivery could help guide this review process.<sup>48</sup> Where local authorities have jurisdiction over forest resources, joint capacity building with the forest department would be helpful in forging closer working relationships that would benefit communities. Another idea for strengthening interdepartmental cooperation for rural development is to establish a staff cross-exchange program, in which professional officers of forest department exchange positions with counterparts in other line departments, such as rural development. New community-based forestry programs could also be twinned with community-driven development initiatives, such as District Poverty Initiative programs to provide communities with livelihood incentives while forests mature. Nonforest livelihood measures include self-help groups and income-generating activities, agricultural support, tubewells, fish ponds, and water harvesting.

Small-scale testing of program merging is currently being undertaken in Andhra Pradesh, with favorable results. In Assam a pilot forestry project in two districts has been merged with the statewide Assam Agricultural Competitiveness Project, a Bank-funded project that broadens livelihood opportunities and community support organization support for community development. The project has also set up effective coordinating institutions among participating line agencies.

**Advisory bodies for forestry and rural development are needed at the state level.** Rural development in forest fringe communities is complex and involves a number of actors. State governments should consider establishing a Forestry and Rural Development Advisory Board or similar body, led by an independent senior chairperson, with senior representatives from key government rural development agencies, tribal leaders, and selected community support

<sup>48</sup> This kind of study was completed in Jharkhand in 2004 (Public Affairs Foundation 2004).

organizations. Under one approach, the board would report to the state minister for environment and forests, advising him or her on priority actions for forestry and rural livelihoods and policy reform and ensuring active public participation where required. A second option would be to have the body report to the chief minister. This approach would allow the proposed board to focus on wider rural development and coordination issues. All these bodies must be viewed with caution, however. Experience often shows these institutions often exist on paper but rarely meet, that they are used more for monitoring than coordination or strategic guidance. The proposed Forestry and Rural Development Advisory Board could be an effective body to guide the transition toward community forestry management. States such as Assam already have bodies such as wildlife advisory boards that could serve as models.

**State-level community forestry associations need to be established.** Community forestry associations could be established in each state in order to level the playing field in terms of power relationships with government. An association would bring together interested villages involved in community-based forestry in a forum to articulate common goals and issues to government and to serve as a focal point for communications, education, market intelligence, and training programs. Tribal leaders and women would need to be a central part of such an organization. A small capital grant would provide seed money to pay for a small office, equipment, membership drives, registration, development of a data base, and production of materials. The grant could come from the central government or donors, on a declining basis over three to five years. As communities begin to earn higher revenues from forestry operations and more communities participate in forestry development, external funding could gradually be replaced with annual contributions from communities. With 13,698 JFM committees and an annual levy of Rs500 per committee, for example, Madhya Pradesh would generate Rs6.8 million (\$152,000) a year. Even if only one-third of the communities were functioning and contributed, there would more than enough resources to sustain a small office secretariat and strong institutional support programs. It is important that these institutions grow organically.

**Information must be shared across institutions.** India is blessed with a range of experiences and abundant information on JFM and related topics from government agency reports, Web sites, research institutions, community support organizations, and external agencies. It is extremely difficult, however, to sort through the thousands of relevant reports and articles scattered in different locations and forms. Stakeholders involved with JFM in India cannot easily build their knowledge bases or share experiences from India or other countries where community-based forestry has gone through the same transitions.

In partnership with appropriate community support organizations and international organizations, the government needs to create a strong and sustainable national multi-stakeholder community forestry network. These networks should build on existing systems, such as the Resource Unit for Participatory Forestry (RUPFOR), which is housed in a private NGO and acts as a stakeholder forum in close consultation with the Ministry of Environment and Forests. Discussions with various stakeholders suggest that the RUPFOR could be strengthened, by expanding Web links, offering publications electronically, and organizing more workshops and field visits, for example.

An effective network requires strong financial and technical support. It should constantly gather information on thematic issues and innovative solutions from within India and globally, post information that can be downloaded for free, offer training materials, and create and manage focused e-discussion groups on community forestry issues. The RUPFOR network could be reviewed by interested stakeholders, who could identify ways of making it even more accessible and supportive to community-based forestry from policy level to field officers. At the same time,

the JFM cell in the Ministry of Environment and Forests could be reviewed to assess its effectiveness and determine how to better integrate it into national and international networks.

Knowledge sharing must also occur through personal exchanges of experiences of policymakers, government officials, and community members. There are abundant opportunities for cross-fertilization between leading and lagging states; tapping this wealth of internal knowledge is critical for moving all states farther along the community forestry continuum. An expanded program of exchange visits within India could facilitate this process. Another option to explore is establishing model community forests in states in which progressive reforms and processes can be tested and used as demonstrations. An extension of this option would be to twin leading forestry communities with counterparts in other countries to facilitate cross-cultural experience sharing. Experiences in other countries offer great scope for sharing information and lessons learning. A program for international exchanges is needed in partnership with international NGOs and donors. Opening up India to other global experiences can be a powerful catalyst for change.

## **Potential for Welfare Gains from Proposed Reforms**

**An example from Jharkhand illustrates the productive potential of forests and the possible gains in total income from implementing proposed reforms.**<sup>49</sup> Based on three alternative scenarios of increased productivity, output, and marketed commodities; projections of increased JFM area and forest productivity; and a sustainable selective timber felling system augmented by modest nontimber forest product production, by 2020 a typical JFM community could increase annual forest income by less than Rs200,000 to more than Rs1 million. At the same time, annual revenues per hectare collected by the state government could increase tenfold to almost Rs700 per hectare.

**At the national level, total forest income from commercial sales could rise from an estimated \$222 million in 2004 (worst-case scenario) to about \$2 billion a year in 2020 (best-case scenario).** Furthermore, with a 20 percent increase in nontimber forest product prices due to local quality improvements and modest value addition and 10 percent increases in timber and bamboo prices from quality enhancements, annual market-based incomes could increase another 11 percent, or \$220 million, by 2020 in the best-case scenario. Communities would continue to enjoy subsistence benefits from the forest. The imputed net subsistence value of fuelwood and fodder alone could be worth another \$1.1 billion a year.<sup>50</sup>

**Conservation values from the forest are also important.** Ecological and ecotourism benefits increase net income from 1.1 percent to 2.4 percent of GDP (Chopra, Bhattacharya, and Kumar 2002). This represents an increase of \$6.2 billion from the entire forest cover in India. Given that JFM forests currently represent about 27 percent of total forest cover, a simple assumption is that 27 percent of these gains (\$1.7 billion) could be derived from current JFM forests as they mature. This model is very basic and produces only order of magnitude estimates. More complex models could be based on refined growth and yield estimates by region and forest types, more precise data on prices and costs, and different assumptions about how a “typical” community forest is allocated across various land uses.

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<sup>49</sup> See appendix 15 for more information on the Jharkhand and national projections.

<sup>50</sup> This figure is based on 8.4 million families (or households) involved with JFM (Bahuguna and others 2004), average gross subsistence value for fuelwood and fodder from case studies in Jharkhand and Assam (see appendix 4), and net values of 50 percent of gross values to account for collection time.

**Commercial fuelwood could be another option for increasing value addition from the forest for communities.** With better market access, villagers could be induced to increase forest stocking on their private farm holdings through agro-forestry, which can generate food, poles, timber, raw materials for crafts, and fuelwood. If some communities produce lucrative aromatic oils or medicinal plants for international markets, net returns could rise even more.

**Production of timber could increase to almost 20 million cubic meters by 2020,** making a significant contribution to India's deficit in high- and mid-value hardwood. It would also improve the balance of payments, by reducing the need to import logs. Annual community income could increase to almost Rs1 million, an incremental increase of Rs5,000 per household.

These projections are based on communities selling logs to local sawmills or larger intermediaries at the roadside. Moving into secondary processing by turning logs into squares or lumber is a logical progression for some communities or a consortium of communities, which would add significant value and increase local incomes further.

**The main message is that even under very conservative assumptions, the asset value of forest resources has great upside potential under proposed reforms, as community-based forestry evolves and expands, forest productivity improves, and better market channels open up.** This simple analysis reveals that community-based forestry, coupled with investments in increasing forest productivity, could substantially expand rural incomes and increase revenues to the state through downstream taxes. Yet this potential will not be realized until governments address the fundamental issues and constraints that are hindering more effective development of community-based forestry livelihood opportunities.

## **Priorities and Phasing of Reform Options**

**A mix of reforms is needed at both the national and state levels** (table 7.4). The array of reforms is complex and needs to be phased carefully. Priorities may emerge from recommendation in the forthcoming report of the National Forest Commission. But based on experiences in India and other jurisdictions, it is suggested that reforms initially focus on small actions that have a good chance of success, provide incentives for communities to participate, and encourage government to implement more challenging reforms. These reforms will require significant financial and technical support. Current national and state priorities for fiscal allocations need to be reviewed and more attention given to the core business functions of government, including more targeted forest R&D, information networks and exchange programs, remote sensing, mapping, and monitoring. While forest rehabilitation remains a critical national priority, creative financing solutions and incentive programs involving the government, private sector, and communities need to be explored, through the IFC, for example. In addition, sustained and perhaps more coordinated donor support is needed to community forestry, building on the comparative advantages and experiences offered by the principal actors (the Asian Development Bank, the Japan Bank for International Cooperation, DFID, and the World Bank, among others). Donor funds can play a critical role in building institutional capacities, undertaking strategic sector work, and supporting knowledge sharing.

**Table 7.4. Options for and phasing of proposed policy and program reforms**

<i>Reform/actor</i>	<i>Timeframe</i>	<i>Recommended policy or program</i>
<i>Policy and legal reform to support better resource tenure and management rights for communities</i>		
Government of India	Short term	<ul style="list-style-type: none"> <li>• Build national vision for forestry and community forestry based on National Forest Commission report and other studies.</li> </ul>
	Medium term	<ul style="list-style-type: none"> <li>• Establish national policy guidelines on tenure reform to strengthen community resource rights.</li> </ul>
States	Long term	<ul style="list-style-type: none"> <li>• Conduct major review of decentralization, PESA, and JFM legal and regulatory conflicts, and identify short and long-term reforms.</li> </ul>
	Short term	<ul style="list-style-type: none"> <li>• Consolidate national forestry legislative reforms.</li> <li>• Institute processes to identify and acknowledge historic forest rights that have a legal basis.</li> <li>• Disseminate information on legal and policy framework to communities in local languages.</li> <li>• Provide legal training to forest department staff, sensitize police and judiciary to community forestry issues.</li> </ul>
	Medium term	<ul style="list-style-type: none"> <li>• Review and strengthen state forest policies and comprehensive forest sector strategies.</li> <li>• Strengthen the legal foundation for community forestry, PESA linkages, Memoranda of Understanding, and registration processes.</li> <li>• Develop and apply more efficient tenure models for communities in unencumbered areas and among nomadic tribes, starting with pilot areas and scaling up as capacities are built.</li> </ul>
	Long term	<ul style="list-style-type: none"> <li>• Record and map forest tenures, beginning with pilot areas in key states.</li> <li>• Consolidate state forestry legislative reforms.</li> </ul>
<i>Strengthen forest management regulation and monitoring and control systems for community forestry</i>		
Government of India	Short term	<ul style="list-style-type: none"> <li>• Conduct a national review of forest research around community forestry.</li> </ul>
	Medium term	<ul style="list-style-type: none"> <li>• Develop a new national research strategy with strong community forest focus.</li> </ul>
States	Short term	<ul style="list-style-type: none"> <li>• Develop operational manuals for community forestry.</li> <li>• Strengthen working plans and micro-plans in key areas, to support community forestry reforms.</li> </ul>
	Medium term	<ul style="list-style-type: none"> <li>• Develop forest sector strategies with livelihood and conservation focus.</li> <li>• Strengthen resource assessment at state and community levels with Forest Survey of India remote sensing data and better field data.</li> <li>• Develop integrated, computer-based management information systems.</li> <li>• Strengthen mapping capability to support management planning at division and community levels.</li> </ul>
	Long term	<ul style="list-style-type: none"> <li>• Improve forest and livelihood monitoring systems with community and community support organization partners.</li> <li>• Strengthen growth and yield systems and silviculture prescriptions focused on nontraditional timber and nontimber forest products; use communities to help establish and maintain field plots.</li> </ul>
<i>Improve access to more efficient markets by forest communities to support improved livelihoods</i>		
Government of India	Medium term	<ul style="list-style-type: none"> <li>• Explore policy of letting communities consolidate into clusters for more efficient management; build on established tribal institutions.</li> <li>• Conduct national review and reform of harvesting and transit regulations and notified species.</li> </ul>
	Long term	<ul style="list-style-type: none"> <li>• Review forest fiscal systems, and identify options to improve efficiency and transparency.</li> </ul>

<i>Improve access to more efficient markets by forest communities to support improved livelihoods</i>		
States	Short term	<ul style="list-style-type: none"> <li>• Improve market information sharing and networks.</li> <li>• Build new market-driven partnership models for marketing nontimber forest products, timber, fuelwood, and bamboo.</li> </ul>
	Medium term	<ul style="list-style-type: none"> <li>• Strengthen extension and technical service delivery to communities and producer organizations.</li> <li>• Facilitate creation of strong local producer organizations.</li> <li>• With the government of India, review regulatory framework leading to reform of harvesting and transit regulations</li> </ul>
<i>Build more effective and flexible institutions to support community forestry recommended policy and program actions</i>		
Government of India	Short term	<ul style="list-style-type: none"> <li>• Explore new approaches for private sector investment in wood supply with communities.</li> <li>• Develop systems for information and knowledge sharing at local, state, national, and international levels.</li> <li>• Consider establishing national advisory body for forestry.</li> </ul>
	Medium term	<ul style="list-style-type: none"> <li>• Strengthen policy and economics functions in the Ministry of Environment and Forests.</li> <li>• Conduct national review of rural development service in forest communities.</li> </ul>
States	Short term	<ul style="list-style-type: none"> <li>• Establish model forests in states where various reforms can be tested and implemented at field level and used for demonstration purposes.</li> <li>• Establish a national and state system for allowing private consultants to work with forest communities.</li> </ul>
	Medium term	<ul style="list-style-type: none"> <li>• Establish state-level advisory body with broad representation.</li> <li>• Conduct state-level reviews of rural development service delivery.</li> <li>• Develop a stronger role for community support organizations in community forestry.</li> <li>• Develop a strategic plan for forest department to support shifting roles and responsibilities.</li> <li>• Build capacity in local authorities to support decentralization of forest management.</li> <li>• Build capacity in communities to assume greater management responsibilities.</li> <li>• Strengthen forest department capability in key areas to support shifting roles needed to support community forestry.</li> </ul>
	Long term	<ul style="list-style-type: none"> <li>• Establish functioning community forestry associations at state level.</li> </ul>

**Further reforms in the community-based forestry model will not be easy, given the competing interests in the forest sector** (Khare and others 2000). Government foresters are mandated to implement policy, but they are ill equipped to deal with the challenge of change brought by JFM, let alone further transitional approaches. While many forest officers are open to progressive reforms, others are locked into old ways of doing business. The departments suffer from a rigid hierarchical structure, centralized planning, and limited mechanisms for two-way dialogue about issues and opportunities. The strong forestry conservation goal of the Ministry of Environment and Forests and state forest departments is viewed seriously by field staff; changes that potentially threaten this goal (real or perceived) are viewed with considerable caution. Many forest officers have major concerns about the ability of communities to assume more forestry responsibilities, but they accept that with proper capacity building of both communities and forest departments, many of these concerns can be alleviated. Forest industrialists who have benefited in the past from subsidized raw materials will continue to lobby for long-term forest leases, which would reduce the opportunity for communities to supply needed timber inputs. Conservationists, who promote biodiversity protection above rational forest utilization, often have considerable influence on forest policy. Social activists effectively promote the interests of rural forest-based communities and tribal people.

What is needed is a common vision at the national and state levels that focuses on forest livelihoods as well as conservation, the enabling factors required to unlock forest values for communities, and agreement on how to implement progressive reforms. Achieving and implementing this common vision will be challenging. With bold steps and political will, a strong foundation can be laid to transform community forestry into a more productive and competitive sector of the rural economy while also addressing national forest conservation goals.

## 8. CONCLUSIONS

Forestry represents the second-largest land use in India after agriculture. Forest communities are generally poor and dominated by tribal groups, whose traditional cultures and institutions often have strong links to the forest.

While most forest communities appear to be agrarian based, forests still play an important supporting role as a safety net during lean times. Fuelwood, fodder, and other nontimber forest products also provide seasonal subsistence. Commercial products such as timber currently play a small role in overall livelihoods, due to cultural factors, poor incentive structures, and general restrictions on trade posed by forest legal and policy frameworks. Although policies governing JFM at the national and state levels have evolved over the past 18 years to put more emphasis on forest livelihoods and poverty alleviation, the program's main thrust is still largely toward forest rehabilitation and conservation.

India is at an important crossroads with respect to its forest sector and community-based forestry programs. Forests are under intense pressure, mainly from human activities, with the current consumption of timber and fuelwood well above sustainable harvest levels. There appears to be great potential for increasing production to meet this supply gap, especially from forests managed by communities and farms. In addition, a number of nontimber forest products, such as medicinal plants and aromatic oils, are beginning to show economic promise.

The ability of communities to tap into these emerging opportunities is hampered by a complex legal framework, command and control regulatory approaches, insufficient understanding of community forest institutions, and poor access to efficient market channels. JFM still focuses largely on commercial plantation management under forest department jurisdiction, with communities providing protection services in return for better nontimber forest product access and a share of any timber revenue.

There appears to be a broad agreement among many stakeholders that continued evolution of JFM toward a model in which communities are more fully empowered with rights and responsibilities can both strengthen forest conservation and increase rural livelihoods. There is, however, no clear national consensus on how to implement this transition, how quickly reform should occur, or what the immediate and longer term policy and program priorities should be.

Despite many positive reforms by some states in recent years and a number of highly committed staff in both state and national forest agencies, in its current form JFM is unlikely to lift poor people in most forest communities out of poverty. Accelerated reforms must place forest livelihoods within a broader mix of livelihood opportunities, particularly by improving agricultural performance, building stronger partnerships, and improving budget and program collaboration between state forest departments and other rural development agencies. New approaches must strengthen community forest rights and responsibilities and open up more direct market channels for forest products. These broad policy thrusts need to be supported by more efficient and flexible regulatory, monitoring, and control systems and a transformation of roles and responsibilities among key actors, in particular state forest departments and communities.

Achieving and implementing a common vision for a more effective community-based forestry model will be challenging; it will require time, patience, and significant investments to build the requisite capacities. With bold steps and political will, however, a strong foundation can be laid to transform community forestry into a more productive and competitive sector of the rural economy.

## References

- Agrawal, A. 1999. *Greener Pastures: Politics, Markets and Community Among A Migrant Pastoral People*. Durham, NC: Duke University Press.
- Alsop, R., D. Sjoblom, C. Namazei, and P. Patil. 2002. "Community-Level User Groups in Three World Bank-Aided Projects: Do They Perform As Expected?" World Bank ESSED Social Development Paper No. 40, Washington, DC.
- Australian National University 2003. "Market for Forest Products in India" ANU Forestry Market Report No. 26, December. Canberra.
- Bahuguna, V.K. 2004. "Root to Canopy: An Overview." In *Root to Canopy: Regenerating Forests through Community-State Partnerships*, ed. V.K. Buhuguna, K. Mitra, D. Capitrano, and S. Sargal. Delhi: Winrock International and Commonwealth Forestry Association.
- Bahuguna, V.K., K. Mitra, D. Capitrano, and S. Sargal, eds. 2004. *Root to Canopy: Regenerating Forests through Community-State Partnerships*. Delhi: Winrock International and Commonwealth Forestry Association.
- Baland, J.P., and J.M. Plateau 1996. *Halting Degradation of Natural Resources: Is There A Role for Rural Communities?* Oxford: Clarendon Press.
- Bardhan, P, J. Baland, S. Das, D. Mookherjee, and R. Sarkar. 2002. "The Environmental Impact of Poverty: Evidence from Firewood Collection in Rural Nepal." University of East Anglia, Norwich.
- Battacharya, P., and R. Prasad. 1998. "Integrated Options for Forest Management in India." Indian Institute of Forest Management, Bhopal.
- Centre for Civil Society. 2003. "Keepers of the Forest: Foresters or Forest Dwellers?" CCS-ARCH Briefing Paper, New Delhi.
- Chopra, K., B. Bhattacharya, and P. Kumar 2002. "Contribution of Forestry Sector to Gross Domestic Product (GDP) in India." Institute of Economic Growth. Delhi University
- Clay, J. 2004. *Borrowed from the Future: Challenges and Guidelines for Community-Based Natural Resource Management*. Ford Foundation
- Contreras-Hermosilla, A. 2004. "Rethinking Forest Regulations." Presentation to National Forest Commission, December 2, Delhi.
- Dewalt, B., F. Olivera, and J. Betancourt Correa. 2000. "Mid-Term Evaluation of the Mexico Forestry Project." World Bank, Washington, DC.
- Dharia, M. 2005. "JFM for Community-Based Natural Resource Management: Reflections." *Information Bulletin on Participatory Forest Management*. Resource Unit for Participatory Forestry, Delhi.

- Durst, P., C. Brown, H. Tacio, and M. Ishikawa. 2005. *In Search of Excellence: Exemplary Forest Management in Asia and the Pacific*. Asia-Pacific Forest Commission and RECOFTC, Bangkok.
- Ellsworth, L., and A. White 2004. "Deeper Roots: Strengthening Community Tenure Security and Community Livelihoods." Ford Foundation, New York
- FAO (Food and Agriculture Organization). 2005. *State of the World's Forests*. Rome: Food and Agriculture Organization.
- Gadgil, M., and R. Guha 1995. *Ecology and Equity: The Use and Abuse of Nature in Contemporary India*. London: Routledge.
- Ghate, R. 2003. "Ensuring Collective Action in Participatory Forest Management." South Asia Network for Development and Environmental Economics, Working Paper No. 3-03. August. Kathmandu, Nepal
- Government of Assam. 1891. Assam Forest Regulation Act 1891. Guwahati
- Government of Bihar. 1984. Bihar Forest Produce (Regulation of Trade) Act 1984. Patna
- . 1885. Bihar Tenancy Act 1885. Patna
- . 1908. Chotanagpur Area and Chotanagpur Tenancy Act 1908. Patna
- Government of India. 1860. Societies Registration Act, 1860. New Delhi.
- . 1878. Indian Forest Act 1878. New Delhi.
- . 1972. Indian Forest Act, 1927 (Act No. 16 of 1927). New Delhi.
- . 1976. Report of the National Commission on Agriculture, 1976, Part IX, Forestry. New Delhi.
- . 1981. Forest (Conservation) Act 1980 and Rules 1981. New Delhi.
- . 2001. Census of India. Delhi.
- Government of Madhya Pradesh. 1993a. Madhya Pradesh (Panchayat Raj Avam Gram Swaraj) Adhiniyam. Bhopal
- . 1993b. Panchayat Raj Adhiniyam. Bhopal
- . 1999. Madhya Pradesh Act 5 of 1999. Bhopal
- Hedge, N. 2000. "Priorities for Forestry Research in India." In *Asia Pacific Forestry Research - Vision 2010*. Proc. of the Regional Seminar. Kuala Lumpur, Malaysia. Mar. 26-27, 1999. Country Report 106-108.

- Hill, I., and D. Shields. 1988. "Incentives for Joint Forest Management: Analytical Methods and Case Studies." World Bank Technical Paper No.394, Washington, DC.
- Indian Centre for Science and High Technology and United Nations Industrial Development Organization 2004. Regional workshop on quality control of medicinal plant products in South-East Asia. July 23-34, 2004, Kuala Lumpur.
- Indiastat.com. Various years. Available at [www.Indiastat.com/](http://www.Indiastat.com/).
- ITC Portal 2005. ITC's e\_Choupal movement. [www.itcportal.com](http://www.itcportal.com)
- International Tropical Timber Organization.. 2003. "Review of the Indian Timber Market." Preliminary Pre-Project Report. Yohohama.
- Karsenty, A. 2000. "Economic Instruments for Tropical Forests: The Congo Basin Case." Instruments for Sustainable Private Sector Forestry Series. Centre for International Forest Research, French Agricultural Research Centre for International Development , International Institute for Environment and Development. Bogor, Indonesia
- Khan, I., and M. Pillai, eds. 2002. "India's Forestry Sector: A Review of Policy, Legal and Institutional Framework." World Bank Technical Note, Washington, DC.
- Khare, A., Madhu Sarin, N.C. Saxena, Subhabrata Pali, Seema Bathla, Farhad Vania, and M. Satyanarayana. 2000. "Joint Forest Management: Policy Practice and Prospects. Policy that Works for Forests and People Series. No.3. International Institute for Environment and Development, London, and World Wildlife Fund, Delhi.
- Kholin, G., and M. Ostwald. 2001. "Impact of Plantations on Forest Use and Forest Status in Orissa, India." *Ambio* 30 (1).
- Kothari, S. 2000. "To Be Governed or Self-Governed?" Adivasi, July 16. *The Hindu. National Newspaper*
- Kumar, S. 2002. "Does 'Participation' in Common Pool Resource Management Help the Poor? A Social Cost-Benefit Analysis of Joint Forest Management in Jharkhand, India." *World Development* 30 (5): 763-82.
- Liedtke, M. 2003. *The Context for Community Forestry in India: Forest Legislation and Policy*. International Development Research Centre, Ottawa.
- Mahapatra, R. 2003. "The Multi-Billion Dollar Fuelwood Trade Is the Last Resort for India's Poor." Infochange News and Features, June. [www.infochangeindia.org](http://www.infochangeindia.org)
- Maharjan, M.R. 1998. "Yield Regulation Techniques for Community Forest Management in Nepal: Opportunities and Constraints." Paper prepared for the international seminar "Cultivating Forests: Alternative Forest Management Practices and Techniques for Community Forestry," September 23-25, RECOFTC, Bangkok.

- Manoharan, T.R. 2000. "Natural Resource Accounting: Economic Valuation of Intangible Benefits of Forests." RIS Discussion Paper No. 04/2000. Research and Information System for the Nonaligned and other Developing Countries, New Delhi.
- Mckean, M. 1992. "Management of Traditional Common Lands (Iriaichi) in Japan." In D. Bromley, ed., *Making the Commons Work: Theory, Practice and Policy*, 63–93. San Francisco: Institute for Contemporary Studies.
- MOEF (Ministry of Environment and Forests). 2000a. "National Forest Action Plan." Delhi.
- . 2000b. "National Policy Guidelines." Delhi
- . 2001b. Forest Statistics of India. Delhi
- . 2001b. *Forest Survey of India*. Dheradun.
- . 2003. Terms of reference for National Forest Commission. Delhi.
- . 2004. "Forestry in India." PowerPoint presentation to the National Forestry Commission, December 2, Delhi.
- . 1952. National Forest Policy. Delhi
- . 1988. National Forest Policy. Delhi
- . Various years. *Annual Report*. Delhi
- Molnar, A. 2004. "Forestry in Transition: Changing Opportunities for Communities and Forests." PowerPoint presentation to the National Forestry Commission, December 2, Delhi.
- . 2005. "Forest Staffing Levels in Various Countries." Personal Communication. Forest Trends, Washington DC
- Molnar, A., S. Scherr, and A. Khare. 2004. "Who Conserves the World's Forests? Community-Driven Strategies to Protect Forests and Respect Rights." Working Paper. Forest Trends. Washington, DC.
- Narain, U., Gupta, S., and K. van't Veld. 2005. "Poverty and the Environment: Exploring the Relationship between Household Incomes, Private Assets, and Natural Assets." Draft Working Paper. Resources for the Future, Washington, DC.
- Neumann, R.P., and E. Hirsch. 2000. Commercialization of Nontimber Forest Products: Review and Analysis of Research." Center for International Forestry Research, Bogor, Indonesia.
- Oksanen, T. 2004. "Introduction to Forest Fiscal Systems." In *Reforming Forest Fiscal Systems: An Overview of Country Approaches and Experiences*. Proceedings of international workshop on "Reforming Fiscal Systems to Promote Poverty Reduction and Sustainable Forest Management," held October 19–21, 2003, at the World Bank, Washington, DC
- Ostrom, E. 1992a. *Crafting Institutions for Self-Governing Irrigation Systems*. San Francisco: ICS Press.

- . 1992b. “Policy Analysis of Collective Action and Self-Governance.” In *Advances in Policy Studies since 1950*, ed. W.N. Dunn and R.M. Kelly. *Policy Studies Review Annual* 10: 81–119.
- . 1997. “Self Governance and Forest Resources.” “Local Institutions for Forest Management: How Can Research Make a Difference?” CIFOR, Bogor, Indonesia, November 19–21. Available at [www.Cgiar.Org/Cifor](http://www.Cgiar.Org/Cifor).
- Pandey, Deep. 2003. *Livelihood Improvements through Multifunctional Forestry Systems in India*. Unpublished research background paper for World Bank
- . 2005. “CIFOR Poverty Impact Assessment of Joint Forest Management in Jharkhand, India.” Presentation to World Bank during Rural Week, March 31, Washington, DC.
- Pandey, Devandra. 2001. “Fuelwood Studies in India: Myth and Reality.” Workshop on SIDA-Supported CIFOR Project “Fuelwood: Crisis or Balance?” Marstrand, Sweden, June, 6–8.
- People’s Daily Online. 2004. “China Becomes One of World’s Biggest Furniture Exporters.” September 20. [www.english.peopledaily.com.cn/](http://www.english.peopledaily.com.cn/)
- Peters, C.M. 1994. *Sustainable Harvest of Nontimber Plant Resources in Tropical Moist Forest: An Ecological Primer*. Biodiversity Support Program. Centre for Environmental Research and Conservation. New York Botanical Garden
- . 1999. “A Protocol for Participatory Inventories of Timber and Nontimber Forest Products in Cameroon.” Report to International Rice Institute/ Central African Regional Program for the Environment. University of Maryland.
- Pingle, U. 2004. “Communities and Forest Management: Janaram Forest Division, Adilbad, Andhra Pradesh, India.” Community Forestry International, Santa Barbara, CA.
- Poffenberger, M., and B. Mcgean 1998. *Village Voices, Forest Choices. Joint Forest Management in India*. Oxford University Press. New Delhi.
- Poffenberger, M., B. Mcgean, N.H. Ravindranath, and M. Gadgil. 1992. *Field Methods Manual 1. Diagnostic Tools for Supporting Joint Forest Management Systems*. Society for Promotion of Wastelands Development, Joint Forest Management National Support Group, New Delhi, India. (Available at no cost from Ford Foundation, 55 Lodi Estate, New Delhi, 110 003, India.)
- Prasad, R., and P. Bhatnagar. 1990. “Socio-Economic Potential of Minor Forest Produce in Madhya Pradesh.” *SFRI Bulletin* No. 26, State Forest Research Institute, Jabalpur, India.
- Proyecto para la Conservación y Manejo Sustentable de Recursos Forestales en México 2003. “Proyecto de conservacion y manejo sustentable de recursos forestales en mexico. Informe y avance 1998–2000.” Mision de Evaluacion de Medio Termino, Mexico. For Secretariat of Environment, Natural Resources and Fisheries
- Public Affairs Foundation. 2004. “Benchmarking Public Service Delivery at the Forest Fringes in Jharkhand, India: A Pilot Citizen Report Card.” Bangalore, India.

- Ruiz-Perez, M., B. Belcher, R. Achdiawan, M. Alexiades, C. Aubertin, J. Caballero, B. Campbell, C., Clement, T. Cunningham, A. Fantini, H. De Foresta, C. Fernandez, K. Gautam, P. Martinez, W. De Jong, K. Kusters, M. Kuty, C. Lopez, M. Fu., M. Alfaro, T. Nair, O. Ndoye, R. Ocampo, N. Rai, M. Ricker, K. Schreckenber, S. Shackleton, P. Shanley, T. Sunderland, and Yeo-Chang Youn. 2004. "Markets Drive the Specialization Strategies of Forest Peoples." *Ecology and Society* 9 (2): 4.
- Saigal, S. 2002. *Changing Ownership and Management of State Forest Plantations*. India. International Institute for Environment and Development. London.
- Saigal, S., S. Arora, and S. Rizvi. 2002. *The New Foresters: The Role of Private Enterprise in the Indian Forestry Sector*. Ecotech Services and International Institute for Environment and Development, London.
- Saxena, N.C. 2001. Personal Notes On Forest Markets. in: Scherr, S., White, A., and D. Kaimowitz 2002. *Making Markets Work for Forest Communities*. Forest Trends, Washington, DC.
- . 2002. "Fuelwood Production through Wasteland Development: Some Policy Issues." In *Institutionalizing Common Pool Resources*, D.K. Marothia, ed. New Delhi: Concept Publishing Company.
- Scialabba, Nadia El-Hage, and Caroline Hattam (Editors) 2002. *Organic agriculture, environment and food security*. Environment and Natural Resources Series No.4. FAO, Rome.
- Scherr, S., A. White, and D. Kaimowitz. 2002. *Making Markets Work for Forest Communities*. Forest Trends, Washington, DC.
- Shah, Amita, and D.C. Sah. 2004. "Poverty among Tribal people in Madhya Pradesh: Has Anything Changed over Time?" *Journal of Human Development* 5 (2): 241–63.
- Singh, R., and V. Sinha 2004. "Legislators' Perception about the Participatory Forest Management and Their Role: A Case Study of Madhya Pradesh Legislative Assembly." Indian Institute of Forest Management, Bhopal.
- Subedi, B. 2002. "Toward Expanded Property Rights of Local Communities over Forest Resources in Nepal: Lessons and Strategies." Presentation to the Global Perspectives on Indigenous People's Forestry: Linking Communities, Commerce and Conservation Conference, June 2–6, Vancouver, British Council.
- Sunderlin, W., A. Angelsen, B. Belcher, P. Burgers, R. Nasi, L. Santoso, and S. Wunder. 2005. *Livelihoods, forests, and conservation in developing countries: An Overview*. World Development. Vol. 33 (2005) Issue 9, Pages: 1383-1402
- Tang, Shui Yan. 1992. *Institutions and Collective Action: Self-Governance in Irrigation*. San Francisco: Institute for Contemporary Studies Press.
- The Energy Research Institute 2004. "Socioeconomic and Institutional Assessment for Forest Sector Analysis in Jharkhand." Report prepared for the World Bank, September, Delhi.
- . 2005. "Socioeconomic and Institutional Assessment for Forest Sector Analysis in Assam." Report prepared for World Bank, October, Delhi.

- Tiwarly, M. 2004. *Participatory Forest Policies, Politics and Institutions in India: Joint Forest Management in Jharkhand and West Bengal*. Aldershot, United Kingdom: Ashgate Press.
- UNDP (United Nations Development Programme)/World Bank. 2003. *India: Access of the Poor to Clean Household Fuels*. Washington, DC.
- Upadhyay, S., and V. Upadhyay. 2002. *Handbook on Forest Laws, Wildlife Laws, and the Environment*. Vol. 1. Delhi: Lexis Nexis Butterworths.
- Van Exem, A. 1991. *Basic Socio-Economic Attitudes of Chotanagpur Tribal people*. Ranchi: Catholic Co-Operative Society. Jharkhand, India
- Vedeld, P., A. Angelsen, E. Sjaastad, and G. Berg. 2004. "Counting on the Environment: Forest Incomes for the Rural Poor." World Bank Environmental Economics Series Paper No. 98, June, Washington, DC.
- Wade, R. 1994. *Village Republics: Economic Conditions for Collective Action in South India*. San Francisco, CA: Institute for Contemporary Studies Press.
- Walter, S. 2002. "Certification and Benefit-Sharing Mechanisms in the Field of Nonwood Forest Products: An Overview." *Medicinal Plant Conservation* 8, Newsletter of the IUCN Species Survival Commission, Medicinal Plant Specialist Group. Bonn
- White, A., and J. Xu. 2004. Understanding the Chinese forest market and its global implications. In *Forest in China: Policy, Consumption and Production in Forestry's New Superpower*, ed. J. Xu, A. White, S. Nilsson, and A.J. Pottinger. Special issue of International Forestry Review Commonwealth Forestry Association. Crib, UK
- White, T.A., and A. Martin. 2002. *Who Owns the World's Forests?* Forest Trends, Washington, DC.
- Wong, J.L.G., K. Thornber, and N. Baker. 2001. "Resource Assessment of Non-Wood Forest Products: Experience and Biometric Principles." NWFP Series 13, Food and Agriculture Organization, Rome.
- World Bank. 2005a. *India: Re-Energizing the Agricultural Sector to Sustain Growth and Reduce Poverty*. Delhi: Oxford University Press.
- . 2005b. "Project Performance Assessment Report : Madhya Pradesh Forestry Development Project." Operations Evaluation Department, March 7, Washington, DC.
- . 2005c. "Small-Medium Scale Forest Enterprises in India: Opportunities for IFC and World Bank Engagement." Discussion Note. Agriculture and Rural Development Forest Team, Washington, DC.
- Wunder, S. 2001. "Poverty Alleviation and Tropical Forests: What Scope for Synergies?" *World Development* 29 (11)
- Xu, J. 2004. "Development of Forestry and Reform of Forest Sector in China." Presentation to the National Forest Commission, December 2, Delhi.