

Report No. 34481-IN

India Unlocking Opportunities for Forest-Dependent People in India

(In Two Volumes) Volume II: Appendixes

December 28, 2005

Agriculture and Rural Development Sector Unit
South Asia Region



Document of the World Bank

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 | |

| | |
|-------------------|-------------------|
| Vice President: | Praful Patel |
| Country Director: | Michael Carter |
| Sector Director: | Constance Bernard |
| Sector Manager: | Adolfo Brizzi |
| Task Manager: | Grant Milne |

Contents

| | |
|---|-----------|
| Appendix 1. Description of Study Methods in Jharkhand, Assam, and Madhya Pradesh.. | 1 |
| Background..... | 1 |
| Jharkhand..... | 1 |
| Assam | 4 |
| Madhya Pradesh | 9 |
| National Report..... | 10 |
| Appendix 2. Structure of the Indian Secondary Forest Industry..... | 11 |
| India's Small Scale Sector | 11 |
| Structure of India's Forest-Based Industries | 11 |
| The Paper and Paper Board Industry | 12 |
| The Wood-Based Panel Industry | 12 |
| Sawmilling and Wood Working | 13 |
| Non-timber Forest Products..... | 13 |
| Safety Matches | 14 |
| Wood Carving.. .. | 14 |
| Community-Based Production Enterprises: Joint Forest Management | 14 |
| Farm Forestry | 15 |
| Social and Economic Benefits of SSFEs | 15 |
| Constraints to India's Small Scale Forest Enterprises | 16 |
| Appendix 3. Fiscal Analysis of the Forest Sector | 19 |
| Appendix 4. National and State Legal and Policy Frameworks..... | 23 |
| Key National Legal and Policy Milestones | 23 |
| Central Issues with State Legal Frameworks for JFM..... | 26 |
| Legal and Policy Conflicts..... | 28 |
| PESA—Panacea for Community-Based Forestry?..... | 29 |
| Examples of Conflicts and Contradictions with PESA and Forestry | 30 |
| Appendix 5. Community Livelihoods in Assam, Jharkhand and Madhya Pradesh..... | 33 |
| Background..... | 33 |
| Tribals and Tribal Characteristics in India | 34 |
| What are Forest Livelihoods? | 37 |
| Livelihood Patterns in the Focal States | 38 |
| Forest Livelihoods and Linkages with Rural and Tribal Development in the Three Focal States..... | 46 |
| 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 |
| Saw Timber—Jharkhand and Madhya Pradesh Case Study..... | 54 |
| Kendu Leaf—Jharkhand and Madhya Pradesh Case Study | 57 |
| Bamboo—Assam Case Study | 61 |

| | |
|--|------------|
| Medicinal Plants and Aromatic Oils—Madhya Pradesh and Assam..... | 65 |
| Fuelwood | 69 |
| Appendix 10. Forest Fiscal Systems and Analysis | 71 |
| What is a Forest Fiscal System? | 71 |
| What are the Main Issues in India?..... | 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 |
| Background..... | 93 |
| Case Study from Jharkhand..... | 93 |
| Extending the Model to a National Level..... | 95 |
| References..... | 100 |

Tables

| | |
|--|----|
| Table A1.1. Typology for village selection in Jharkhand..... | 3 |
| Table A1.2. Workshop regional characteristics - Assam..... | 7 |
| Table A1.3. Village typology for field surveys | 9 |
| Table A2.1. Number of units of medium and large wood-based industries | 11 |
| Table A2.2. Structure of India's pulp and paper industry..... | 12 |
| Table A2.3. Estimated annual production of selected nontimber forest products | 13 |
| Table A4.1. Conflicts between 1980 Forest Conservation Act and 1988 National Forest Policy..... | 28 |
| Table A5.1. Key socio-economic indicators, focal states..... | 33 |
| Table A5.2. Land holdings by household group, Jharkhand 1992 | 34 |
| Table A5.3. Population characteristics, main tribal states | 34 |
| Table A5.4. Poverty in tribal groups..... | 35 |
| Table A5.5. Livelihood patterns, case study village Jharkhand, Assam..... | 39 |
| Table A5.6. Livelihood calendar of a typical forest-fringe household in Assam | 40 |
| Table A5.7. Permanent income sources by quartile, Jhabua | 42 |
| Table A5.8. Global case studies of forest environmental Income | 44 |
| Table A5.9. Relative importance of various means of the Livelihood | 45 |
| Table A6.1. Contrasting community forest Institutions..... | 48 |
| Table A9.1. SWOT analysis of Hindustan Paper Corporation Nagaon mill | 63 |
| Table A9.2. Bamboo supply chain pricing analysis: comparison of growers based 5 kilometers and 85 kilometers..... | 64 |
| Table A10.1. Benefit sharing schemes in the focal states..... | 72 |
| Table A10.2. Estimated net revenue shares for alternative forest models and scenarios | 73 |
| Table A10.3. Mean revenue and expenditure per hectare, selected states, 1992-2000..... | 74 |
| Table A11.1. Estimated economic returns to alternative forestry options..... | 76 |

| | |
|--|----|
| Table A14.1. Options for revised institutional roles and responsibilities for community-based forestry . | 91 |
| Table A14.2. Proposed key functions of forest department to support community-based forestry | 92 |
| Table A15.1. Potential forest product supply from reformed JFM programs—Jharkhand | 93 |
| Table A15.2. Potential forest product supply from reformed JFM program—National perspective | 96 |
| Table A15.3. Data and assumptions for national projections of revenue from reformed JFM | 96 |

Figures

| | |
|---|----|
| Figure A1.1. Location of selected villages for field surveys | 4 |
| Figure A1.2. Location of regional consultative workshops | 7 |
| Figure A3.1. Real central plan expenditures for MOEF 1992-03 to 2003-04 | 19 |
| Figure A3.2. Real plan expenditures on forestry 1992/93 – 2002/03 | 20 |
| Figure A3.3. Budget shares, Forestry and Wildlife, MOEF | 21 |
| Figure A3.4. Real state forestry expenditures, Assam and Madhya Pradesh 1995-2002 | 22 |
| Figure A5.1. Livelihood components | 37 |
| Figure A5.2. Permanent income shares, Jhabua | 43 |
| Figure A5.3. Natural resource permanent income shares, Jhabua | 44 |
| Figure A8.1. Sustainability issues with Sal management | 52 |
| Figure A9.1. Cost allocations for kendu leaf, Jharkhand | 61 |
| Figure A12.1. Community-based forest continuum | 78 |
| Figure A12.2. The forest livelihood path and community forestry | 79 |
| Figure A15.1. Income projections for Jharkhand case study | 95 |
| Figure A15.2. Total forest income projections, reformed national JFM | 97 |
| Figure A15.3. Total state revenue projections, reformed national JFM | 97 |
| Figure A15.4. Income per community projections, reformed national JFM | 98 |

Boxes

| | |
|---|----|
| Box A4.1. Policy qualifications on forest rights | 24 |
| Box A4.2. Examples of follow-on acts, rules and regulations, Madhya Pradesh | 27 |
| Box A5.1. Munda relationships with the land | 35 |
| Box A5.2. Traditional functions of village councils | 36 |
| Box A7.1. Attributes of efficient resource assessment systems | 49 |
| Box A9.1. Impact of harvesting and transit rules in Jharkhand | 57 |
| Box A9.2. Kendu leaf regulatory system | 58 |
| Box A9.3. Challenges for developing new bamboo products | 65 |
| Box A9.4. Positive and negative features of patchouli | 68 |
| Box A9.5. What role does NEDFI play in patchouli marketing? | 69 |
| Box A10.1. What is economic rent? | 71 |

Appendix 1. Description of Study Methods in Jharkhand, Assam, and Madhya Pradesh

Background

Sector studies were conducted in three states: Jharkhand, Assam, and Madhya Pradesh. All three are important because of their high poverty levels and the heavy dependence of poor people on forests for livelihoods. The three states offer good contrast in terms of the scale of the resource base, forest cover types, forest utilization, history and scope of JFM, forestry institutional capacities, and local legal, policy, and regulatory frameworks to support community-based forestry.

Jharkhand

Jharkhand covers an area of 79,714 square kilometers, of which about 23,000 square kilometers is forested (52 percent dense forest and 48 percent open forest). About 78 percent of the state's population of 27 million people live in rural areas.

About 16 million people in more than 10,000 villages situated in and around forests are dependent on forest resources for timber, fuel, and nontimber products. Recent assessment of rural poverty in India identifies Jharkhand to be of particular concern because the absolute numbers of poor are high and increasing. In Jharkhand 64 percent of the rural people are below the poverty line, and the proportion of poor in forested areas is even higher. Forest fringe communities represent about 60 percent of the total state population and more than 90 percent of the state's tribal people. Jharkhand's tribal groups strongly identify culturally, and they use the forests for subsistence, as a safety net, and as a source of supplemental income.

The Forest Department's Vision 2010 strategy accentuates the need to shift the focus of forestry programs toward efficient and effective decentralized management of forest resources through village-level institutions. The strategy also highlights a growing concern over forest cover degradation from human and livestock pressures. Recent surveys indicate 12,000 square kilometers of degraded forest cover.

JFM is expanding rapidly in Jharkhand. The state's goal is to register 10,000 committees by 2010, up from the current level of 3,358.

To address the key questions and provide objective solutions, a team of highly respected and experienced international and national consultants was recruited. The team addressed forest management planning systems, forest resource assessment systems, the state legal framework and key issues, marketing systems for selected products, and institutional structures around community forestry. It also assessed community livelihoods, forest use, and perceptions of forestry and JFM. International consultants dealt with marketing, forest management, and resource assessment and worked closely with local counterparts identified with the assistance of the Jharkhand forest department over a period of about three weeks. Field missions included key informant interviews with relevant stakeholders in the private and public sector and in civil society, as well as field visits to communities involved in JFM at various stages of progress. The national legal specialist in forest and environmental law gathered critical legal documents for review and worked closely with the team to identify legal and regulatory issues that hinder

communities from increasing forest livelihoods. An international environmental lawyer reviewed the legal material to provide objective analyses of issues and suggested solutions. A highly respected national research institute (The Energy Research Institute [TERI]) undertook the institutional assessment and gathered broad input from communities in conjunction with local community support organizations. The forest department identified technical counterparts for each consultant specialist to assist with information collection and organizing field visits. To facilitate an integrated study approach, team members met frequently both in the capital (Ranchi) and during field visits to share ideas and information and to discuss potential technical and policy reforms.

The social and institutional work undertaken by TERI was a critical component of the integrated study, providing a “people’s perspective” and valuable insight on social and institutional aspects of community forestry. The TERI inputs were derived from a literature review, results from three one-day stakeholder workshops across the state, and detailed field studies in six communities. The three workshops were representative of the three main forest types in the state (dry deciduous forests in north-western Jharkhand, moist deciduous forests in southern part of the state, and mixed forests in the east). They also focused on areas with a significant number of JFM committees according to forest department records, which also encompassed a high distribution of the major tribal groups in the state, in particular the Munda, Oraon, Santhal, and Ho. The tribal groups in the state have traditionally been located in specific parts of the state. Their socio-cultural practices have been associated in different ways with the forests. Therefore, the concentration zone of tribal groups was considered as one of the important criteria for selection of the regions for the workshops. In addition, the selection of regions for workshop was also based on the presence of local community support organizations for organizing and facilitating the workshops, and grassroots experience of various issues related to poverty reduction and natural resource based livelihood improvement in the state. Based on these parameters, three districts: Seraikela in South Chotanagpur, Hazaribagh in North Chotanagpur, and Dumka in Santhal Pargana region were selected for a workshop. Workshop participants were identified in consultation with local community support organizations and Jharkhand forest department. Participants mainly comprised of tribal village members from the three regions and included women, socio-economically backward castes, as well as a few village heads. A balance was sought among those who had not been part of any program/project as well as a few members of other community support organization led projects/self-initiated forest protection groups from the regions to facilitate better sharing of experiences. In addition, a few representatives of other local community support organizations, researchers working specifically on forestry issues in the region, and one representative of the local forest department office, were invited to share information and village perspectives on forest management, use of forests, local livelihoods and so forth. The workshop objectives were to create a regional context for the baseline information to be gathered in the six selected study villages and triangulate information emerging in the secondary literature review; facilitate a discussion among the village representatives and local organizations about institutional and policy issues relevant to forest resource management; provide a space and opportunity for people to voice their concerns on priority issues; exchange information among villages about comparative forest resource use and promising models of community management; identify leader communities and their characteristics; identify constraints and opportunities for community or joint forest management or income generation, including policy and regulatory barriers, tenure and access and use rights, structure of markets, location of markets, and nature of demand and competition; and gain a consensus on villages to be studied in-depth within that region.

A typology (table A1.1) developed by the World Bank and other stakeholders¹ was used to select six villages (figure A1.1) for more detailed field assessment was made using information from the workshops. The methodology adopted for the village surveys was a mix of both Participatory Rural Appraisal (PRA) tools for collecting village level information and a questionnaire survey for collection information at the household level. These tools helped gather information mainly in group meetings held in the beginning of the survey. The tools were helpful in establishing rapport with the villagers. The mapping exercises undertaken in the beginning were useful, as it encouraged villagers from different hamlets to gather at one place. This helped in explaining the purpose of study and also in deciding samples for household level surveys. Twenty to twenty-five household were selected from each village for a detailed questionnaire survey. In total two to three days were spent in each village. To further understand a broader perspective on some of the main issues and “triangulate” the information, key informant interviews were conducted with resource persons from the forest department and community support organizations. The objectives of the field studies were to: prepare profiles of forest-dependent communities, groups and people; understand local development and priorities; ascertain contribution of forests to local subsistence and income livelihoods; understand community institutions and issues surrounding JFM and broader rural development, local forest management issues and key opportunities and constraints in promoting community based forestry and livelihood improvement activities.

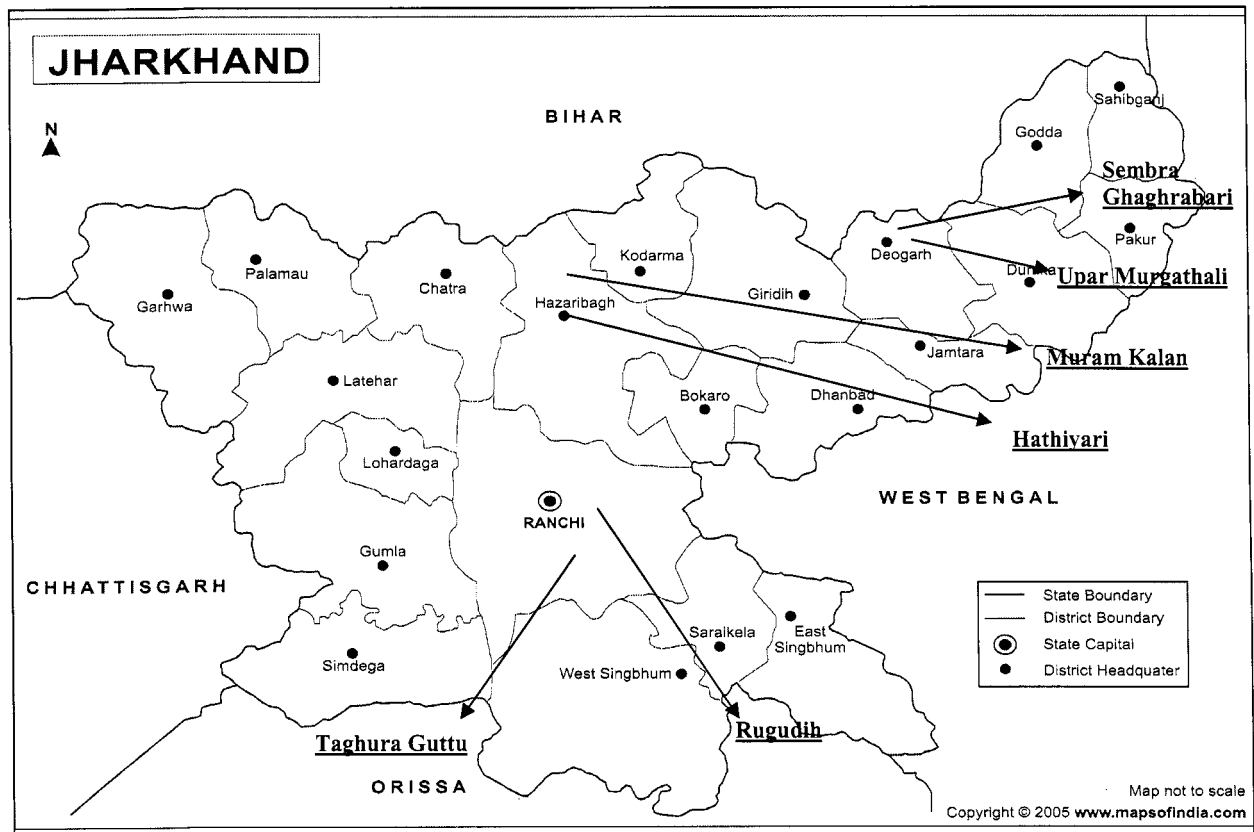
Table A1.1. Typology for village selection in Jharkhand

| <i>Type of forest</i> | <i>Forest division</i> | <i>Quality of forest</i> | <i>Degree of insulation</i> | <i>JFM/</i> | <i>Traditional/non traditional</i> | <i>Name of village</i> |
|-----------------------|------------------------|--------------------------|-----------------------------|-------------|------------------------------------|------------------------|
| Moist Sal | Chaibasa | Degraded | Near main road | Yes | Nontraditional | Thakura Guttu |
| Moist Sal | Seraikela | Dense | Distant from road | No | Traditional | Rugudih |
| Dry Sal | Hazaribagh | Degraded | Distant from road | No | Traditional | Hathyari |
| Dry Sal | Hazaribagh | Dense | Near main road | Yes | Nontraditional | Murumkalan |
| Mixed | Dumka | Dense | Distant from road | Yes | Traditional | Upar Murgathali |
| Mixed /dry Sal | Dumka | Degraded | Near main road | No | Nontraditional | Semra Ghagharbari |

The reporting process was highly collaborative to promote an integrated assessment of community forestry challenges and opportunities in Jharkhand. The legal, forest management, forest resource assessment and marketing consultants reviewed each other’s reports to ensure consistency and accuracy. The background papers were presented to the Jharkhand forest department by the task manager and valuable feedback was used to make revisions.

¹ Forest Trends (Washington, DC); Jharkhand forest department, and community support organizations.

Figure A1.1. Location of selected villages for field surveys²



Source: Maps of India (map used with permission).

Assam

One-third of Assam's total land area of 78,438 square kilometers is forested. The state's forests are among the most biodiversity rich in South Asia. However, forests are under threat from illegal harvesting, fire, overgrazing, and encroachment. High population growth, flooding, and migrants from neighboring states are cited as major causes of forest encroachment. Almost 20 percent of the reserved and protected area forests are subject to various levels of encroachment. The state's forest policy, developed in 2004, outlines a number of progressive strategies and programs related to JFM, forest product marketing, biodiversity conservation, and forest eco-tourism. JFM is just beginning to be implemented and is a major thrust of the new forest policy.

The same team and approach was used in Assam as in Jharkhand over a period of about three weeks. The same approach to social and institutional work undertaken by TERI in Jharkhand was repeated in Assam and again was a critical component of the integrated study, providing a "people's perspective" and valuable insight on social and institutional aspects surrounding community forestry. The field study was conducted in two phases. In the first phase, four regional workshops were organized to gather a broad understanding of the issues across different regions

² Maps have proved a challenge for Jharkhand. Very recent revisions of district boundaries (and creation of four new districts) are not reflected on many digital thematic maps.

of the state. In the second phase, detailed village surveys were undertaken to gather livelihood and social/demographic data at the household level, as separate case studies.

The workshops were aimed to get a consensus on the villages to be surveyed in the second phase of the study and also issues, which needed detailed investigation in the field survey. Specific objectives included: creating a regional context for the baseline information to be measured over time in the selected study villages and triangulate information emerging in the secondary literature review; facilitating a discussion among the village representatives and local organizations about institutional and policy issues relevant to forest resource management and provide a space and opportunity for people to voice their concerns on priority issues; exchanging information among villages about comparative forest resource use and promising models of community management; identifying leader communities and their characteristics; identifying constraints and opportunities for community or joint forest management or income generation; and gaining consensus on villages to be studied in-depth within that region, within the parameters of the forest village typology. The selection of regions for the workshops was done in consultation with the Assam Forest Department. It took account of the following variables:

Physiographic regions: The state of Assam can be divided into three main regions, namely the Brahmaputra valley, the hills of Karbi Anglong and North Cachar and the Barak valley. The Brahmaputra valley covers 72 percent of the state's total area with 18 districts. The hills of Karbi Anglong and North Cachar are mainly confined to the districts of Karbi Anglong and North Cachar Hills. The Barak valley, an active floodplain, in the southern part of the state covers 3 districts. The selection of districts to hold the workshops aimed at representing all three regions. However, conducting a workshop in the region of the hills was not possible due to instable political conditions. The workshops in this report thus represent the Brahmaputra region where three workshops were conducted, representing upper and lower Brahmaputra valley. The fourth workshop was conducted in the district of Cachar, representing the Barak valley region.

Forest type and cover: The four major forest types found in the state can be broadly classified as tropical wet evergreen forests, tropical semi-evergreen forests, tropical moist deciduous forests, and sub-tropical broadleaved hill forests. Tropical wet evergreen forests are found mainly in the eastern and southern state parts of the state. Tropical semi-evergreen forests are found in southern and northwestern parts of the state. Tropical moist deciduous forests are found in central, western and northwestern parts of the state and the tropical broadleaved hill forests in hilly regions of the state, especially in North Cachar and Karbi Anglong districts. However, it needs to be mentioned here that the above distribution pattern is only indicative as usually a mixed pattern is observed with one district itself containing 2-3 forest types. However due to instable political conditions in the hill districts, we were not able to conduct survey in sub-tropical broadleaved hill forest areas. However, in order to compensate for this survey was conducted in the adjoining Cachar district.

Status of JFM: Since JFM program has already been initiated by the forest department in the state from 1998 and has been amended in 2004, the status of JFM program, in terms of number of committees formed by the forest department in different circle was considered as one of criteria for selecting the districts. The districts for workshops were selected from those regions, which had significant number of JFM committees as per the records of the forest department.

Major tribal groups: The tribal groups in the state have traditionally been located in specific parts of the state and based on their socio-cultural and resource use practices have been associated in different ways with the forests in and around them. In Assam the tribal population is broadly categorized into the plain tribes and the hill tribes. The tribes in the hill regions are still associated with the practice of slash and burn agriculture. All the economic activities and cultural practices

of such tribes have traditionally revolved around this resource use practice. In the Barak valley, the Khasi tribe is associated with the practice of “*pan jhum*,” which is considered as having significantly different implications on forestry management. At the same time, the valley is also home to a large number of tea-garden laborers (considered as tribal populations in other states of India). The increasing number of unemployment amongst these groups is also having a significant impact on forestry management in the region. The Bodo, one of the major plain tribes, involved mainly in agriculture, is another example of the variance in the impact of resource use and socio-cultural practices on forestry management. Therefore, the concentration zone of tribal groups was considered as one of the important criteria for selection of the regions for the workshops.

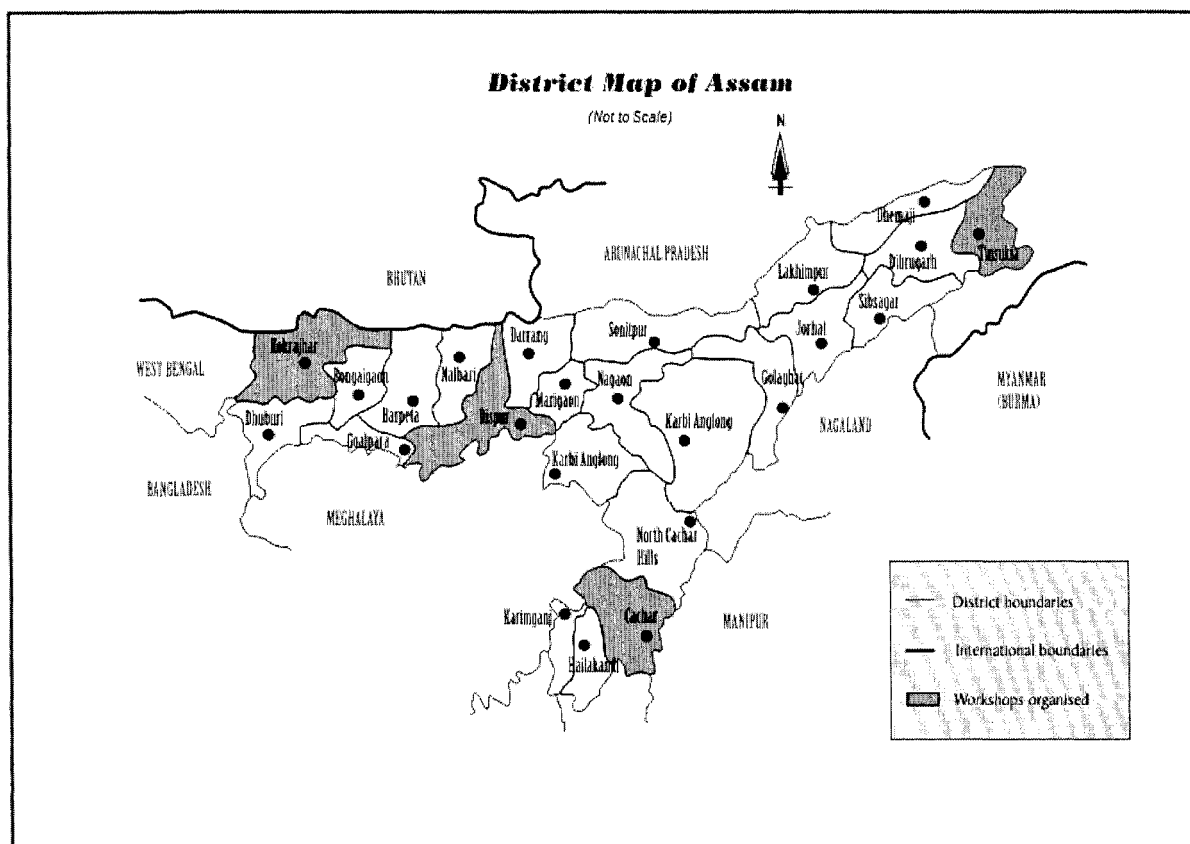
Presence of a respectable local community support organization: The selection of regions for workshop was also done taking into consideration the presence of local NGOs not only for organizing and facilitating the workshops but also for their grassroots experience on various issues related to poverty reduction and livelihood improvement in the state. Therefore, selection of NGOs was done taking into consideration their activities related to natural resource management, promotion of education and income generation activities for poor including women and their experience of working with the forest department.

Based on these parameters, as mentioned above, three districts in the Brahmaputra valley, Tinsukia, Kamrup, and Kokhrajar, and one district in the Barak valley, Cachar, were selected for the workshop (figure A1.2). More details on the characteristics of each workshop site are shown in table A1.2.

The participants for the workshops were identified in consultation with local CSOs and forest department. They mainly comprised of tribal village members from the two regions including women, socio-economically backward communities as well as a few village heads. These members were identified considering on balance mix of those who have not been part of any program/project as well as a few members of other ongoing projects/self-initiated forest protection groups from the regions to facilitate better sharing of experiences. In addition to these, a few representatives of other local CSOs, researchers working specifically on forestry issues in the region and representatives of forest department wherever possible, were invited to gather information and village perspectives on the variation within each region in forest management, use, and livelihoods and so forth. The specific details on profiles of participants are given in detail in the findings of each workshop.

The workshops were organized in a manner to ensure broad participation by various groups as well as better understanding of issues and priorities of different groups. Hence, the approach adopted was to encourage an open discussion on each of the identified topics given in the terms of reference. This ensured understanding of the range of variation among villages of the region, different viewpoints and perspectives of various groups, identification of some of the main problems and concerns, knowledge of positive experiences and models adopted by some groups and so forth and collective information about forestry and livelihood situation in the region.

Figure A1.2. Location of regional consultative workshops



Source: TERI 2005 (map used with permission).

Table A1.2. Workshop characteristics in Assam

| District | Physiographic region | Forest type | Status of JFM | Presence of tribal groups | CSO |
|----------------------|----------------------|--|--|---|---------------------------|
| Cachar and Karimganj | Barak | Tropical semi-evergreen | 21 JFM committees in Cachar, 18 in Karimganj | 1.3 percent in Cachar and 0.3 percent in Karimganj. Tribal groups represented by Dimasas, Khasis, Barmans, Tripuras and Halams. | Deshbandhu Club |
| Kokrajhar | Brahmaputra | Tropical moist deciduous (mixed deciduous) | | 33.7 percent of districts population. Mainly Bodo community. | Green Forest Conservation |
| Kamrup | Brahmaputra | Tropical moist deciduous | | 9.9 percent | Shram-o-Shristi |
| Tinsukia | Brahmaputra | Tropical Wet Evergreen | 18 JFM committees. | 5.8 percent | Ed-En and MAA |

The starting session of workshops were focused on introduction of the participants, explanation about the purpose of the workshop, brief presentation about the characteristics of the region and sharing of experiences of some of locally well-known initiatives of community efforts in forest protection and income generation activities. Of the identified topics for discussion, that is, forest tenure and resource management, utilization of forest resource, forest product marketing and forest management arrangements, the first topic was discussed with all participants to get experience of diverse range of stakeholder present in the workshop. The discussion of second and third topic was organized in small sub-groups to understand the diversity of different groups. These groups then presented their discussions to the other groups. Discussions on forest management arrangements were done again in full house with all the participants, which not only enabled the discussion on different experiences but also identification of regions and few villages for further in-depth study.

The limitations of the workshops could be mainly categorized into those related to time constraint and coordination of workshops. Given the short time for organizing the consultations, the participants were invited through the local CSOs and the forest department. Therefore, in some cases (for example, in the Cachar workshop), there were more participants who were resource persons of the projects undertaken by the local CSO. However, during the process of coordination of the workshops, by forming groups of project and nonproject beneficiaries it was ensured that all the groups had enough space to share their experience. The lack of time also led to difficulty in cross-checking the workshop arrangements, which in the case of the Cachar workshop resulted in the under representation of JFM villages. However, this gap was filled by the enthusiastic participation of the forest department representatives and the well informed CSO participants and community members, who were aware of the program. Not having been able to facilitate a workshop in the hills region due to the unstable political conditions was considered as a major limitation in the study. However, the workshop at Kokrajhar, a newly formed autonomous council, was an attempt to provide an understanding of issues related to forestry management under such an administrative set up. In the coordination of the workshop, flexibility was maintained to accommodate discussions on issues besides the identified topics. Also considering the time factor, the discussions of themes like forest product collection and marketing were combined into one session.

In the second phase, village level surveys were conducted, subsequent to the regional workshops, with the broad aim to further investigate the issues raised in the workshops and prepare a detailed case study of the selected villages. The villages were selected using the typology given in the terms of reference and taking into consideration the suggestions made by the participants of the workshops as well as by the forest department. Based on this, eight villages were selected for the in-depth survey (table A1.3).

The methodology adopted for the village surveys was a mix of both participatory rural appraisal tools for collecting village level information and questionnaire survey for collection information at the household level. The information from these tools was collected mainly in group meetings held in the beginning of the survey. The tools were helpful in establishing rapport with the villagers quickly. The mapping exercises undertaken in the beginning were useful, as it encouraged villagers from different hamlets to gather at one place. This helped in explaining the purpose of study and also in deciding samples for household level surveys. Since the total number of household in the selected villages varied, taking time schedule of the study into consideration, 25-30 households were selected from each village for questionnaire survey. In total, two days were spent in each village. In addition to the village level surveys, to further understand some of the issues and 'triangulate' the information, interviews were conducted with resource persons from forest department and CSOs.

As mentioned previously, not having been able to conduct a survey, due to political instability in the hills region was a major limitation. However during the village survey, this limitation manifested itself while conducting surveys in both the Barak and the Brahmaputra regions. The team was unable to go into villages located in the interior forest areas. Even in villages where permission was granted, there was a considerable limitation as the team was strongly advised not to spend more than a duration of three hours in a village for security purposes. In the district of Kokrajhar, the team was under the constraint of carrying out the survey with accompanying security personnel and the constraint of carrying out the sample survey according to the selection criterion and in the presence of the Councils representatives.

Table A1.3. Village typology for field surveys

| <i>Type of forest</i> | <i>District</i> | <i>Forest division</i> | <i>Quality of forest</i> | <i>Degree of insulation^a</i> | <i>JFM/No-JFM</i> | <i>Forest village or revenue village^b</i> | <i>Name of village</i> |
|--|-----------------|------------------------|--------------------------|---|-------------------|--|------------------------|
| Tropical semi-evergreen Forests | Karimganj | Karimganj | Dense | Accessible | JFM | Forest | Korikhai |
| Tropical semi-evergreen Forests | Cachar | Cachar | Degraded | Restricted access | No JFM | Revenue | Maruacherra |
| Tropical moist deciduous forests (mixed deciduous) | Kokrajhar | Haltugaon | Degraded | Accessible | JFM | Forest | Bishmuri |
| Tropical moist deciduous forests (mixed deciduous) | Kokrajhar | Kachugaon | Dense | Restricted access | No JFM | Forest | Demdema |
| Tropical Wet Evergreen Forest | Tinsukia | Digboi | Degraded | Restricted access | No JFM | Revenue | Paharpur |
| Tropical Wet Evergreen Forest | Tinsukia | Digboi | Dense | Accessible | JFM | Forest | Soraipung |
| Tropical moist deciduous forests | Kamrup | Kamrup West | Degraded | Restricted access | No JFM | Revenue | Chakrapani |
| Tropical moist deciduous forests | Kamrup | Kamrup East | Dense | Accessible | JFM | Revenue | Garopara |

^a Based on observed communication links (difficulty in access)

^b Additional criteria

The task manager presented a summary of the results to the forest department for feedback and to aid in revision of background papers.

Madhya Pradesh

About 75 percent of Madhya Pradesh's population of 66 million live in rural areas. The total land base is 308,242 square kilometers, of which about 77,265 square kilometers are forest cover (57 percent dense forest and 43 percent open forest). The state government is also increasingly concerned over forest cover degradation from human and livestock pressures. Current estimates show 32 million livestock units in the state. About 21 million people in more than 22,000 villages situated within 5 kilometers of forests are dependent on forest resources for timber, fuel, and nontimber products. An estimated 37 percent of the rural people are below the poverty line, and

the proportion of poor in forested areas is even higher. About 25 million people comprise of tribal people and scheduled castes. Madhya Pradesh's tribal groups strongly identify with forests for subsistence and cultural reasons, as a safety net, and as a source of supplemental income. The Forest Department's recent Vision 2020 strategy emphasizes investment and management on state, private and community forests for multiple objectives including environmental security, poverty alleviation of forest-dependent communities, and bridging the gap between supply and demand of various forest products. A key pillar of many of the specific sub-strategies is greater empowerment of forest-dependent communities with respect to forest management responsibilities and authority. JFM is well developed with almost one-third of the total forest area under community management. Madhya Pradesh has more JFM committees than any other state and has the country's largest area of Teak plantation.

A slightly modified approach was used in Madhya Pradesh to reduce costs and take advantage of other ongoing work in the state. The same team of national and international consultants gathered relevant data and other information through intensive field work. However, field surveys and workshops for communities were not held due to the availability of similar information from a broad range of other studies on JFM, community perceptions of forestry, forestry and natural resources livelihoods, tribals, and so forth. Desk studies were used to collect and distill this information into a background paper. Further, tribal groups in Jharkhand are very similar to those in Madhya Pradesh and much of the research done for Jharkhand was applicable in Madhya Pradesh. The task manager presented a summary of the findings to the Madhya Pradesh forest department for feedback and to aid in revising the background papers.

National Report

The background papers drafted for research in the three states contributed heavily to the development of a national report on JFM, augmented by a broad range of national and international material on community forestry, marketing, livelihoods and policy. Initial results from the state studies were presented to the National Forest Commission in December 2004 and valuable comments received that aided in drafting the national report. The presentation team also included experts from Mexico, Honduras and China, as well as experts with wide international experience in community forestry. The material prepared for these sessions was also extremely valuable in drafting the national report. The first draft of the national report was reviewed internally by staff in Agriculture and Rural Development-South Asia. Comments and suggestions helped shape a second draft, which was then evaluated by seven peer reviewers both from inside and outside the World Bank, as well as four anonymous reviewers in India.

Appendix 2. Structure of the Indian Secondary Forest Industry

India's Small Scale Sector

India's small scale sector (all types of industry) is an important component of the Indian economy and contributes significantly to industrial output, exports and employment.³ This sector has seen steady growth during the past decade. The number of units increased from 2.38 million in 1993–94 to 3.44 million in 2001–02. During the same period the production increased from Rs2,416.48 billion to Rs6,903.96 billion and employment from 13.93 million to 19.34 million. Exports increased from Rs290.68 billion in 1994–95 to Rs697.97 billion in 2000–01. The sector plays a major role in India's exports and contributes 45–50 percent of total exports (about 35 percent directly and 15 percent through merchant exporters, trade houses and export houses). It is estimated that a million rupees of investment in fixed assets in the small-scale sector leads to production of goods and/or services worth Rs4.62 million annually, with an approximate value addition of ten percentage points. This sector also creates the largest employment opportunities outside agriculture.

Within the forestry sector, the focus has traditionally been on large enterprises. The Small Scale Forestry Enterprise (SSFE) sector, which processes the majority of forest products and provides employment to millions of poor people, has not received the attention it deserves. India has a very large number of poor (c. 260 million) and indigenous peoples (c. 80 million), many of whom depend on forest-based livelihoods. Millions of poor people earn their livelihood through fuelwood and nontimber forest product collection and through small scale pulp, paper, wood based panel sawmilling, joinery and furniture and safety match manufacture and through processing and sale of wood carvings, sports goods and other products nonforest timber product-based SSFEs alone provide up to 50 percent of the income of 20–30 percent of the rural labor force in India (Government of India 1999).

Structure of India's Forest-based Industries

India's National Forestry Action Program documents the number of medium and larger scale wood based industries in the country some of which could provide opportunities for additional IFC investment (see Table A2.1).

Table A2.1. Number of units of medium and large wood-based industries

| <i>Industry</i> | <i>Number of units</i> |
|-----------------------------|------------------------|
| Paper mills | 21 |
| Newsprint | 5 |
| Rayon grade pulp | 5 |
| Paper grade pulp | 1 |
| Paper board | 35 |
| Plywood | 61 |
| Veneer | 14 |
| Block board and flush doors | 98 |
| Particle board | 11 |
| Fiber board | 5 |
| Safety matches | 5 |

Source: Ministry of Environment and Forests 2001.

³ Drawn directly from a discussion note (World Bank 2005a)

The Paper and Paper Board Industry

Paper and paperboard production is an important forest-based industry in India. It is estimated that in 1993, there were 380 paper mills functioning in the country, of which 359 (94 percent) were small mills having an installed capacity of less than 30,000 metric tons per year (Pradhan and Barik 1999). The current capacity-wise breakdown of the industry is shown in table A2.2.

TableA2.2. Structure of India's Pulp and Paper Industry

| <i>Installed capacity (metric tons per year)</i> | <i>Number of mills</i> |
|--|------------------------|
| Less than 5,000 | 140 |
| 5,000–10,000 | 112 |
| 10,000–20,000 | 88 |
| 20,000–33,000 | 32 |
| More than 33,000 | 34 |

Source: Indian Agro Paper Mills Association, forest industry statistics.

The total installed capacity for paper and paper board is estimated to be 3.9 million metric tons but the actual production is about 2.6 million metric tons (Government of India 1999). It is estimated that 66 percent of the installed capacity is in small units (Pradhan and Barik 1999). Actual production of smaller scale I units has been reported as 1.7 million metric tons. Of raw material used by the pulp and paper industry wood accounts for 43 percent, agro-based fiber (mainly bagasse and straw) - 28 percent and waste paper - 29 percent

The hand made paper industry, a traditional craft, is a recognized village industry under the Khadi and Village Industries Act and receives special assistance from the Khadi and Village Industries Commission. It generally utilizes textile fiber derived from rags, gunny bags, cotton linters and other waste material. According to an estimate made a few years ago, the total annual production of handmade paper by the cottage industry was just 5,000 metric tons with a sale value of about Rs40 million. Most of this paper is used for greeting cards and certain stationery items.

The Wood-Based Panel Industry

There are three major wood-based panel products that are manufactured in India - plywood, including veneers, blockboards and flush doors; fiberboard; and particle board. SSFEs play an important role in the manufacture of all of these products. According to an estimate made a few years ago, there were 480 plywood factories in the country, of which 418 (87 percent) were in the small-scale sector (Federation of Indian Plywood and Panel Industry 2004)

At the time of the most recent survey there were 14 decorative veneer units, with an installed capacity of 33 million square meters. It is not known, however, how many of these were in the small-scale sector. The current annual capacity of decorative veneer units is estimated to be 33 million square meters. There were 98 units that were producing flush doors and blockboards with an annual production of 7.6 million square meters. Of these, 98 units small scale units accounted for nearly a quarter of production. In 1993 there were 11 particleboard manufacturing units in the country with a total installed capacity of 85,000 metric tons, while licenses for six more units had been granted with an additional capacity of 87,000 metric tons. There were three fiberboard mills in India with a total installed capacity of 57,000 metric tons. In addition, there were two units manufacturing medium density fiberboard with an installed capacity of 65,000 metric tons. Fresh licenses had also been granted to one hardboard plant with of 20,000 metric tons capacity and

seven medium density fiberboard plants with a total capacity of 207,000 metric tons. The total annual capacity of particleboard and fiberboard units at present is estimated to be about 207,000 metric tons.

Sawmilling and Wood Working

It is estimated that there are about 23,000 sawmills in India. Ninety-eight percent of these are in the small category with annual log intake up to 3,000 cubic meters. Annual production capacity is estimated at 27 million cubic meters, but capacity utilization is estimated to be 50–64 percent. The last survey undertaken estimated that about 140,000 workers were employed in the sawmilling industry. It was estimated that small sawmills accounted for 82 percent of the total sawn timber in the country. The main uses of the sawn wood are for construction (28 percent); production of boxes (18 percent); joinery (27 percent); furniture (11 percent); Sleepers (8 percent); and other uses (8 percent)

Wood working is a traditional industry in India producing furniture, doors, windows, panels, sports goods, handicrafts, shoelasts and heels, textile mill accessories (bobbins and shuttles), and so forth. In addition, truck and bus body building and the manufacture of agricultural implements are also important wood-based industries which consume a large quantity of wood. It is estimated that construction of the body of each truck consumes 6.25 cubic meters of sawn timber. A large number of wooden agricultural implements are manufactured each year. Most of the work is done in small-scale units or by individual artisans. According to a field estimate, the total annual consumption of wood for this purpose was about 4 million metric tons and there were 54,975 wood working units in the small-scale sector.

Non-timber Forest Products

India's forests yield a large number of diverse nontimber forest products. Estimated annual production of some of the commercially important nontimber forest products is given in table A2.3.

Table A2.3. Estimated annual production of selected nontimber forest products

| <i>Product</i> | <i>Annual production (metric tons)</i> |
|--|--|
| Wild edible products | 101,200 |
| Myrobalans | 132,250 |
| Sal (<i>Shorea robusta</i>) seeds | 709,700 |
| Mahua (<i>Madhuca latifolia</i>) seeds | 697,600 |
| Neem (<i>Azadirachta indica</i>) seeds | 115,000 |
| Other seeds | 57,500 |
| Essential oils | 3,160 |
| Gum (karaya) | 15,000 |
| Resin (from Pines) | 45,000 |
| Katha | 5,750 |
| Tans and dyes | 222,900 |
| Bamboo | 4,716,600 |
| Fibers and flosses | 15,000 |
| Beedi leaves | 360,000 |
| Lac | 30,000 |

Source: World Bank 2005a.

Safety Matches

There are about 12,000 safety match making units in the country, and all except five are in the small-scale and cottage industries category. Eighty-two percent of the production is in the small-scale and cottage sectors. The industry as a whole employs 250,000 people out of which only 6,000 are in the large scale mechanized sector.

Wood Carving

India has a well-developed traditional wood carving industry. The major wood carving centers are located in the states of Uttar Pradesh (Saharanpur and Nagina); Rajasthan (Jodhpur); Arunachal Pradesh (Tirap); Gujarat (Surat and Mahuva); Kerala (Kochi, Ernakulum, Trichur and Thiruvananthapuram); Jammu; Kashmir; and Madhya Pradesh. In India there are about 90,000 carving centers and the number of registered artisans is reported to be 260,000. The actual number of artisans is perhaps higher: for example in Kerala, while there are 3,400 registered artisans, a survey by a private organization revealed that there were 6,000 wood artisans in Thiruvananthapuram alone. The number of people indirectly involved in the industry is much higher. For instance, in Saharanpur District of Uttar Pradesh, it is estimated that while 50,000 to 87,000 people are directly involved in wood carving industry, about 350,000 people are indirectly dependent on it (Centre for International Forestry Research 2002; World Wildlife Fund 2003).

The industry gets its raw material from the Forest Department as well as farmers. The consumption is high. In Saharanpur alone, it is estimated that about 25 truck loads of wood are consumed per day by the industry, which translates into roughly 90,614 cubic meters per year. It is estimated that 2,010 cubic meters of wood are consumed by the industry in Kerala. The main products made are boxes, figurines, idols, jewelry boxes, incense boxes and stick holders, candle stands, photo frames, coaster sets, letter racks, stationery holders, pipe stands, tobacco jars, tables, screens and carved furniture (World Wildlife Fund 2003).

Exporters play a key role in the industry. They obtain orders from foreign buyers and get the products manufactured in their own units. If they are unable to produce the volumes required, they outsource some production to artisans on a contract basis. India is one of the largest producers of wood carved products in the world. Exports amounted to Rs4,344 billion in 2000-01. The main importing countries are the United States (25 percent) and the United Kingdom (12 percent)

Community-Based Production Enterprises: Joint Forest Management

The JFM program, under which local community groups and the Forest Department jointly protect and manage the forest patches adjoining a village and share the benefits, is now over a decade old. Many of the JFM Committees have started producing forest products such as poles, timber, grasses and other nontimber forest products on a regular basis and thus have emerged as important community-based forestry production enterprises. However, market constraints are an issue and few communities if any, are producing timber for sale as roundwood, or processing logs into lumber.

Farm Forestry

The provisions of the Forest (Conservation) Act (1980) and the National Forest Policy (1988) effectively prevent a direct role for the corporate private sector on government's legally classified 'forest lands', which cover 97 percent of the forest area. Outside government forest lands there are restrictions presented by statutory ceilings on the amount of agricultural land that can be held by individual owners. Thus, the creation of large-scale private plantations on either forest or nonforest lands is currently almost impossible.

The net result of this legislation is that farmers are now major producers of industrial wood in India. The growth of farm forestry in some areas such as Uddham Singh Nagar in Uttaranchal and Prakasam in Andhra Pradesh for example creates opportunities to promote the expansion of existing and establishment of new wood-based SSFEs. It is estimated that Uddham Singh Nagar and Prakasam districts alone produce 0.2–0.28 million metric tons and 0.65–0.7 million metric tons respectively of farm grown wood annually. In terms of value, it is estimated that wood worth Rs650 million and Rs560 million respectively is produced annually in Uddham Singh Nagar and Prakasam districts. Thus, just two districts (or rather parts of these districts) are producing nearly 1 million metric tons of wood annually valued at more than Rs1,200 million. Many wood-based enterprises have sprung up in areas where abundant farm grown wood is available.

However, despite these positive farm forestry developments there is a growing shortage of roundwood for many industries in many areas of India.

Social and Economic Benefits of SSFEs

SSFEs play an important role in improving rural livelihoods, especially for the poor. This not only reduces pressure on scarce agricultural land but also decreases stress out-migration from rural areas into cities, where the poor often end up living in slums under sub-human conditions. Some of the characteristics of SSFEs that indicate their suitability for generating local livelihood opportunities for the poor and other vulnerable groups include the fact they are small in size and are often household based; they are predominantly rural and frequently seasonal; they are labor intensive and use simple technologies; they require very low capital inputs; they are accessible to low income and socially disadvantaged groups; they provide direct benefits to the local economy; and women are heavily involved, often forming a majority of the labor force.

Landless and poor women often form a significant proportion of the labor force in many SSFEs. Even among landed farmers, earnings from SSFEs usually improve their income security and reduce pressures that lead to over-exploitation of the agricultural land base. SSFEs also boost the local economy through local purchase of raw material for example, farm grown timber from farmers, and improve the technical skills of the workers. As the capacity of agriculture to generate additional livelihoods progressively declines, more and more rural people turn toward employment in SSFEs and other small-scale enterprises.

A feature of the Indian SSFE sector is that while most of the forests are owned by the government, the bulk of SSFEs are in the private sector. It is estimated that more than 90 percent of India's wood based products are presently manufactured in the private sector. SSFEs are an important players in the forestry sector. As noted earlier, 98 percent of sawmills in India are small, but they produce as much as 82 percent of the sawn timber in the country. About 87 percent of plywood factories and 94 percent of paper mills also fall in the small enterprise category. It is estimated that the wood processing industries in India process about 24–30 million cubic meters of wood per year, the bulk of which is processed by SSFEs.

It is clear from the above account that the Indian SSFE sector is very diverse and encompasses a wide range of activities ranging from production or collection of products such as fuelwood, poles and nonforest products; their processing either by hand (for example, leaf plate stitching) or by modern machinery, and marketing at every level ranging from barter at the local level to export to international markets. The Indian SSFE sector produces a wide range of products such as poles, fuelwood, charcoal, sawn timber, furniture, veneer, plywood, blockboard, fiberboard, particle board, paper, safety matches sports goods, handicrafts, herbal medicines and other nontimber forest products.

Due to the diversity of products, markets and policies, it is difficult to make generalizations for the entire SSFE sector. However there are several emerging investment opportunities constraints to development and anticipated shifts in the structure size and location of SSFEs that could provide a starting point for International Finance Corporation (IFC) and World Bank engagement.

Constraints to India's Small Scale Forest Enterprises

The key constraints faced by SSFEs in India are:

- Despite the past success of farm forestry a growing shortage of quality raw material due to felling bans and restrictions on extraction in several states.
- Growing concerns over environmental and labor issues. In recent years, many court rulings have resulted in the closure of forest produce processing industries on account of enhanced environmental concerns.
- Since economic liberalization there has been growing competition from cheap imports and a trend toward removal of protective policies, such as reservation. Indian SSFEs are generally quite inefficiently run, the quality of products is poor and there is lack of standardization – thus they are quite uncompetitive internationally. There is an urgent need to improve both technical and business management and to attract foreign investment especially in medium scale industries.
- Difficulties of market access. Stringent application of an international intellectual property rights regime is also likely adversely to affect marketing prospects for some Indian SSFEs.

Since it is in these latter areas that IFC and the Bank both have the potential to play a useful role this next section discusses those possibilities.

Raw material shortages. Some of the larger forest industries such as WIMCO (a match company) and several pulp and paper mills have been successful in engaging farmers located close to their mills as outgrowers. Earlier loan schemes had mixed results but current outgrower schemes under which companies raise and sell high quality clonal eucalyptus seedlings and guarantee farmers a reasonable and guaranteed price are proving more successful. For example about 9,000 farming families are now involved producing about 85 percent of the BILT Corporation's annual wood requirement.

BILT's chief executive officer has made the point that such schemes could be accelerated if there existed a mechanism for allowing access to government forest lands by companies that would be willing to collaborate with local communities in raising pulpwood as a cash crop. This has long been a politically sensitive issue because of the risk of preventing access by poorer families to essential fuelwood and grazing lands. In fact such leasehold arrangements are explicitly debarred by the 1980 Forest Conservation Act and 1988 Forest Policy. However a number of factors

suggest that it might make sense for IFC and the Bank to engage in very exploratory dialogue with government on the possibility of pilot scale testing under very strictly controlled circumstances of a scheme under which partnership arrangements might be introduced for areas of degraded JFM community owned forest to be earmarked for pulpwood or other types of industrial wood production. These pilot schemes would need to be worked out through carefully structured and transparently negotiated contractual arrangements that would fully engage and protect the interests of local communities, provide improved seedlings and technical assistance to participating families and a guaranteed minimum price for the wood to be produced.

One of the reasons for suggesting this approach is that some JFM schemes are running into marketing constraints for the output of their woodlands. IFC's Corporate Citizenship Facility could be an appropriate vehicle for testing such pilot scale business /community partnership schemes in India. A scheme along these same lines in Kenya is in an advanced stage of processing with a client company.

What is being suggested above as a pilot scheme for the pulp and paper industry could feasibly be relevant to other types of industry in India. For example, many other SSFEs are facing raw material shortages and are unable to utilize their installed capacity. Capacity utilization is only 50 percent for plywood, 41 percent for decorative veneers, 41 percent for particle board and 60 percent for fiberboard (Government of India 1999). The sports goods industry is facing an acute shortage of conventional sports goods timbers such as mulberry, ash and willow.

Similarly, Saharanpur's wood carving industry has started facing raw material shortages after the Supreme Court ordered the closure of all unlicensed sawmills on 4 March 1997. Further, the state government imposed a 12.5 percent Sales Tax on wood brought from outside the state. It is estimated that due to the Supreme Court's ban, Saharanpur's handicrafts industry has suffered a loss of Rs280 -300 million (World Wildlife Fund 2003).

The safety match industry is facing shortage of raw material, especially of veneer quality wood. According to one estimate, the projected shortfall for the year 2000 was 900,000 cubic meters. While farm forestry plantations, especially poplar, have increased raw material availability in the north, most match units are located far away in south India.

Environmental concerns and judicial activism. The Supreme Court order to close unlicensed sawmills mentioned above is not an isolated case. There is a generally greater awareness about environmental issues and the judiciary has passed several judgments to protect forests and the environment, which have adversely affected several SSFEs. The most important court case for the forestry sector in recent years is the ongoing case of T.N. Godavarman Thirumulpad v. Union of India, under which, starting in December 1996, the Supreme Court of India has issued sweeping directions to oversee the enforcement of forest laws across the nation.

Some of the important directions of the court affecting forest-based industries were as follows:

- The felling of all trees in all forest was to remain suspended except in accordance with a working plan approved by the Central Government.
- Licenses given to all wood-based industries (in the North East) were suspended.
- A complete ban was introduced on the movement of cut trees and timber from any seven north eastern states of the country either by rail, road or water ways. The Indian railways and state governments were directed to take all measures necessary to ensure strict compliance of these directions. Railways were asked to shift immediately to concrete sleepers instead of using wooden sleepers. Defense establishments were also asked to find alternatives to various wood-based products.

Economic liberalization and the WTO regime. With increasing trade liberalization and tougher environmental standards now being applied to many straw and bagasse mills some smaller sized agricultural crop waste based pulp and paper mills are finding it increasingly difficult to survive (for example, a study by Rao 2001) indicated that 211 such mills had already been closed).

Secondly, GOI is moving to adoption of measures that will facilitate direct foreign investment. For example the regime of licensing has been reduced to seven industries and this list no longer includes the pulp and paper industry. This means that large industries can now freely enter many fields where earlier their entry was restricted. In recent years as many as 39 products have been de-reserved: 15 items on 3 April 1997, 9 items on 3 February 1999, 1 item on 1 January 2001 and 14 items on 29 June 2001.

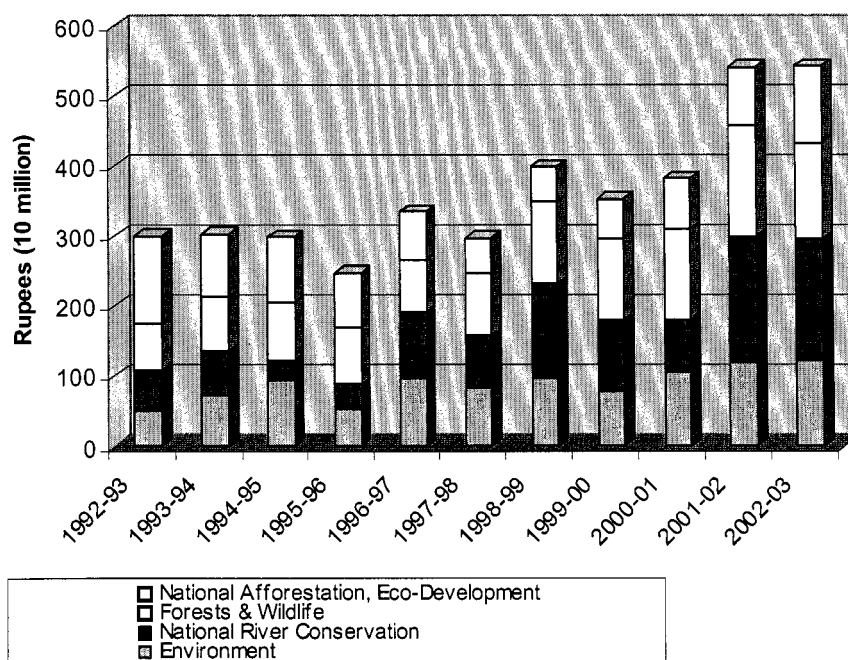
In short, it seems possible that foreign investment could be attracted for expansion of a few existing pulp and paper or construction of new mills of an economic size that would be able to withstand foreign competition. Also for expansion and upgrading the efficiency of many of India's medium scale wood base panel (plywood, medium density fiberboard, etc) plants (which in turn will create increased market opportunities farm forestry and the output from JFM owned forests). If that hypothesis is correct this trend is likely to create significant opportunities for further IFC investment. IFC has had much experience of financing both pulp and wood based panel industries in many different countries.

Poor management and technical skills. Many SSFEs suffer from inefficient operations and poor quality of products resulting in loss of markets. For example, the sawmilling industry in India is highly inefficient. The conversion rate is very low. It is estimated that the conversion yield from log form to graded sawn timbers is only 45-50 percent, as compared to 55-65 percent in developed countries. Only 560 sawmills are following Indian Standards on grading and produce only 2.4 percent sawn graded timber. Wood waste produced by sawmills is rarely put to any commercial use, with nearly 90 percent of it being used as fuel. Seasoning and preservative treatment of wood is not common. Air seasoning of wood is carried out by only 470 mills and only 7 percent of the sawn wood produced is kiln seasoned. Wood treatment is even rarer. A pressure impregnation facility is available in only 118 units and a mere 0.4 percent of sawn wood is treated with wood preservatives.

Appendix 3. Fiscal Analysis of the Forest Sector

Real expenditures from the centre are rising to meet timber supply challenges. At the national level, Ministry of Environment and Forestry (MOEF) allocates central plan financial resources to forestry programs both through individual states, and independent national activities such as research and development. These funds make up the majority of public resources allocated for capital investment and recurrent costs in forest management in India. In nominal terms, the MOEF central plan expenditures were about Rs990 Crore in 2002-03 (about \$220 million), representing roughly four percent of national GDP. These expenditures are spread across four main budget centers in MOEF: Environment; Forests and Wildlife; National Afforestation and Eco-development Board; and the National River Conservation Directorate.⁴ In real terms (1993 = 100), public expenditures across these four thrusts have increased from just under Rs300 Crore in 1992-93, to Rs543 Crore in 2002-03, representing aggregate real growth of 81 percent (figure A3.1), or an annual average of 8.1 percent over the 10- year period.

Figure A3.1. Real central plan expenditures from MOEF 1992-03 to 2003-04



Source: MOEF Annual Reports, various years.

The budget headings most closely aligned to “forest management” are Forests and Wildlife, and those of the National Afforestation and Eco-Development Board. In real terms, the total budget for these elements has increased from Rs192 Crore to Rs247 Crore between 1992-93 and 2002-03, or about 29 percent over the 10 year period (2.9 percent per year on an average basis (figure

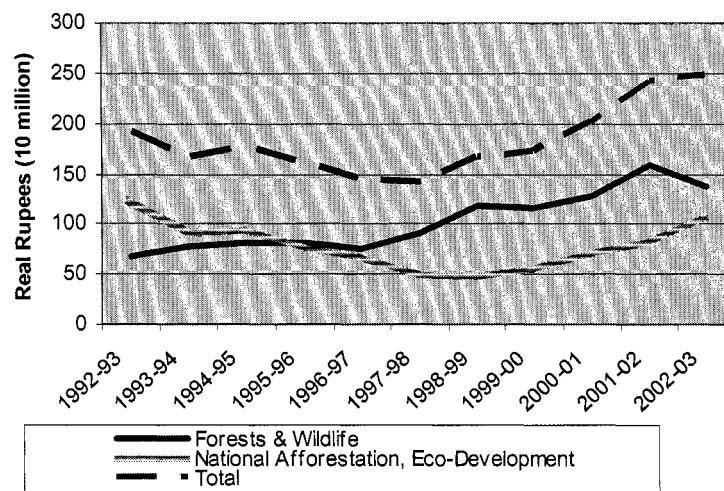
⁴ Environment comprises of national environmental management and protection services ; Forests and Wildlife covers management programs for forestry, community forestry and wildlife; National Afforestation and Eco-development Board delivers the National Afforestation Program (NAP) through Forest Development Agency structures in each state and JFM committees, National Action Plan to Combat Desertification, and grants to voluntary organizations; National River Conservation Directorate implements river system management, pollution control, monitoring.

A3.2). Of interest is the steady increase in expenditures by the National Afforestation and Eco-Development Board, which delivers the National Afforestation Program (NAP). The NAP is comprised of four sub-programs including Non-Timber Forest Products (nonforest timber product); Integrated Afforestation and Eco-Development Scheme (IAEDS); Area Oriented Fuelwood and Fodder Project (AOFFP); and Association of Scheduled Tribes and Rural Poor (ASTRP). Countering this increase in budget however, is the worrying dip in real budget expenditures for Forestry and Wildlife from 2001-02 and the fact that the nominal allocation for 2003-04 were the same as the previous year (Rs265 Crore). This is cause for concern since the Forestry and Wildlife budget underpins forest management activities such as research and development, and forest inventory surveys, which are fundamental to monitoring and improving the performance of forest management programs. A breakdown of the Forestry and Wildlife outlays (figure A3.3), based on averages over 1998-89 to 2001-02 shows that the budget is allocated among five major program areas, with the majority of funds directed to Research, Development, Education and Training.⁵

A main feature of Figure A3.3 is the relatively low share allocated for forest surveys and policy, which are critical elements to support community forest management programs, yet appear to receive inadequate funding. In addition to central plan financial support, states also allocate budget support to local Forest

Departments. Another concern is delivery of central plan expenditures relative to budget allocations. Of the four NAP components delivered by the National Afforestation and Eco-Development Board between 1997/98 and 2001/02, on average 71 percent of sanctioned budgets were released for expenditure. The lowest performing component was the ASTRP with 55 percent of budgets released over the three year period. This is worrying since these expenditures are directed at tribal communities, who are a major group of forest dwellers. A main conclusion of the previous analysis is that MOEF, through central plan allocations, is providing the bulk of finance for capital investment in forest management for plantations (through community programs), and recurrent forest research, protection, monitoring and inventory. While real expenditures are rising, questions remain about how well these are supporting the ongoing evolution of JFM at the state level.

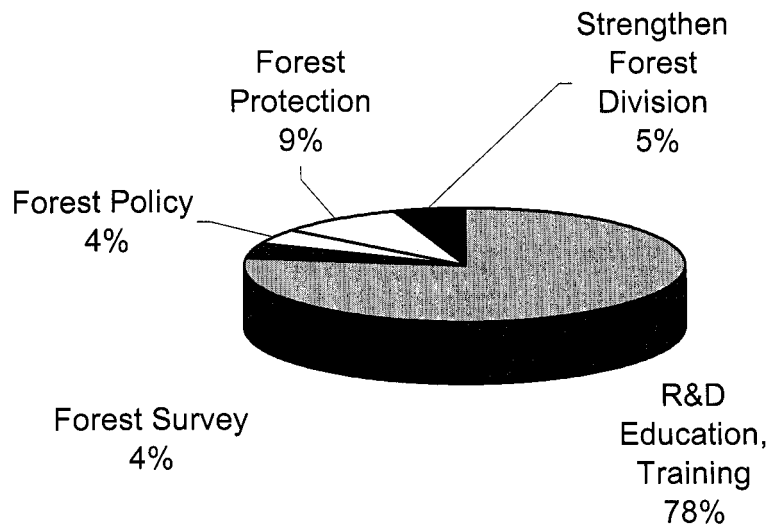
Figure A3.2. Real plan expenditures on forestry 1992/93 - 2002/03



Source: National Planning Commission, various years.

⁵ Forest Survey supports national forest cover surveys by Forest Survey of India in Dehradun; Forest Policy deals with policy development and forest sector information; Forest Protection includes programs to reduce losses from fire, insects and disease; Strengthen Forest Division provides support to forest agency infrastructure; Research, Development, Education and Training supports the Indian Council of Forest Research and Education, and several national forest research institutes including genetics, plywood, coastal and marine management, wildlife and forestry. It also supports environmental and natural resource training programs and curricula development and the training programs for Indian Forest Service.

Figure A3.3. Budget shares, forestry and wildlife, MOEF



Source: MOEF Annual reports, various years.

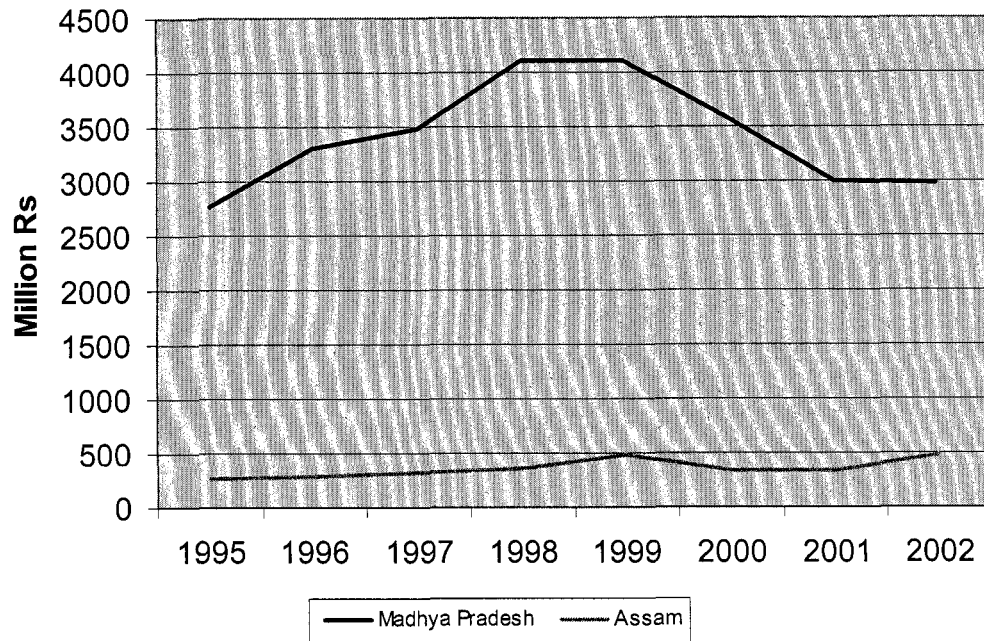
Real state budgets are rising slowly but mainly cover recurrent costs. In Madhya Pradesh⁶, forest department real expenditures from state allocations (1993=100), increased from Rs2.8 billion (\$61 million) in 1992 to Rs3.0 billion (\$66 million) in 2002 (figure A3.4). The rising trend to 1999 was due to budget support from the World Bank JFM project in the state. As Figure 8 illustrates, since the closure of the project, real expenditures are 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. By contrast, research and training account for less than two percent of the total recurrent expenditures funded by the state. A high proportion of the recurrent expenditures in Madhya Pradesh cover staff salaries and benefits, which has doubled every five years to stay in line with inflation (JPS 2002). National transfers through central programs averaged about Rs2.4 billion (\$53 million) from 1997-98 to 2001-02. In Assam, real state budget allocations for forestry peaked in 1999, declined and then have slowly increased to 1999 levels. Most nonplan expenditures are for recurrent costs and mainly cover salaries. The state has few funds for capital investment; virtually all investment resources come from national forestry programs. In Jharkhand⁷, the allocation of annual state budget to forestry in undivided Bihar forest department was less than 0.7 percent; this figure is now three percent. Non-plan operating budgets are about Rs1 billion (\$22 million), with 70 percent spent on forest management. This would include forest establishment and production. Salaries, overheads and travel are funded through a separate nonplan budget of about Rs1 billion through the Principle Chief Conservator of Forests. The focus of expenditures is clearly on field activities linked with forest establishment and rehabilitation. A worrying feature, common to the other two states, is the

⁶ Detailed budget data were available from the Forest Department

⁷ Detailed budget figures were only available for 2002-03

relatively small budget allocations to critical supporting forest management functions such as inventory, planning and research.

Figure A3.4. Real state forestry expenditures, Assam and Madhya Pradesh 1995-2002



Source: JPS Associates 2002 and World Bank 2005b.

Appendix 4. National and State Legal and Policy Frameworks

Key National Legal and Policy Milestones

Indian Forest Act, 1878

The expansion of the Indian railway system at the turn of the 19th century led to the development of the Indian Forest Act in 1878. In the Act, individual states were recognized as sole proprietors of classified forest lands. State forest lands were defined as lands not falling under 'continuous' cultivation or 'permanent' settlement. Traditional forest practices, including grazing, forest-based gathering, and forest-based shifting cultivation were generally rejected as a basis for allocating private property rights when forests were demarcated. According to a Forest Department resolution in 1890, previously defined rights of access and use were to be redefined by Government as 'privileges' for specific tribes, castes, villages and organizations. This marks the beginning in a long history of alienation of traditional rights, which has persisted to the present. The Act is generally viewed as vesting exceptionally strong powers in the government for control over forest resources.

Indian Forest Act, 1927

The new Act incorporated few substantive changes over the 1878 Act and it remains the primary legislative basis for state forest management today. After Independence in 1947, the Government of India formally adopted the 1927 Act. Under the new Indian Constitution, forests were placed within a 'state list', which gave state legislatures a primary right to make forest laws. It also gave the state wide powers to control forests and land not under government ownership, including use of expropriation. One main objective of the 1927 Indian Forest Act⁸ was to consolidate laws relating to forests, transit of produce, and duty levied on timber and nontimber forest products. A striking feature in the Act is the absence of any definition of forest or forestland. The recent attempt by the Supreme Court to assign a meaning to the term 'forest' as per the dictionary definition has seen a spate of legal interventions due to its wide ambit. Recent interpretations could even cover trees on private lands. Forest may include private, common pastureland or cultivable land.⁹ The Act also reinforced the three classes of forests established in the 1878 Forest Act; namely reserve, protected and village forests. Of the three forest categories established by the Indian Forest Act 1927, the most restricted to communities for local use is reserved forest, identified as having high commercial values and amenable to sustained commercial timber exploitation. Stronger state control of reserved forests was sought, which involved either the relinquishment, or transferal of other claims and rights through a settlement process, although very occasionally, limited access was granted (Lawbuary 1999). Reserved forests may be constituted by the State government on any forestland or wasteland, which is the property of the government or over which the government has proprietary rights. Most uses by local people were prohibited unless specifically allowed by a forest officer in the course of settlement.¹⁰

National Forest Policy, 1952

The National Policy of 1952 promoted the colonial goals of industrial forestry. The 1952 policy also classified the forest of India, whether state or privately owned, into four categories; Protection Forests, National Forests, Village Forests and Tree Lands. The policy also declared that village communities should not be permitted to use forests at the cost of "national interest,"

⁸ Along with amendments made to Ss. 2 (4A), 26 (1), 33(1), 42, 52, 66A, 67, 68 and 79

⁹ See Upadhyay S. and Upadhyay V; 2002; Hand Book on Forest and Wildlife Laws and the Environment; Lexis Nexis Butterworths

¹⁰ Indian Forest Act 1927, Sections 3-26.

which was identified with defense, communications and vital industries. Emphasis was laid on conversion of low value mixed forests to high value plantation of commercial species. Commercial exploitation and degradation of India's forests increased dramatically after 1947 in a post-independent India. The 1952 National Forest Policy guidelines were largely directed toward the supply of cheap timber and nontimber forest products for state-sponsored industrialization and modernization. Concessions were leased to large contractors at low rental rates and encouraged high rates of harvesting often at unsustainable rates. Given the status of monitoring systems at the time, the authorities were hard pressed to track forest loss with any precision. The policy also emphasized scientific conservation, which involved further regulation of local rights and restrictions of privileges of users of the forest. The policy supported the need to restrict forest rights for communities, which may have had traditional rights prior to the Forest Acts of 1878 and 1927.

Indian Wildlife (Protection) Act 1972

This Act lays out the legal framework governing India's system of protected areas such as national parks. With respect to forests, it defines very tight restrictions pertaining to the removal of specified plants from protected areas. The legal framework under this Act is much more restrictive for communities inside or adjacent to designated protected areas due to concerns over loss of biodiversity. However, this gives rise to a dual system of community rights and responsibilities. Those inside or adjacent to protected areas and participating in a community natural resource management program generally enjoy fewer rights and benefits than JFM communities outside 5 kilometers in reserved and protected forests. Confusion arises when communities are on or close to the 5-kilometer boundary.

National Commission on Agriculture, 1976

The National Commission on Agriculture 1976 also supported industrial use of forest¹¹ with a focus on clear felling of valuable mixed forests and planting cleared areas with suitable fast growing species yielding higher returns. The 1976 Commission also identified the need to provide small timber, fuelwood and fodder for the rural population. However, this was subject to some qualification (box A4.1). In 1976, forestry was added to the concurrent list of the Constitution of India, meaning that the Centre and States would share responsibility and control over forest matters. Although the Government of India retains the power to legislate on forestry issues, this can only occur after consulting the states. The responsibility of administering the forests remained primarily with the state government.

Box A4.1. Policy qualifications on forest rights

"Free supply of forest produce to rural populations and their rights and privileges have brought about destruction to forests, so it is necessary to reverse the process. The rural people have not contributed much toward the maintenance and regeneration of the forests. Having overexploited the resources they cannot in all fairness expect somebody else will take the trouble of providing them with the produce free of charge."

Source: National Commission on Agriculture, 1976

Forest Conservation Act, 1980

The Forest Conservation Act 1980, allowed the Government of India, through Ministry of Environment and Forests (MOEF) to fight growing deforestation and indiscriminate timber harvesting (Khan and Pillai 2001). Timber leases were gradually phased out. The Act also sought to regain further control over forests by restricting the state government's power to de-reserve¹² a forest. It also restricted the use of forest land for nonforestry purposes without the prior approval of the central government. In 1988 two more important provisions were added where clear felling

¹¹ Report of the National Commission on Agriculture, 1976, Divan and Rosencranz (2001)

¹² To remove a designated forest from the "reserved" category to allow use of the land for other purposes

of natural forests were prohibited without the permission of the Central Government. Further leasing of forest land to private individual, community or corporations were also brought within the purview of the Central Government. The Act prevents states from allocating forest title to encroachers. Subsequent moves to regularize encroachment have been limited to people moving into forest areas prior to 1980. Contravention of the provisions of the Act could entail simple imprisonment extendable to fifteen days. The Act is also provided for punishment for offenders from government departments.¹³ The Forest Conservation Act becomes critical in the context of participatory management of forests. While it provides some important accountability measures with respect to State government actions, narrow interpretations of the Act's restrictions on nonforest uses could limit the types of activities that could be initiated under JFM.

National Forest Policy, 1988

The National Forest Policy of 1988 was a total paradigm shift vis-à-vis the earlier two policies. Unlike the industrial use oriented policy statements of 1952 and 1976, the 1988 policy gives major emphasis on the ecological roles of forests, and envisages that the rights and concessions from forests are to be primarily for bona-fide use of communities living within and around the forest areas, especially tribals. Such communities are required to be motivated to protect and develop such forests from which they derive their benefits.¹⁴ The policy also stipulates that the rights and concessions relating to forest produce of tribal community and other poor living within and near forests must be fully protected. The domestic requirements of fuel-wood, fodder, minor forest produce and construction timber should be the first charge on forest produce. It is also envisaged that these and substitute materials shall be made available through appropriate means.¹⁵ With domestic energy, fuelwood would be substituted as far as practicable with alternative sources like biogas, solar energy, liquid petroleum gas, etc.¹⁶ The policy further stipulated that any diversion of forestland should be subject to careful scrutiny by specialists and consider social and environmental costs. The policy is a strong guiding document that influences the executive as well as the judiciary through decisions of the courts.¹⁷ Notwithstanding the laudable objectives of the policy, the necessary corollary changes are not yet fully reflected in formal law. The policy also discourages clear felling in well-stocked natural forests, but not in plantations (Khan and Pillai 2001).¹⁸ Therefore, working plans based on accepted silviculture models for managing natural forests, and which could be implemented by communities, become ineffective instruments for addressing the broader range of community needs. Plantations, while providing a source of commercial timber, do not have the ecological basis to support the richer mix of timber and nonforest timber products that are often desired by communities. The policy has been criticized for calling for forest conservation without offering practical options for implementation, and sustaining the all-encompassing role of the forest departments, including the contradictory functions of being both the forest authority, and operating as a public enterprise in commercial forest production.

Additional Policy Circulars from MOEF

MOEF has issued a number of important and very positive policy changes through government orders, or "circulars," but in many cases implementation has been fragmented and uneven. For example, a 1990 policy circular made it possible for state governments to engage communities in

¹³ See Section 3-A and 3-B of the Forest Conservation Act, 1980.

¹⁴ Section 4.3.4.2 of the Forest Policy, 1988

¹⁵ Section 4.3.4.3 of the Forest Policy, 1988.

¹⁶ Section 4.3.5, Forest Policy 1988

¹⁷ A case in point is the on-going T.N. Godavarman case in the Supreme Court where the main petition has been filed in order to give effect to the forest policy of 1988.

¹⁸ The policy was given legal footing by amending the Forest Conservation Act 1980.

shared forest management (making JFM a reality), but states were not mandated to do so. As a result, progress with JFM across India has been uneven. Another 1990 circular provided guidance on resolving tenure disputes at the state level, but this has not been fully implemented. As another example, in February 2000, MOEF issued a circular requesting that JFM committees be registered under the Societies Registration Act in recognition that JFM committees had weak legal standing in most states. Another circular provided for special dispensations for tribals. Further, the guidelines called for 50 percent of the JFM committee general members, and 1/3 of the executive be women. The guidelines also indicated that JFM should be extended from degraded forests to include good forest areas. The guidelines also requested JFM to be supported by micro-plans prepared after detailed PRA exercises, and with clear market linkages, especially for nontimber forest products. State governments were requested to constitute divisional and state-level representative forums or working groups as conflict resolution bodies. The guidelines also provided mechanisms for benefit-sharing and indicated that these schemes should be transparent. Finally, the guidelines called for concurrent monitoring programs. While these kinds of guidelines represent a clear recognition of key legal and policy issues in community forestry, implementation has been weak at the field level.

Central Issues with State Legal Frameworks for JFM

The concept of JFM is a central feature of the 1988 National Forest Policy, and was accordingly initiated and endorsed by all State and Union Territories. However, there have been no accompanying changes in the national legal framework for JFM. Instead, JFM is operational through administrative orders (government orders) that have little legal underpinning; this is the situation in Jharkhand and Madhya Pradesh. The government order (or circular) is simply a set of guidelines that are to be followed to carry out the JFM program, following the direction in the national JFM circular and any subsequent circulars. Therefore in case of any conflict with the Indian Forest Act 1927 or Forest Conservation Act 1980, the national JFM circular and state-level government orders may be overridden by these legislations. These resolutions are easy to modify, which on one hand lends flexibility, but on the other, deprives them of being certain and legally secure. Since JFM has not been formalized under any law in states such as Jharkhand and Madhya Pradesh, its provisions cannot be challenged in, or be enforced by a court of law. In a few states including Uttar Pradesh, Himachal Pradesh, Jammu & Kashmir and Assam, JFM is linked to state legislation through an amendment. The draft JFM resolution attempts to formalize the process under the Assam Forest Regulation, 1891. This may give the JFM program in Assam a stronger legal footing at the state level. However in all three states including Assam, most forests continue to be looked upon as property of the State and management responsibilities are delegated to local communities through JFM as an administrative arrangement; therefore JFM falls far short of any real devolution of power to local communities. Another legal issue at the state level is the actual process of constituting a JFM committee. While the process is well-defined in the JFM resolutions of each state, it needs to be reviewed based on legal analyses. All three states have a range of historic resource rights held by tribals that are not well-recognized by current JFM policy and legal frameworks.

One fall-out of the uncertain legal status is the difficulty in addressing encroachment issues. It is very difficult to prosecute people encroaching on forests allocated under a JFM Resolution. Also, where JFM is initiated with only one village in a small forest area supporting several villages, the other villages may be excluded from accessing the forest, even where they may have historic forest rights to these resources. In Madhya Pradesh, evolving state legislation raises potential conflicts with historic “nistar” rights, which are historic rights to gather basic needs for rural life

form the forest, and can include timber, fuelwood, grazing lands and fodder (box A4.2).¹⁹ It is not clear if villages converting to JFM keep their nistar rights. If so, there is potential for conflict with broader forest management goals of the forest department. While the nistar rights are protected under law, in reality the JFM resolution without legal foundation appears to take precedence in the field. The resolutions also generally state that once a committee is constituted, the jurisdiction of the committee shall be decided by the district forest officer on deliberations with the committee. Yet the discretion of the officer to decide the jurisdiction can run contrary to the existing rights regimes of the people living in the particular area.

Box A4.2. Examples of follow-on Acts, rules and regulations, Madhya Pradesh

Just as national policy and law governing forestry and communities has evolved at the national level, so it has evolved at the state level. Madhya Pradesh provides a good example of ongoing legal reforms around JFM and historic rights. It is not clear if in all cases, the state laws fully mesh with national legislation, and also address issues of historic land/resource rights by some communities or tribal groups. Examples of state legislation impacting on community-based forestry include:

- *Madhya Pradesh Land Revenue Code, 1959* imposes a duty on the revenue officer to prepare a *nistar patrak* for the unoccupied land in a village falling under the revenue department
- *Madhya Pradesh Protected Forest Rules in 1960* restricted the rights under nistar. In protected forest areas, nistar includes timber of unreserved trees, or reserved trees where expressly sanctioned in that behalf, for agricultural implements, building new houses or repairing houses and cattle sheds of the agriculturists, and surface boulders, muram, sand, chhui and clay.
- *Madhya Pradesh Van Bhumi Shaswat Patta Pratishanharan Adhiniyam, 1973*, revoked all perpetual leases¹⁶ whether granted by special grant, or on contract on forestland
- *Madhya Pradesh Disposal of Timber And Forest Produce Rules 1974*, was enacted where nistar has been defined, to mean and include dry wood fit only for fuel, dry bamboo, grass, thorns, leaves and bakkal; a distinction has been drawn between forest produce for bonafide domestic requirement and forest produce for commercial use. The consumers with restrictive demand in small quantity of forest produce for their own domestic requirement or for local sales may be removed and disposed of under free pass in accordance with the exemptions granted.
- *Madhya Pradesh Forest Village Rules, 1977* govern the administration of such forest villages, which are administrative units having no legal mandate for revenue benefits. These rules are applicable on land declared as protected forests and reserve forest under of the Indian Forest Act, 1927. While constituting a forest village land is required for settlement of tribals, for nistar and for community purposes. The rights given to the tribals for grazing cattle is same as the rights given to villagers in any revenue village.
- *Madhya Pradesh Janjatiyon Ka Sanrakshan (Vrikshon Mein Heit) Adhiniyam, 1999* aims to protect tribal property and trees growing on their lands from exploitation
- *Madhya Pradesh Lok Vaniki Adhiniyam, 2001* and the rules thereunder introduced the concept of social forestry on private lands

Source: Background legal studies for Madhya Pradesh.

It is also unlikely the district forest officer will have the legal competence to address certain tenurial securities, especially in protected forest areas where JFM is prevalent. The binding instrument to be concluded between the forest department and the community participating in the JFM program is the Memorandum of Understanding (MOU). The MOU is not a legal contract. It is also heavily weighted in favor of the government. For example, the right to recall, the right to proceed with or disband a JFM program tends to vest exclusively with the district forest officer. A joint program implies an equal sharing of power but this is missing in the MOUs used in all three states. Under current JFM resolutions in each state, the district forest officer is usually the competent authority for registration of the committee with Forest Department, but there are

16. Section 237 (1), Madhya Pradesh Land Revenue Code, 1959.

serious legal questions about this process. Registration is a legal process, which is normally done under the Indian Registration Act, or other institutional registration acts such as the Society Registration Act, The Cooperative Society Act, and the Trust Acts. Any such power given to the district forest officer for committee registration without proper legal authority would not be tenable in law. Therefore any such registration process by an incompetent authority vis-à-vis registration would be legally invalid. The MOEF Guidelines of 2000 suggests the registration of JFM committees as societies under the Societies Registration Act, 1860. But, legal questions arise from this suggestion. The Societies Registration Act 1860 is an Act to improve the legal condition of societies for promotion of literature, art, science and for diffusion of knowledge as well as for charitable purposes. This fundamentally is at variance with the basic objective of JFM, which is an incentive-based management strategy.

Legal and Policy Conflicts

Part of the problem with the current legal framework for JFM is contradictions between progressive policy intentions and existing law. As an example, the amended Forest Conservation Act 1980 and the National Forest Policy 1988 contain a number of conflicting articles (table A4.1).

Table A4.1. Conflicts between 1980 Forest Conservation Act and 1988 National Forest Policy

| <i>Provisions of the policy</i> | <i>Contradicted by</i> |
|--|---|
| Minor forest produce should be protected, improved and their production enhanced (section 3.5). | Forest Conservation Act prohibits plantation of horticulture crops, palms, oil bearing and medicinal plants on forest lands, unless prior permission of the Government of India has been taken. |
| Degraded lands should be made available on lease or on the basis of a tree patta scheme to individuals and institutions (section 4.2.4). | Forest Conservation Act bans assignment or lease of forest land to the people or institutions not wholly owned by government. |
| Rights and concessions enjoyed by the tribals should be fully protected (section 4.3.4.3). | Rights and concessions, including grazing, should always remain related to the carrying capacity of forests (section 4.3.4.1). |
| Domestic requirement of tribals should be the first charge on forest produce (section 4.3.4.3). | MFPs and substitute materials should be made available through conveniently located depots at reasonable prices (same section). |
| Land laws should be modified to facilitate individuals to undertake tree farming on their own land (section 4.2.4). | Appropriate regulations should govern the felling of trees on private holding (same section). |

Source: Saxena 2005 – personal communication.

At the state level, the case of horticulture in Jharkhand illustrates the complexities of the current legal framework. Under subsection 1 of Section 6 of the Bihar Land Reforms Act 1950, all lands used for horticulture and, which were in Khas possession of a tenure holder are deemed to be settled by the state as Raiyati. Land used for horticultural purposes includes growing fruits, flowers, or vegetables. Therefore, such lands which are in Khas possession of the landlord and which were used for growing fruits, flower and vegetables have to be treated as Raiyati land. As per Clause A of section 23A of the Bihar Tenancy Act 1885, they are entitled to cut down trees or bamboos standing on such lands, and to appropriate the flowers, fruits, or other products.

However, on lands which are used for growing nonfruit-bearing trees, the state still has control over such trees. Subject to local customs or usage, the incidents of homestead tenancy which are provided under section 182 of the Bihar Tenancy Act 1885, are to be regulated by the provisions applicable to Raiyati lands. Even here, the provisions of clause 23A of that Act comes into play, especially with respect of trees on such lands. The trees standing on such lands thus belong exclusively to the outgoing landlords irrespective of whether these are fruit or nonfruit-bearing ones.

PESA – Panacea for Community-Based Forestry?

Another key legal and policy initiative was the 73rd Constitutional Amendment of 1992, which specified three levels of local institutions; village level (*gram sabha*); block level, and district level.²⁰ The amendment supports the government of India's goal for decentralization of governance and gives *panchayat* raj institutions a statutory mandate, potential to raise local finances through taxation. Under the Panchayat Extension to Scheduled Areas Act, 1996 (PESA), *gram sabha* or village assemblies in Scheduled Areas were endowed with powers over community resources generally and more specifically with ownership of minor forest produce. The *Panchayats* along with the *gram sabha* has been further empowered, among other things to prevent alienation of land in the Scheduled Areas and to take appropriate action to restore any unlawfully alienated land of a Scheduled Tribe; and the power to manage village markets. The 73rd amendment also provided for a more inclusive body at the village level; namely *gram sabha*, which consists of all the adult villagers. While the *Panchayats* are administrative and political bodies, the *gram sabha* is the real representative of the village community. 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.

It is imperative to understand the implications of the new *panchayat* regime, through the original Constitutional amendment and the subsequent PESA 1996, especially on tribal self-rule law and marketing of nontimber forest products. One of the basic tenets of the PESA 1996 is that state legislations on *Panchayats* shall be in accordance with customary laws, social and religious practices, and traditional management practices of community resources, which includes forests. Further, the PESA emphasizes the competence of *gram sabha* in safeguarding and preserving traditions and customs of the people, their cultural identity, community resources, and customary mode of dispute resolution. It can be safely assumed that such community resources would invariably include forest resources especially on community land. *Panchayats* in Scheduled Areas have due legal backing through the PESA, while JFM committees originate from government orders or resolutions, which are revocable. The JFM committees are specific natural resource management bodies with no legal standing, while the *Panchayats*, being institutions of self governance and supported under both the constitution of India and supporting legislation, have strong legal backing to perform a variety of functions like village administration, and social and economic development, which logically could include management of natural resources. In general, while the intention of many states has been to implement PESA in its full spirit, the ground reality is that they are subject to rules framed by the state government, availability of funds, and other laws in force. It is entirely possible for *Panchayats* to override the decisions of JFM committees, for example with distribution of benefits. While PESA has been greeted in some circles as a panacea for accelerating community forestry, the reality is far different.

²⁰ I am indebted to N.C. Saxena for providing a wealth of examples of conflicts between PESA and forestry legislation and policy. These are included directly in the following section as identified.

Examples of Conflicts and Contradictions with PESA and Forestry

According to PESA, *Panchayats* and *gram sabhas* are the owners of nontimber forest products, but Forest Departments often contend that villages do not have control over reserved forests, as these are outside village boundaries, and therefore PESA is not applicable to reserved forests. This is a legal issue, and even the two Ministries in Government of India, Rural Development and Environment and Forests hold different views²¹ about the applicability of PESA over reserved forests, about the inclusion of Kendu and bamboo in the nonforest timber products to be controlled by *Panchayats*. Secondly, there are contradictions between JFM and PESA too, as JFM encouraged small community based informal groups, whereas PESA recognizes formal *Panchayats* and *gram sabhas*. Even the revised JFM guidelines issued by the Ministry of Environment and Forests in 2000 do not specifically mention PESA, indicating the low importance given to its provisions and their potential bearing on the JFM framework in Schedule V areas by the central Ministry.

Several NGOs working on JFM have preferred JFM committees over *Panchayats* as the organizational unit for managing the resource and sharing benefits. It is undoubtedly easier for them (and also for Forest Department) to deal with new and informal organizations that they create and fund rather than contend with the rough-and-tumble of 'political' and statutory *Panchayats*. Operationalizing the provisions of PESA has thus several practical problems, and no definitive answers have yet been obtained to the question of ownership of nonforest timber product by *gram sabhas*. The third set of problem has arisen because many states, such as Orissa, have tried to dilute the provisions of PESA, though it had no legal jurisdiction to do so, as PESA is a Central Act.

Following the Central PESA Act, the Government of Orissa enacted the Orissa Act for the State. However, the Orissa Act appears to want to circumscribe the constitutional provisions of the Central Act by adding a clause²² 'consistent with relevant laws in force' while incorporating the constitutional provision concerning the competence of the *gram sabha* to manage community resources and dispute resolution as per the customs and traditions of the people. Thus, tribals can have ownership rights over Minor Forest Produce, but only if the relevant laws in force allow for it. This is a clear violation of the Constitutional Provision of the Central Act since in case of any inconsistency the relevant state laws have to be changed instead of negating the rights granted to *gram sabha* as per the Central Act in this regard.

Section 4 (m) (ii) of this Act provides that -

“while endowing *Panchayats* in the Scheduled Areas with such powers and authority as may be necessary to enable them to function as institutions of self-government, a State legislature shall ensure that the *Panchayats* at the appropriate level and the *gram sabha* are endowed specifically with the ownership of minor forest produce.”

Further, PESA required that state government would change its existing laws wherever these were not in consistent with the central legislation. However, Orissa government has done just the opposite.

²¹ MOEF tried to reconcile the differences in 1999 through a policy circular, but this has had little effect in the field.

²² Many other states have also diluted the Government of India PESA Act. Both the Gujarat and Maharashtra Acts make ownership subject to the relevant state acts on nontimber forest products. The Maharashtra state Act leaves bamboo and cane out of the list of nontimber forest products over which ownership is granted to the panchayats.

Despite the fact that the Central Act clearly provides ownership (not just control) of nontimber forest products to *gram sabhas*, the Ministry of Environment and Forests set up an 'expert committee' to consider what comprises nontimber product and what does 'ownership' mean. The expert committee recommended that ownership meant revenue from sale of usufructory rights, that is, the right to net revenues from nontimber product, after retaining the administrative expenses of the department, and not right of control. The committee also argued that bamboo and cane, two important products for the poor, are not forest timber products.

In Andhra Pradesh too, there is a clear contradiction between PESA and GOM 173 dt. 7/12/96 of the Environment, Forest, Science and Technology Department. The usufructory rights of user groups called Vana Samrakshana Samitis (VSS) prescribed therein include, "(a) All Non-Timber Forest Produce except those for which the state holds monopoly rights. However the right to collection shall remain with the VSS members, if they so desire. The members shall be paid the collection charges upon delivery of the produce as per the rates fixed by the Government." It can also be seen that there is a contradiction between the 'ownership' vesting in *gram Panchayats/sabhas* clause and the monopoly rights vested in GCC. GOMs 173 also entitles VSS to 100 percent share in timber and bamboo harvested as prescribed in the microplan. Whether bamboo constitutes major or minor forest produce is also an unsettled question.

Another problem with the Orissa legislation is that instead of giving clear rights to *gram sabha*, space has been kept in the state law for involvement of higher order *panchayati raj* institutions instead. Thus the spirit of the Government of India Act with focus on empowerment of the *gram sabha* has not been followed in Orissa. This is again a violation of the Central Act which explicitly forbids usurpation of powers of a lower level *panchayat* by a higher level *panchayat*.

Such indifference to PESA can be seen in many other states too. The irony is that while PESA remains unimplemented, Government of India has proposed amending Schedule V of the Constitution itself to open up tribal areas for commercial exploitation by national and multinational corporate interests.

In Jharkhand, *panchayat* elections have yet to take place. Jharkhand is the only state in India without *Panchayats*. When election take place, local authorities may find that the Bihar Forest Produce (Regulation of Trade) Act 1984, folded into Jharkhand at bifurcation, presents a State marketing monopoly in the trade of nationalized timber and nontimber forest products. Under the 1984 Act, the State may appoint agents to purchase and trade of forest produce on its behalf. No person other than the Government or its agent shall purchase, transport, import or export the specified forest produce.²³ Thus all the primary collectors²⁴ who gather the designated forest produce have to sell it to the designated agent of the State, at depots established by the State and at a price determined by the State. Thus, there is a clear conflict between the Bihar Forest Produce (Regulation of Trade) Act 1984, and the PESA as the latter vests local authorities in Scheduled Areas with 'marketing' rights over forest produce, while the former legislation seeks to regulate by creating a state monopoly.

In Madhya Pradesh, soon after the 73rd amendment, the State Panchayat Raj Adhiniyam, 1993²⁵ was enacted. While the *gram panchayat*²⁶ 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. Control and management of such forests were

²³ Sec 5 of The Bihar Forest Produce (Regulation of Trade) Act, 1984

²⁴ Sec 2 (4) of The Bihar Forest Produce (Regulation of Trade) Act, 1984

²⁵ Act 1 of 1993

²⁶ (Act 3 of 2001). This Act renamed the MP Panchayati Raj Act as Madhya Pradesh (Panchayat Raj Avam Gram Swaraj) Adhiniyam, 1993.

clearly state's responsibility. Various amendments have been made in the principal Act. By 1997, amendments gave the Zilla Parishad an advisory role to the state government in respect to protection of environment and social forestry. In 1999 (Madhya Pradesh Act 5 of 1999), the *gram sabha* was entrusted with the management of natural resources including water, land and forests. However, in case of a conflict, the specific laws dealing with the natural resource take precedence. The Madhya Pradesh Transit (Forest Produce) Rules, 2000²⁷ empower the Gram Panchayat to issue passes for the transit of forest produce, within or outside the state of Madhya Pradesh, but these passes can also be issued by the district forest officer. There is enough legal space available in the PESA to allow *Panchayats* a greater role in forest management but the contradictions and limitations brought by the existing forestry legal framework must be addressed.

Assam stands on a different legal footing. PESA is not applicable to Assam, as it is only applicable to fifth schedule areas and not sixth schedule which encompasses the autonomous districts of Assam. The Assam Panchayat Act 1994 extends to the whole of Assam in rural areas except the Autonomous Districts under the sixth schedule of the constitution.²⁸ Some important functions assigned to PRIs include development of wastelands, village grazing lands and preventing their unauthorized alienation and use, promotion of social forestry, farm forestry, fuel plantation, and fodder development. Zilla Parishads are responsible for marketing of minor forest produce raised in community lands. However the JFM Resolution does not make this distinction of Autonomous Districts and the rest of the Districts and makes it universally applicable. This is bound to create conflict with the District Council in the scheduled districts. Although as regards nonforest timber product there is less possibility of conflict in this functional role with forest department, because Assam does not have a state marketing board for nonforest timber products.

It is critical that the institutional links between government decentralization policy (through *Panchayats* or local authorities) and administrative decentralization such as through JFM and its user groups be better understood and strengthened. *Panchayats*, being elected bodies have a strong vertical and horizontal reach. Yet *Panchayats* lack capacities, are often plagued with internal politics and domination by elites. Experience in other parts of India (World Bank 2004a) suggest that fiscal decentralization through local authorities can create problems of local expenditure discretion, revenue generation and collection, and mandates that exceed capacity to deliver. Many local organizations do not perform as quickly or effectively as anticipated, raising questions about their viability, fairness, and sustainability (World Bank 2004). However, a global study of natural resource decentralization identified many positive outcomes to decentralization involving natural resources Ribot (2004). These include local governments demonstrating capacity and initiative in natural resource management; empowering local people to protect their forests; increased revenues to local councils and local people; stronger roles for disadvantaged groups in natural resource management; and cases of sustained forest management

²⁷ Enacted under Indian Forest Act, 1927

²⁸ North Cachar Hills and Karbi Anglong District and Bodoland Territorial Council;

Appendix 5. Community Livelihoods in Assam, Jharkhand, and Madhya Pradesh

Background

Assam, Jharkhand, and Madhya Pradesh share a number of common socio-economic features (table A5.1). First, the three states are poor based on income per capita and human development indices falling well below the national average. In addition, the percentage of people below the poverty line is much higher than the national average. Second, the share of agriculture out of total state gross domestic product is higher than the figure for all India, suggesting a relatively high dependence on agriculture for economic activity. Average land holdings in Jharkhand and Assam are less than the national average. Population densities in Jharkhand and Assam are slightly higher than the national average. Madhya Pradesh's population density is 66 percent lower than the national average. Literacy rates among people over 15 years of age are higher than the national average, with the exception of Jharkhand. Forest cover per capita in Jharkhand and Assam is just slightly below the national average, while Madhya Pradesh is significantly higher. On its own, Madhya Pradesh accounts for almost 12 percent of the national forest cover.

TableA5.1. Key socioeconomic indicators, focal states

| <i>State</i> | <i>Population density (per km²)</i> | <i>Income per capita rupees (2002-03)</i> | <i>HDI (2001)</i> | <i>People BPL (%)</i> | <i>Literacy over 15 years (%)</i> | <i>Agriculture share of GDP (%) 2001-02</i> | <i>Average land holdings (ha)</i> | <i>Forest per capita (ha)</i> |
|----------------|--|---|-------------------|-----------------------|-----------------------------------|---|-----------------------------------|-------------------------------|
| Jharkhand | 338 | 9,955 | 0.367 | 44 | 54 | 23 | 0.61 | 0.09 |
| Madhya Pradesh | 195 | 11,438 | 0.394 | 37 | 64 | 35 | 0.95 | 0.13 |
| Assam | 339 | 11,755 | 0.386 | 36 | 64 | 27 | 0.55 | 0.09 |
| All India | 324 | 18,912 | 0.472 | 26 | 61 | 21 | 0.75 | 0.10 |

Source: Census of India (2001 Census); Indiatat.com.

Notes: HDI: Human Development Index; BPL: People Below Poverty Line

These broad statistics are useful for comparisons, but may understate the actual poverty situation in rural areas. As an example, in Jharkhand, poverty is higher in rural areas and is an important factor in forest encroachment. An estimated 76 percent of rural people (mostly from tribal groups) live under the poverty line. The phenomenon of chronic poverty, including a high degree of uncertainty about the livelihood base, often coincides with two particular agro-ecological and socio-economic conditions: first, dry land regions characterized by frequent failure of crops and sporadic employment opportunities, leading to high level of unprotected risks of livelihood security among the poor; and second, forest-based economies, especially in hilly regions with predominance of tribal populations who have limited access to natural resources, information and markets (2004; 2005). Jharkhand provides a good example, where tribal people are closely connected with forests for livelihoods, and where agriculture is often characterized by single crop paddy rice dependent on rainfall. Agriculture opportunities are constrained by the high percentage of marginal farmers with very small land holdings (table A5.2).²⁹ Almost 70 percent of all rural households in Jharkhand are limited to an average of 0.37 hectares of land, which is inadequate to sustain family nutrition with rice paddy, restricts mixed farming and ecologically sound cultivation, and does not allow for fields to be shared with children as they grow up and marry. The small average land holding, low productivity of agriculture, and limited opportunities to earn nonfarm income from other resources such as forests, leads to migration as an important coping

²⁹ *Source:* Mishra 2001.

strategy for people in many rural areas of Jharkhand. Rural people are vulnerable to periods of shortfalls in income. At the same time, vulnerability in poor, rural areas is a function of both the probability and size of income, and the ability to cope with exogenous shocks such as crop failure and/or loss of health. These factors can lead to high-interest private debt from money lenders to meet costs of purchasing food, or social and customary expenses, for example with a funeral or wedding. Due to lack of access to institutional credit, private money lenders constitute the only available source for credit (see Mosse and others 2002).

Table A5.2. Land holdings by household group, Jharkhand 1992

| Category | Percent households | Percent land held | Average holdings (ha) |
|-------------|--------------------|-------------------|-----------------------|
| Marginal | 69.04 | 21.44 | 0.37 |
| Small | 13.53 | 15.99 | 1.39 |
| Semi-Medium | 11.31 | 26.72 | 2.79 |
| Medium | 5.42 | 26.51 | 5.77 |
| Large | 0.70 | 9.34 | 15.87 |

Source: TERI 2004.

Tribals and Tribal Characteristics in India

About 742 million people, or 72.2 percent of India's population live in rural areas. Of these, 88.8 million belong to scheduled tribes. The Indian Constitution identifies scheduled tribes according to criteria like geographical isolation, cultural traits and "backwardness." From 1971 to 2001, the ST population in India has increased by an average of 4.5 percent per year, compared to the general population increase of 2.9 percent over the same period. Tribals now comprise 8.6 percent of the national population. They are distributed across the country, encompassing 10 neighboring states (table A5.3). The scheduled tribes are mainly concentrated in the so-called 'Tribal Belt' of central India, with a second concentration in the Northeast. The Tribal Belt represents a distinct geo-cultural region and is home to the main tribal groups throughout India (Gonds, Santhals, Oraons, Mundas, and Khonds) as well as hundreds of subtribes, each with distinctive dialects, specific customs and traditions. Tribals represent a significant share of the total state population, particularly in Chattisgarh, Jharkhand, Orissa, Madhya Pradesh, Gujarat and Rajasthan. Also, with one exception (Maharashtra), more than 90 percent of the tribal population lives in rural areas. Of interest to this report is the linkage between tribals and forests. The Chota Nagpur plateau running east to west across these tribal states, contains the majority of the forest area in India, and includes much of Chattisgarh, Jharkhand, Orissa, Madhya Pradesh and smaller areas of Maharashtra, and West Bengal. For example, out of the 45 districts in Madhya Pradesh, 14 are forest-rich districts inhabited by almost 80 percent of the tribal population (Census of India 1991). Tribals generally dwell in forested and hilly areas, and depend on forests for their cultural and spiritual needs, and to varying degrees, their economic needs.

Table A5.3. Population characteristics, main tribal states

| State | Total pop. (million) | Tribal pop. (million) | Tribal share (%) | Rural tribal Pop. (million) | Rural tribal share (%) |
|-----------------|----------------------|-----------------------|------------------|-----------------------------|------------------------|
| Chattisgarh | 20.8 | 6.6 | 32 | 6.3 | 95 |
| Jharkhand | 26.9 | 6.9 | 26 | 6.3 | 92 |
| Orissa | 36.7 | 8.1 | 22 | 7.7 | 95 |
| Madhya Pradesh | 60.4 | 11.6 | 19 | 10.9 | 93 |
| Gujarat | 50.6 | 7.8 | 15 | 7.2 | 92 |
| Rajasthan | 56.5 | 7.0 | 12 | 6.6 | 95 |
| Maharashtra | 96.8 | 7.4 | 8 | 6.4 | 87 |
| Andhra Pradesh | 75.7 | 5.0 | 7 | 4.6 | 92 |
| Karnataka | 52.7 | 3.5 | 7 | 2.9 | 85 |
| West Bengal | 80.2 | 3.7 | 5 | 3.5 | 93 |
| Selected States | 557.3 | 67.6 | 12 | 62.3 | 92 |

Source: Census of India (2001 census).

There is a fairly strong link between chronic rural poverty and natural forests (Sunderlin and others 2004). The tribal communities in Jharkhand, Madhya Pradesh and Assam are among the poorest groups in society (table A5.4), although there is wide variation in the percentage of people below the poverty line compared with state averages. In Madhya Pradesh, there is a 19 point variation, while in Assam the difference is only 3 points. South-West Madhya Pradesh, dominated by tribals, represents one of the seven regions having the highest incidence of rural poverty in India. In 1993-94 over 60 percent of the rural households in the region were poor, of which about 42 per cent were severely poor.

Table A5.4. Poverty in tribal groups

| State | Poverty (% BPL) | |
|----------------|-----------------|---------|
| | State | Tribals |
| Jharkhand | 44 | 60 |
| Madhya Pradesh | 37 | 56 |
| Assam | 36 | 39 |

Source: Census of India (2001 census).

According to Shah and Sah (2004), the following are the key factors explaining the highest incidence of poverty in tribal regions: (1) tribals' low bargaining capacity; (2) their low degree of political representation and poor quality of local governance; and (3) constrained access to forest, land, and water. The issue of control, power and access to natural resources is contentious both at economic and political level for tribal groups. At the economic level, there tends to be increasing resentment among tribals that outsiders and nontribal people (including industrialists, merchants, traders, mine-owners, government employees and contractors) can often access water and forests that historically used to be theirs. This manifests itself to the political level with several tribal activist groups not content with the loss of historic rights over forest land, which they see as a compromise of their demand of self-rule or autonomy. In turn, this is a major factor contributing to insurgency, particularly in Assam and Jharkhand.

Among some of the tribes common to Jharkhand and Madhya Pradesh, a distinction is often made between *adivasi* (tribal people), *sadan* (long-settled other backward castes of nontribal origin) and *diku* (outsiders). *Adivasi* societies are considered different from caste Hindu societies as they are based on equality and not on hierarchy, they have remote habitation, have a intimate relationship with the natural habitat, and that have animistic forms of religion (see Kothari 2000; Mandelbaum 1970; Sharma 2001; Weiner 1978). Neighboring *nonadivasis* like blacksmiths (*Lohar*), potters (*Kamar*), shepherds (*Gau*), basket makers (*Mahali*) and others, can "transform into *adivasi*" (*adivasi-hokotanako*) by marrying tribal women, adopting tribal clans and taking part in (and contributing to) tribal religious festivals. By doing so, they are said to acquire the right of being buried in those lands, that is, they acquire land inheritance rights. Conversely, any *adivasi* can become *diku*, if he/she behaves in a manner that is unacceptable (*diku:e baiotana*). Mundas who leave their villages and migrate to cities for seasonal or permanent work do become *diku* if they neglect and disrespect their own people and their ancestral practices by not going back to the village for religious festivals, by ignoring the teaching of the ancestors (*haram hoko ora*), changed way of thinking (*diku uru:*) and by treating their tribal fellows in a dishonest way. Tribals are attached to their land economically, spiritually and culturally (box A5.1). The memorial stones of the Mundas in

Box A 5.1. Munda relationships with the land

Many ethnographers have documented the symbolic relation between people, land, and ancestors among Munda-speaking groups. Some have attempted a reading of structural analogies between rice plants and ancestors in which the bones of the ancestors are the "seeds" for future generations (Verardo 2003). As a famous anthropologist observed among the Soras, "Living Sora are nourished by soul. Something of the consciousness of their ancestors is infused back into the grain grown by their descendants on the land which those ancestors used to cultivate"

Source: (Vitebsky 1993).

Jharkhand and Madhya Pradesh are a symbol of belonging to the tribe and of owning land in the village (Verardo 2003). The tribal, regardless of his wealth and social position, is not fully integrated in the community unless he owns some land in its area. Only land ownership and farming seem to give the feeling of a full integration into the tribe (Van Exem 1992). Traditional socio-political systems extend from the village to the cluster and regional levels. Village and cluster leaders belong to the clan of the pioneers of the area. When a new settlement is founded, the eldest among the pioneers becomes the specialist of the sacred and the one younger to him becomes the village-head. Although their position is hereditary, downward accountability is ensured by the fact that they are *primus inter pares* and villagers can at any time nominate a different person in case they misbehave. Village councils are often responsible for a number of traditional tasks (box A5.2), many of which could be adopted as part of greater legal responsibilities for community natural resource management.

Clusters of 10-20 villages constitute the next level of socio-political organization. In Oraon areas, these clusters are called *Parhas* and are headed by a *Parha-raja*; in Santhali areas, they are called *pargana*, headed by a *maji parda*, in Ho areas they are called *pir*, headed by a *Manki*, and in Munda areas they are called *Parha* or *Manki-patti* and headed by a *Manki*. Historians and sociologists have argued that the clusters marked an advance from socio-political hunting groups and grouped men of several clans together (Roy 1912), or that they constitute unions of a number of villages of the same clan located around the

original village, that is, they were kin based and that an increase in population caused the formation of these groupings (Sachidananda 1979). It is argued that these socio-political systems have been a feature of all tribal areas since “the beginning of time.” Kin-based clusters have in certain areas being replaced by administrative boundaries that do not reflect the social reality on the ground. This is especially true in areas with a mixed tribal and nontribal population.

While the economic exploitation, land alienation, and displacements have all affected the scheduled tribes in the state, a further complicating influence in local decision making is the decline in traditional institutions. Many tribals have a very 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 forest dwellers including tribals. This can reduce the effectiveness of these program thrusts and the impact on poverty. This can reduce the effectiveness of these program thrusts and the impact on poverty.

Box A5.2. Traditional functions of village councils

Village councils typically carry out a number of functions such as:

- Applying ancestral practices regarding management of forests and resolving issues related to natural resource management as and when they arise
- Overseeing village welfare and community development, such as providing the benefits of land, forest and water management for the whole community
- Maintaining pathways, village roads, water sources and other development works
- Organizing community festivals and other celebrations
- Levying and collecting tax (also through free labor) to finance the above celebrations and for maintenance of public goods
- Maintaining of day-to-day functioning of village community
- Setting up of village grain-banks to meet emergency situations
- Sorting out disputes and regulating inheritance rights concerning land and property.

Source: Lourduswamy 1997.

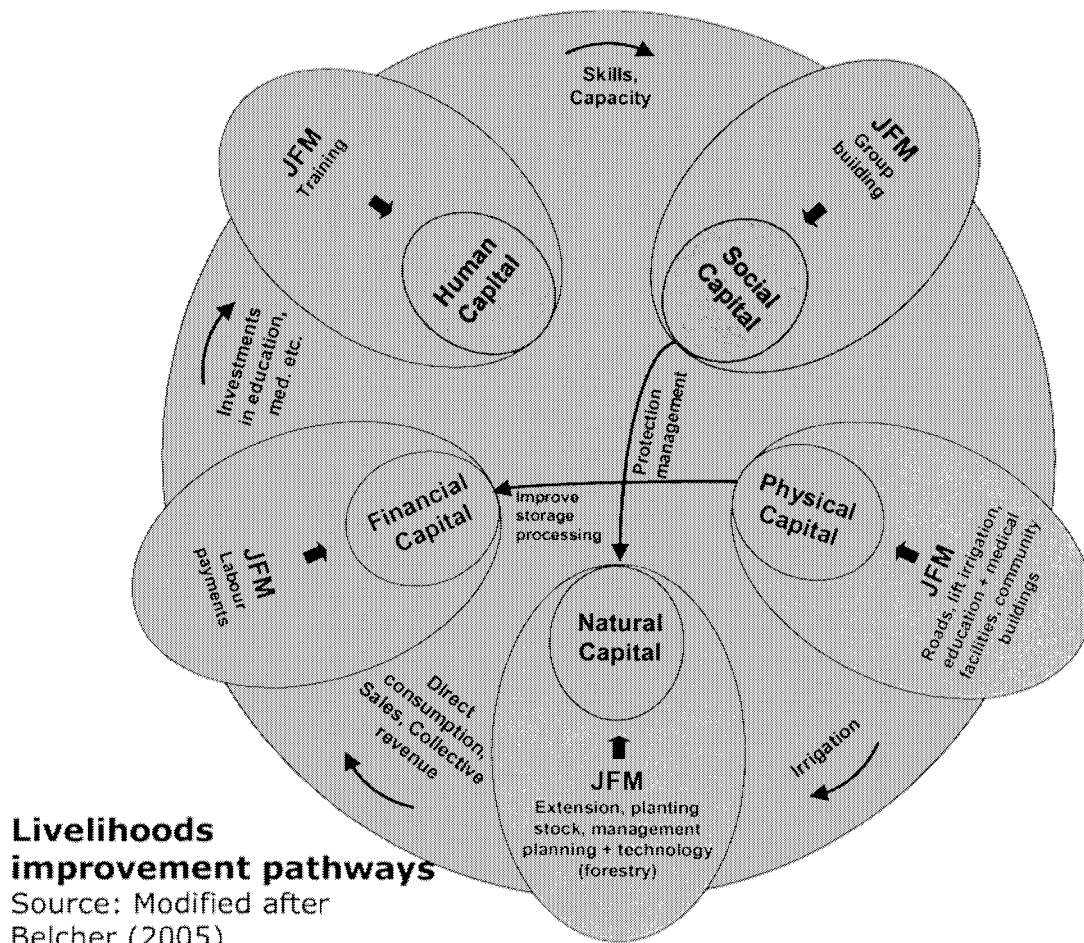
What Are Forest Livelihoods?

There is a general agreement on four conceptual positions around forest livelihoods:

- Livelihoods and forests operate as separate policy realms
- Livelihoods insecurity acts as a constraint on forest conservation
- Forest conservation must not compromise livelihoods
- Livelihoods improvement depends on forest conservation

At the same time, it is important to recognize that: both forest conservation and livelihoods improvement are necessary; there is a need to monitor livelihoods impact and operate in an adaptive and socially accountable manner; and policies and systems that ignore diverse – but inseparable relationships between forests and livelihoods, risk collapse. Forest livelihoods can be viewed as a composite of five broad sources of capital (human, social, physical, financial, and natural). JFM has linkages with all five areas, and any JFM program, to successfully address livelihood needs, must address all these areas (figure A5.1).

Figure 5.1. Livelihood components



Livelihood Patterns in the Focal States

Jharkhand –smallholder farming with forests as a safety net

The six case study villages selected for Jharkhand provide certain village-specific and some general idea of the socio-economic situation of forest-dependent communities in the state of Jharkhand (table A5.5). Tribals account for between 80 and 100 percent of the village population; the one outlier is Munam Kalen with 25 percent. In terms of infrastructure and development, villages in all the regions were found to be backward. Inadequate provision of water, both for drinking purposes and irrigation, is a common feature across all the villages. The livelihood system in these villages is mainly agrarian, complemented by income from labor.

In the Porahat area of West Singhbhum, “Bir-horoko” are the people (*Horoko*) who live in thick forests (*Bir*), and practice hunting- gathering activities; “Buru-horoko” are the people who live in the secondary forest (*Buru*), and practice slash-and-burn cultivation; and “Hoko” are the people who live in permanent villages and practice mixed, settled cultivation.

Landholding size is very small in the villages with about two-thirds of the farmers falling in the category of marginal, with less than 1 hectare. As a result, agriculture can only provide sustenance for six to seven months; for rest of the year people have to look for other sources of income. People usually migrate to work in mines or factories in villages that are situated close to industrial towns. On average, agriculture was the primary occupation in 60 percent of all households, and various forms of labor (unskilled, skilled) in 32 percent of all households. Community variations in livelihood patterns can be explained on the basis of ethnic characterization, resource endowment and access, and use of productive resources. All villages were interacting with degraded forests of variable quality, usually from illegal harvesting in the past. The average forest area per capita is 0.09 hectares, equal to the state average slightly below the national average of 0.1 hectares. The average is heavily skewed by the figure of 0.18 hectares from West Singhbhum district (Thakura Guutu village).

Two of the districts (Seraikela and Dumka) have very low per capita forest cover (0.06 hectares and 0.03 hectares respectively). Based on the evidence from the field, forests in the six villages were used mainly for seasonal subsistence, and also as a safety net to augment poor agriculture performance. As could be seen in some villages, with the availability of alternative opportunities (particularly wage labor), people have shifted away from the use of forest products. In general, all communities used the forest, but primarily for subsistence fuelwood and fodder. Fuelwood supplied an average of 86 percent of energy needs, and ranged between 50 and 100 percent. On the other hand, fodder from the forest provided about 55 percent of input requirements for domestic livestock. On average, gross values were Rs2,356 (fuelwood) and Rs8,507 (fodder) per household per year. Gross values ranged from Rs982-Rs3,367/household (fuelwood) and Rs7,665-Rs14,042/household (fodder). Poles played a minor role in forest livelihoods with an average household using between 6-10 poles every three years for minor construction. Bamboo was used in only one of the six villages surveyed for domestic construction. The surveys clearly found that the use of nontimber forest products was mainly for subsistence. While some villages reported periodic sales of a few products in local markets, people could not specify the quantity collected or sold. In general, the village surveys infer a low level of commercial sales of forest products, due in part to poor access to markets from degraded roads, isolated and low levels of production, and low awareness of markets outside of local trading areas.

Table A5.5. Livelihood patterns, case study villages Jharkhand, Assam

| State district village | Forest per capita (ha) | Adult literacy (%) | Km to urban market (km) | Pop. (No) | Tribals (%) | Primary occupation agriculture (%) | Primary occupation labor (%) | Level of forest degradation | JMF exists? | Energy from forest (%) | Fodder from forest (%) | Fuel | Fodder | Poles | Bamboo |
|------------------------|------------------------|--------------------|-------------------------|-----------|-------------|------------------------------------|------------------------------|-----------------------------|-------------|------------------------|------------------------|------|--------|-------|--------|
| | (1) | (2) | | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) |
| Jharkhand | | | | | | | | | | | | | | | |
| <i>West Singhbhum</i> | 0.18 | | | | | | | | | | | | | | |
| Thakura Guttu | | 47 | 15 | 629 | 90 | 40 | 52 | Moderate | Yes | 100 | 70 | 1791 | 11667 | 267 | 0 |
| <i>Seraikela</i> | 0.06 | | | | | | | | | | | | | | |
| Rugudih | | 32 | 26 | 1310 | 88 | 60 | 20 | Low | No | 100 | 70 | 982 | 14042 | 300 | 0 |
| <i>Hazaribag</i> | 0.09 | | | | | | | | | | | | | | |
| Hathiyari | | 72 | 5 | 1415 | 80 | 24 | 67 | Moderate | Yes | 95 | 50 | 3367 | 9308 | 267 | 0 |
| Munam Kalen | | 69 | 3 | 6500 | 25 | 60 | 25 | Moderate | Yes | 50 | 50 | 2818 | 7665 | 300 | 0 |
| <i>Dumka</i> | 0.03 | | | | | | | | | | | | | | |
| Upar Murgathi | | 47 | 10 | 455 | 100 | 94 | 6 | Low | Yes | 100 | 90 | 2800 | 8357 | 233 | 133 |
| Sema Ghaghrabari | | 51 | 40 | 630 | 0 | 80 | 20 | High | No | 70 | 0 | 2380 | 0 | Minor | Minor |
| Assam | | | | | | | | | | | | | | | |
| <i>Karimganj</i> | 0.06 | | | | | | | | | | | | | | |
| Karikhal | | 56 | 20 | 644 | 0 | 100 | 0 | Moderate | Yes | 89 | 40 | 2250 | 6029 | 175 | 1488 |
| Maruchara | | 36 | 7 | 482 | 33 | 8 | 36 | Low | No | | 45 | 3780 | 2563 | 150 | 1488 |
| <i>Kohrajhar</i> | 0.15 | | | | | | | | | | | | | | |
| Demdema | | 21 | 23 | 978 | 60 | 80 | 20 | High | No | 67 | 75 | 975 | 10354 | 125 | 1050 |
| Bishmuri | | 42 | 26 | 456 | 100 | 90 | 3 | Moderate | Yes | 70 | 65 | 3741 | 19495 | 161 | 1138 |
| <i>Kamrup</i> | 0.06 | | | | | | | | | | | | | | |
| Garopara | | 40 | 12 | 500 | 100 | 86 | 14 | Moderate | Yes | 70 | 70 | 1710 | 12848 | 262 | 1138 |
| Chakrapani | | 78 | 10 | 980 | 100 | 90 | 10 | Moderate | No | 57 | 60 | 1732 | 12047 | 132 | 1400 |
| <i>Tinsukia</i> | 0.13 | | | | | | | | | | | | | | |
| Sorapung | | 16 | 8 | 397 | 0 | 60 | 40 | High | Yes | 100 | 80 | 1733 | 18207 | 131 | 1663 |
| Paharpur | | 37 | 30 | 849 | 0 | 90 | 10 | Moderate | No | 100 | 75 | 3600 | 6393 | 100 | 1575 |

Sources: (Column 1) MOEF 2001b, www.Indiastat.com; (columns 2–14) field surveys.

Notes: (11 to 14) values based on quantities collected from forest with imputed gross local market value, regardless of whether goods are used for subsistence or sold in local markets. Surveys revealed that the majority of products are used for subsistence purposes. Information on nontimber forest product use was collected but villagers were consistently unable to specify to enumerators reasonably accurate estimates on the quantities collected. A general pattern emerged from the interviews that nontimber forest products were mainly used for subsistence purposes (medicinal plants, Mahua flowers to brew alcohol, fruits, etc). For a few products, including commercial fuelwood, limited sales took place in local markets.

The average distance to a larger town was 17 kilometers, a long distance for people without transport and wishing to sell products characterized by high collection times and low market prices. Tribal villages in the areas close to forests were found to have a higher dependence of forest produce, and in particular, subsistence fuelwood and fodder.

Assam: Smallholder farmers and shifting cultivation are dominant

The tribal groups in Assam have traditionally been located in specific parts of the state and their resource use practices have varied based on their socio-cultural preferences. Hill tribes continue to be engaged in slash and burn agriculture and all their economic and cultural practices have traditionally revolved around this. In the Barak valley, the Khasi tribe is associated with the practice of 'pan jhum' of harvesting betel leaves (pan) and shifting cultivation (jhum). Bodos, one of the major plain tribes in the northeast, are involved mainly in agriculture. Rabhas live in the jungle tracts where the Himalayan Mountains meet the plains of Bengal. The eight case study villages surveyed are a mix of smallholder farmers, shifting cultivation, and landless (table 5.5). Tribals were only recorded in five of the eight villages surveyed. The level of infrastructure and development is very similar to the results from Jharkhand, although villages are about one-third the population. Across the eight villages, 76 percent of households reported agriculture as the primary occupation, significantly higher than in Jharkhand. Agriculture is mostly rainfed but some areas have a traditional method of irrigation through a network of canals called *Dongs*. The main agricultural crops grown are paddy, pulses, mustard, vegetables and jute. Besides agriculture, the villagers also collect fuelwood, mushroom, nontimber products, and fishing for subsistence. Most villagers keep livestock such as cows, bullocks, buffaloes and goats. Due to low returns from agriculture, livelihood from labor was the primary occupation of 17 percent of all households surveyed, and forms an important secondary form of income for many farmers as opportunities arise within the seasonal farming system (table A5.6).

Table A5.6. Livelihood calendar of a typical forest-fringe household in Assam

| Activity performed by the villagers | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Thatch cutting | *** | *** | | | | | | | | | | |
| Agriculture (rice paddies) | | | | | γ | γ | γ | | | | γ | γ |
| Agriculture (cultivation of potatoes, mustard, and matidal) | | XX | XX | | | | | | | | | |
| Agriculture harvesting | | | | | | | | | | | | |
| Vegetable cultivation | | | | ooc | ooc | | | | | | | |
| Cane and bamboo collection | ▲▲ | ▲▲ | | | | | | | | | | |
| Work with forest department | | | | ooo | ooo | | | | | | | |
| Festivals | * | * | * | * | | | * | * | * | * | * | |

Source: Discussions with villagers during background study field surveys.

Forest department, oil companies and stone quarries are the main sources of employment. The daily wage rate for the men varies from Rs 40-50 per day. In addition, during February, March and April some men from landless households migrate to nearby urban areas, in particular Guwahati, in order to work as daily wage laborers. All eight villages were adjacent to degraded forests, but the observation was made that forest quality in these villages was much worse than in Jharkhand. Two of the four districts (Kohrajhar – 0.15 hectares and Tinsukia – 0.13 ha) had per capita forest cover well above the state average of 0.09 ha. The remaining two districts were significantly lower than the state average. All eight communities used the forest, but again, primarily for subsistence fuelwood and fodder. Fuelwood supplied an average of 79 percent of energy needs, and ranged between 57 and 100 percent. Fodder from the forest provided about 64

percent of the feed requirements for domestic livestock. On average, gross values were Rs2,440 (fuelwood) and Rs10,992 (fodder) per household per year. Gross values ranged from Rs975-Rs3,780/household (fuelwood) and Rs2,563-Rs19,495/household (fodder). Poles also played a minor role in forest livelihoods. On the other hand, the gross value of bamboo was almost nine times that of poles for domestic construction. Most communities collect a variety of nontimber forest products, mainly for subsistence use. Women are mostly engaged in collection of nontimber forest products. Exploitation by middlemen and no value addition were cited as the main reasons for low financial returns and poor incentives to engage in commercial activities. In addition, people lacked information about markets for specific products.

The average distance to a larger town was the same as in Jharkhand (17 kilometers). In general, agriculture (including shifting cultivation) is the predominant source of livelihood, however the forest offers a safety net for many villagers, due to small landholdings, low productivity and credit unavailability.

Madhya Pradesh: Low levels of forest dependence across income groups

The tribal relationship with forests in Madhya Pradesh can be roughly classified according to the landscape and livelihood system: upland systems, mixed systems, and lowland systems. Tribal communities in upland systems live in small, scattered settlements located near or within reserve or protected forests, and are under transition from pure forest dependence to a mixed forest/agriculture/wage labor system due to resettlement, and declining forest productivity. Mixed systems, located in middle watersheds, are partially hilly areas with communities having a higher reliance on agriculture. Farming is mainly single crop with some paddy and vegetable cultivation. Lowland systems are located in lower watersheds and communities have relatively little forest access. They tend to be more multi-ethnic, have smaller but more intensively farmed landholdings and own more bullocks. Double cropping is more common and, where irrigation is available, even a third crop may be grown.

Forest-based communities in Madhya Pradesh, and in particular tribal communities, are among the poorest and least developed in the state. The literacy percentage among tribal groups in Madhya Pradesh is 22 percent compared to 64 percent for the state as a whole. Southwest Madhya Pradesh, home to a significant share of the state's forest cover and a concentrated area of tribals, represents one of the seven regions having highest incidence of rural poverty in India. In 1993-94 over 60 percent of the rural households in the region were poor, of which about 42 percent were severely poor. Whereas the incidence of poverty has declined both in the state as well as in Southwest region, as many as 65 percent of rural households still remain below the poverty line. Tribal groups dominate forest communities in Madhya Pradesh. An intensive survey of 40 villages in the forest districts of Krishna and Kurnool (Alsop and others 2002) found that tribals constituted 68 percent of the village population, well above the rate in Assam and slightly higher than the communities surveyed in Jharkhand. About 55 percent of the villagers surveyed had no education, and an additional 28 percent only primary education. Average land holdings were very small, with 55 percent of respondents being marginal farmers with less than 1 hectare. Agriculture, forests and labor constitute primary livelihood systems, with livestock and fish rearing being closely integrated in the farming systems. Service provision and small-scale processing and marketing also seem to play an important role among a number of artisan castes and tribal groups. Women's work is regarded as crucial for the survival of tribal households in terms of provisioning for food, income earning, as well as management of resources. Agriculture in the study area is predominantly rainfed and monocropped, with only about four percent being under irrigation. Less than 25 percent of the gross-cropped area is double cropped. Paddy is the major crop accounting for about 60 to 70 percent of the cultivated land during the kharif season. Cultivation practices among tribals remain primitive, even though most tribes are familiar with

wet rice as well as shifting cultivation. Agriculture generally provides household food security for two to six months of the year for the majority of farming households. It is estimated that average households in upland systems are only able to meet 20–40 percent of their food requirements; those in the middle system 30–40 percent and those in lowland systems 50–70 percent of their needs. Inadequate food security is compelling tribals, especially those in the upland and mixed systems, to depend increasingly on purchased foods to meet their minimum survival needs. Impoverished villagers have to choose between migrating for wage work or resorting to unsustainable harvesting of firewood for survival income. With planning horizons in tribal societies being short, agriculture is aimed at short-term food sufficiency for a few months. Exploitation by market forces has impacted livelihoods from nontimber forest product in the past. These stand threatened further with increased deforestation. Food insecurity peaks in the post-sowing monsoon period (August–September) and again in March when the kharif harvest has been exhausted. In the past, most tribals were able to cover most of the shortfall with foods gathered from the forests. Forest degradation and curtailed forest access has reduced the availability of natural foods on which they depended. Many tribals have become caught in a debt trap because of the precariousness of their food security situation.

A seminal study by Narain and others (2005) examined livelihood patterns in 550 households in forest fringe communities in the Jhabua district of Madhya Pradesh, and more importantly, measured specific components of household income and subsequent dependence on natural resources, including forests (table A5.7).³⁰ The Jhabua district is characterized by literacy rates of 37 percent. Agriculture is predominantly rainfed and is the primary occupation of 91 percent of villagers surveyed. The district's land base is 54 percent agriculture land, 19 percent forest cover, and 27 percent degraded land. Based on estimates of permanent income across household income quartiles, it is apparent that the disparity in income levels is quite significant across the top and bottom income quartiles. In particular, the total permanent income of the richest quartile is almost seven times that of the lowest

group. Agriculture, natural resources, home enterprises, wage employment and transfer income increase directly with household income. Livestock income increases over the first three income quartiles and then declines in the top quartile. Of more interest is the share of household income and how this changes over the four income quartiles (figure A5.2). The figure shows that as household income increases, the share of income from agriculture

declines, being offset by increases in wage employment and home enterprise income. For the lowest quartile, which could include the poorest marginal farmers and landless, agriculture

Table A5.7. Permanent income sources by quartile, Jhabua

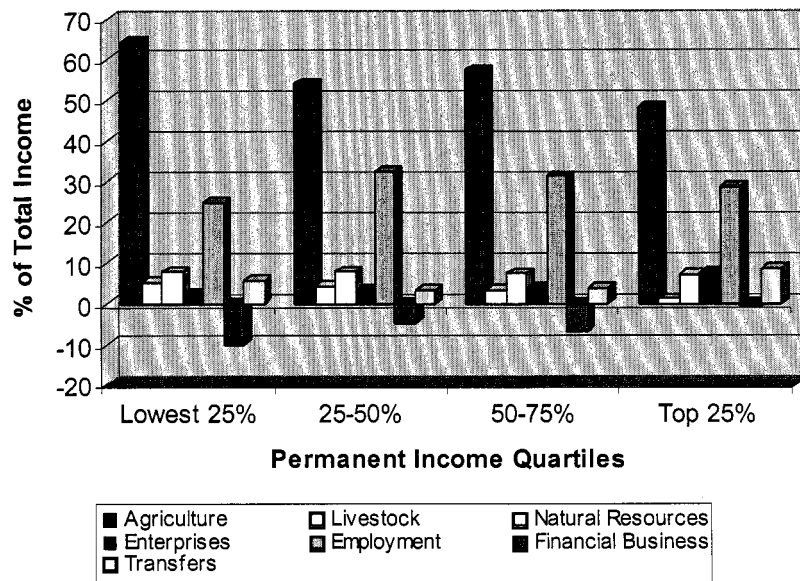
| Income source | Permanent income quartiles (Rs) | | | |
|--------------------|---------------------------------|---------|---------|---------|
| | Lowest | | | |
| | 25 | 25–50 | 50–75 | Top 25 |
| | percent | percent | percent | percent |
| Agriculture | 1,550 | 2,446 | 3,844 | 7,815 |
| Livestock | 125 | 184 | 218 | 179 |
| Natural Resources | 187 | 354 | 490 | 1,136 |
| Enterprises | 51 | 144 | 246 | 1,216 |
| Employment | 597 | 1,466 | 2,087 | 4,630 |
| Financial Business | -243 | -227 | -446 | -131 |
| Transfers | 134 | 148 | 250 | 1357 |
| Total | 2,401 | 4,515 | 6,689 | 16,202 |

Source: Narain and others 2005.

³⁰ Permanent income sources include income from agriculture, livestock rearing, common property resource collection, household enterprises, wage employment, financial transactions and transfers. Income is measured as the difference between total revenue (market based or imputed for subsistence goods) and total input costs incurred, mainly for agriculture. Common property resources included fuelwood, construction poles/timber, fodder, mahua flowers and seeds, kendu leaves, and dung. For the majority of households, the income from these activities is simply the gross revenue.

accounts for more than 60 percent of permanent household income. Employment accounts for another 25 percent. Natural resources from common areas accounts for only 8 percent of permanent income.

Figure A5.2. Permanent income shares, Jhabua

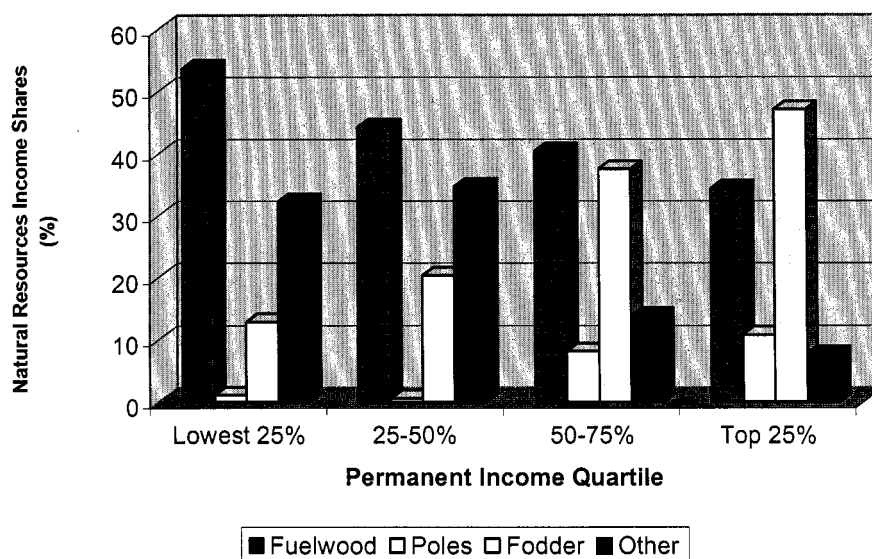


Source: Narain and others 2005.

It is interesting to note that the share of permanent income from natural resources is fairly stable across the four income quartiles at 7–8 percent. An interesting result is that natural resource dependence (the share of total income from natural resources) does not decline as household income increases. The patterns in figure A5.2 tend to support the more general findings from field surveys in Jharkhand and Assam that agriculture and wage employment are the primary occupations and income sources in communities bordering forests. With respect to natural resources alone, the analysis from Jhabua (figure A5.3) shows that the share of fuelwood income from total natural resources income declines as household income increases. This is due largely to other forms of energy (LPG, electric generators) becoming more affordable and the opportunity cost of time spent collecting fuelwood becoming too high. These findings are shared by other studies showing that fuelwood collection will decrease with wealth because of increased opportunity costs of labor and changes in preferences (Banyopadhyay and Shyamsundar 2004; Bardhan and others 2002). A similar pattern is found for “other” natural resources, which would include nontimber products. For the most part, these products require intensive collection efforts to yield what is usually a low value product, in the absence of value addition and access to more efficient markets. 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. How do these results fit with broader global experiences? Vedeld and others (2004) synthesized research case studies on forest dependency from East Africa, South America, Asia and Latin America. The results show a range of average relative shares of environmental incomes out of total household incomes, from 5 percent as a low outcome, and 42 percent as the higher outcome (table A5.8). The Jhabua case study in Madhya Pradesh found the share of permanent natural resource income from total household income at 7–8 percent, slightly above the lower values suggested in table A5.1. On the other hand, the forest environmental income in the lower case of

\$173 is equivalent to about Rs7,800, far above the values found by Narain and others (2005) in the Madhya Pradesh studies.

Figure A5.3. Natural resource permanent income shares, Jhabua



Source: Narain and others 2005.

In summary, a combination of resources (agriculture, forests, and labor) contributes to rural livelihoods in forest fringe areas in the Indian states examined. Experiences from the field suggest that the degree and nature of dependence on forests and livelihood options differs from one community to another (table A5.9). Villages closer to towns will rely less on forest for livelihoods and more on agriculture and wage labor. On the other hand, villages in more remote areas will have to rely more on agriculture and forestry. The communities examined in this study earn very little cash income from forests. Subsistence minor products, as well as fuelwood and fodder are the main contributors to local livelihoods from the forest. The Madhya Pradesh research suggests that nontimber forest products account for a more significant share of livelihoods from natural resources than the communities examined in

Table A5.8. Global case studies of forest environmental income

| Key case study characteristics | Relative forest income share of total household income | | |
|--------------------------------|--|----------------|--------------|
| | Low 5 % | Medium 19 % | High 42 % |
| Annual forest income (\$ PPP) | 173 | 743 | 837 |
| Education levels (years) | 6.4 | 4.8 | 4.4 |
| Distance to market (km) | 22 | 7.9 | 34.7 |

Source: Vedeld and others (2004).

Jharkhand and Assam, but in terms of total household income, nontimber products play a very minor role at present. Of note, none of the communities surveyed mentioned timber as a contributor to household welfare. This is due to several reasons. First, the main priority is food security and forests are valuable to them as they provide subsistence food products to satisfy their immediate needs. Second, they know that Sal trees are necessary for forest products to flourish. Third, tribal people may not be keen in using the some species for commercial purposes as they are by nature, adverse to trade and commerce. Finally, there is opposition between the state's

interest in timber as opposed to communities' interest in forest products, and the insensitivity and lack of cultural awareness of state policies in this matter.

Table A5.9. Relative importance of various means of livelihood

| <i>Typology of villages</i> | <i>Livelihood options</i> | | | |
|--|--|--------------------------------|--|--------------------|
| | Agriculture and allied activities | Forest-based activities | Other off-farm activities and service | Wage income |
| Near urban towns/industrial towns/mining areas | ++ | + | + | +++ |
| With predominantly tribal population and at distant location from town (traditional) | +++ | ++ | + | + |
| Predominantly tribal population, close to a town (nontraditional) | ++ | + | ++ | ++ |
| With predominantly nontribal population (with NGO support) | +++ | + | ++ | + |
| With JFM activities | ++ | + | + | ++ |
| With self-initiated forest protection activities | ++ | ++ | + | ++ |

(+ Low; ++Moderate; +++High)

Source: TERI 2004, 2005.

Field experience suggests that even where communities are interested in pursuing commercial timber production, in JFM programs they view timber as belonging to the state. Where there is no JFM, communities may feel the resources belong to them, but have no access to efficient marketing channels. For some communities, Sal trees are sacred and should not be cut down. Moreover, they realize that Sal trees are necessary for the growth of minor forest products critical for their survival during the lean season. Sustained and legal timber harvesting is where significant revenues could accrue to some communities. It is clear that in the communities surveyed, forests do contribute to rural livelihoods but primarily through seasonal collection of low-value subsistence products. The few which are sold commercially attract low market prices in return for high collection costs. Where forests are highly degraded, this situation is exacerbated as people have to travel further to collect products. In a study of Chhattisgarh areas that were heavily forested a few decades ago, the distance required to collect fuelwood, fodder and minor nontimber forest products has increased four-fold in 20 years (Saxena, 2002). The critical issue, which needs to be emphasized is that from the communities examined in the three focal states, the livelihood potential of forests remain underutilized and provide little hope to communities as a pathway out of poverty. Lessons can be learnt from other Asian countries like China where community/farm forestry has been very successful. In 158 counties of Southern China, farmers get as much as 40 percent of their total income from the forest industry through commercial sales of timber, poles and pulpwood (People's Daily Online 2004). At the same time however, improving forest livelihoods in most communities in India must be integrated into broader rural livelihood initiatives such as agriculture intensification and marketing.

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

In the three states surveyed, priorities for rural development assistance made by members of village communities were remarkably similar. In particular, communities generally want:

- Improved agricultural production mainly through irrigation (check dams, ponds, water pumps) to allow two crops to be harvested each year and diversification into cash crops
- Safe drinking water and simple hand pumps
- Assistance with village-based income generating activities (sewing, weaving)
- Access to the electricity net
- Improved roads and better transport facilities
- Better access to education and health facilities

It is clear from the previous analysis that the majority of forest-fringe communities are primarily dependent on agrarian-based economies, with forests playing an important supporting role through provision of subsistence fuelwood, fodder and limited nontimber forest products on a seasonal basis for some people, and as a safety net for others. From field experience, the current JFM model, based primarily on rehabilitating degraded forests, will have a limited immediate impact on rural development and poverty alleviation. Until communities are able to access better quality forests for timber and commercial nontimber forest products, and/or degraded forests mature, agriculture development is key to lifting the poorest segment of the population out of poverty. But agriculture and forest development initiatives in remote forest fringe communities must also be complemented by infrastructure development (roads, electricity), health and education improvements, and development of social capital in communities. Following Falconer and Arnold (1988), forests are elements of complex rural environments, and forestry alone cannot always alter basic social, economic and political factors at the root of poverty and inequity. The importance of trees and tree products in rural economies will vary from community to community and also between households within a community. Their use and role within the household economy are changing as rural areas become increasingly commercialized, forest resources are progressively degraded, and farm productivity declines.

Field surveys suggest that other rural development agencies (aside from forest department) are not always reaching remote forest fringe communities and providing effective service delivery. This raises some difficult policy issues. State government agencies such as Agriculture, Minor Irrigation, Rural Development, and Tribal Welfare have specific rural development mandates but are not always well-integrated with forest development, nor do they have the necessary structures or human resource capacity to reach remote forest-based communities. A study in Northeast India (Darloug and Roy 2005) found weak linkages between the indigenous community institutions, local authorities, forest department and external organizations. In addition, there was minimal coordination between government agencies dealing with natural resource management and community forestry. Financial resources do not appear to be the main problem; in Jharkhand for example, state agencies such as Rural Development and Tribal Welfare are consistently underspending annual budget appropriations. Nationally only 55 percent of central allocations to the Association of Scheduled Tribes and Rural Poor are actually disbursed. At the same time, state forest departments do have a field presence (albeit spread thinly) in remote forest areas but lack the mandate, resources and training to deliver broader rural development programs. Field evidence suggests that forest department is gradually building trust and respect in more remote forest areas through FDA programs that include modest entry point activities such as check dams. Communities have in some cases, raised expectations that forest department will deliver a wider range of development needs. Yet forest department is limited in how well they can address

broader development needs. This situation presents a paradoxical service delivery issue; forest department has a stronger comparative advantage in field “reach” but lacks the necessary budget, rural development expertise, and mandate to effectively provide a wider range of needed development options to Forest-based communities. At the same time, because of its higher visibility in more remote areas, villagers often expect the forest department to provide for rural development needs (Tiwary 2004). Conversely, state agencies with a clear mandate for rural development, have the expertise and larger budgets than forest department, but are challenged to provide effective service delivery.

Compounding the service delivery issue is poor integration between Forestry Departments and more traditional rural development agencies. Forest development to remote forest communities is through the Forest Development Agency (FDA) system. FDAs can be constituted as a registered society under Societies Registration Act. The executive body of the FDA is chaired by the Conservator of Forests with the Divisional Forest Officer as Member Secretary. Experts from other line agencies are usually represented but have no voting rights, and may not always take part in meetings. JFM committees are represented through 15 nominees from the general body, of which seven must be women. On average, one FDA will represent 25–50 JFM committees. In addition there are specific provisions for undertaking entry point activities for the community throughout the project period and beyond. The FDA executive committee also includes representatives from *Panchayats*/District Councils. Concurrently, broader rural development funds flow mainly to communities in less remote areas through the District Rural Development Agencies (DRDA) system. Concerns were expressed by forest department staff about the limited involvement of rural development agencies within the FDA structure. At the same time, rural development agencies expressed concern that collaboration with the Forest Department and is not as strong as desired. Having in essence, two parallel systems for rural development incurs major transaction costs and limits communities on both “sides” from accessing investment funds and expertise for broader rural development that includes both forestry and nonforestry initiatives.

Appendix 6. Community Forestry Institutions in Maharashtra

A study by Ghate (2003) shed light on the functioning of three main types of community-based forest institutions. These are a self-initiated committee that shifts to JFM; a self-initiated committee established with the help of a CSO; and finally a community that only had a formal JFM committee (table A6.1).

Table A6.1. Contrasting community forest institutions

| <i>Parameter</i> | <i>Deulgaon village self-initiated, then JFM</i> | <i>Ranvahi village CSO-promoted, then JFM</i> | <i>Markegaon village JFM from beginning</i> |
|----------------------|---|---|---|
| Population | 173 | 393 | 161 |
| ST percent | 70 | 96 | 100 |
| Landholding (ha) | 0.8 to 1.1 | 0.4 to 2.8 | 0.8 to 1.1 |
| Forest (ha/capita) | 3.5 | 2.4 | 2.7 |
| History prior to JFM | The community is located on revenue land. After a land survey in 1989, the community initiated informal steps to protect forests within its revenue boundaries. It adopted rules for protection and harvesting. Over the next 10 years, the community forestry institution functioned well, but lack of funds and poor technical knowledge spurred linkages with the forest department, leading to JFM beginning in 1998. | In 1995, a CSO worked with the community to build social capital through self-help groups and capacity building. Forests were degraded and a decision was made to join a JFM program in 2001. The CSO continued to work with the community to develop its own rules for forest use, protection and conflict management. The committee has male and female members from every household. | This is a sparsely populated village with good quality forest but it was under pressure from other villages while local forest guard looked the other way. A neighboring village had initiated a JFM approach and Markegaon villagers felt this approach was worthwhile. A local forest protection committee was created in 1997 and became a registered JFM committee in 2000. |
| Post JFM Benefits | More secure rights to harvest nontimber product; 85 hectares plantation was established; rules self-made and well-understood; timber revenues to be shared equally between village and forest department | Flexible rules are perceived as fair and legitimate. 60 hectares plantation was established. Improved awareness of rights, responsibilities and knowledge systems. More confident dealings with forest department. Tree nursery set up and an agreement reached with forest department for seedling purchase. | Forest related work has provided local employment by forest department. Funds are available for development work by forest authorities. JFM has provided better clarity over boundaries and stronger legal protection against incursion by outsiders. |
| Post JFM Weaknesses | Poor communication and coordination between village and forest department; no system of auditing community financial records; village has lost autonomy for many forestry decisions; female participation in decision making is low. | Growing dependence on CSO. The CSO approach is to placate all groups in the village, leading to poor adherence to, and implementation of rules in the absence of strong sanctions. | Community has little understanding of JFM rules and regulations. Forest department has small role in framing rules, fixing penalties or dealing with infractions. Committee meetings rarely attended by Forest Guard. |
| Sustainability | Possible, based on historic commitment. Need to be stricter on sanctions. Forest department must improve coordination and support. | Likely, based on support from CSO and forest department. But dependence on CSO must be reduced. Good coordination with forest department. | Unlikely. Weak controls over illegal harvesting. Committee not functioning properly. Lack of community and forest department interest. |

Source: Ghate 2003.

Appendix 7. Forest Management Planning Systems

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. In particular, 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 socio-economic welfare of Forest-based communities, both large and small.³¹ Forests are dynamic ecosystems comprising of different vegetative and nonvegetative species, ages and quality. Impacts from human (encroachment, harvesting, grazing) and natural causes (fire, insects and disease) all contribute to the shifting quantity and quality of forest resources in any particular area. Considering a forest managed primarily for timber and nontimber products,³² an effective resource assessment system would normally incorporate a number of important features (box A7.1). Resource assessment systems should provide information to satisfy a range of stakeholders. Communities need local forest resource information for micro-planning and monitoring.

Forest management agencies need forest resource information for management planning at division level, which can also be aggregated to the state or even national level to provide an overview for outlook studies, policy formulation and analysis, and long-term strategies.

Central government planning and finance agencies require macro-level information for economic planning, revenue forecasting, policy development and sector outlook studies. The scientific community needs resource assessment information to

support applied research and development. Finally, where forests are largely under public ownership, the general public has a right to timely and accurate information about the state of the forest and how it is changing.

Box A7.1. Attributes of efficient resource assessment systems

An efficient forest resource assessment system has a number of characteristics:

- Biophysical information on the forest¹, at an appropriate level of detail, based on the broad forest policy and management goals of society
- Map-based information at scales suitable for broader national and state level strategic planning, more detailed district and community-level forest management planning
- Accurate information on land tenure within and surrounding the forest to identify administrative and tenure boundaries
- Models and supporting biological data to assist forest managers in understanding forest dynamics, and developing robust estimates of current and potential forest stocking and productivity.
- Estimates of average annual losses from natural causes such as fire, insects and disease, linked to inventory data, and growth and yield models.
- Estimates of average annual loss from both legal and illegal extraction of forest products.

Source: Background studies.

³¹ Large communities, highly dependent on industrial forestry enterprises, are quite vulnerable to socio-economic impacts from unsustainable forest extraction, collapse of resource stocks and closure of forestry operation. This is also the case where forests support valuable biodiversity and a large eco-tourism industry. In small communities, where forests are part of a mix of livelihoods, people can fall back on agriculture and continue to use the forest for fuelwood, grazing, and minor produce as survival mechanisms.

³² As would be the case with the majority of community-based forest operations in India

Management plans facilitate articulation and execution of forest sector policy and development objectives at different levels, from community micro-plans to a large forest division. Management plans are important for four reasons. First, they are an administrative and economic necessity, given the large potential values inherent in forests. Second, management planning focuses analyses to inform decision making about short, intermediate and long-term forest sector and development goals. Third, the plans provide a public record of proposed forest management actions. Finally, management plans give evidence of stewardship, particularly with public forests and public forest management agencies. Management planning should be responsive to changing goals, conditions, and resource pressures and incorporate mechanism for meaningful public participation. Forest managers require information on current and forecast demand for timber and nontimber forest products for commercial and noncommercial uses from forests under their jurisdiction. This implies that forest management agencies have access to timely and accurate market statistics and trends (domestic and foreign), relevant economic analyses, changing technologies in wood product applications and substitutes, and so forth. Further, this kind of information must be available to forest officers involved in implementing management planning at division and community levels. Forests can take a generation to mature, and silviculture decisions made early in stand development can determine the future structure, composition and product mix available to harvest for domestic and commercial use. A simple decision about what species to plant, or choosing between planting, coppice management or managing natural regeneration, can have major long-term economic implications.

Indian forest policy³³ requires that 10-year working plans are prepared and approved for each Forest Division before any harvesting operation can take place. Each working plan covers all reserve and protected forests under its jurisdiction and describes the bio-geo-physical features, forest resources, management objectives, the work to be executed during the period covered by the plan, and proposed costs. Objectives generally relate to: increasing forest cover and improvement of its quality; protection and rehabilitation of degraded forests; soil and water conservation; wildlife protection; and fulfilling the demand for minor forest products of local people, mainly through JFM. Working Plans tend to be quite comprehensive and can take up to 2-3 years to reach approval stage. There are no formal mechanisms for public consultation. Once approved by MOEF, the working plans form the basis for all forestry work to be undertaken in the Division over the next decade. Collectively, the plans inform forest sector budget allocations from State and Central governments. Forest resource information is gathered from a variety of sources including low-intensity state forest inventory assessment (conducted as part of the bi-annual Forest Survey of India surveys of forest cover), and growth and yield data of mixed quality. The quality of this information varies from state to state.³⁴ To achieve various management objectives, state forests are divided into working circles, which define management interventions for specific forest types. Working circles can overlap to provide flexibility for management treatments within each forest division. Some common working circles are: Improvement (thinning existing forests), Rehabilitation (managing natural regeneration, enrichment planting), Plantations (major planting operations); Protection (from fire, grazing); Bamboo (managing bamboo stands); and Reclamation (reforesting old mining areas). The concept and approach to developing and applying working plans and working circles has a long history and tradition in India.

³³ Although not a legal document, certain aspects of Working Plans have a legal status through recent Supreme Court rulings, for example the MOEF review and approval process.

³⁴ A few states such as Madhya Pradesh and Andhra Pradesh, are now developing more intensive and fairly progressive inventory and mapping systems to provide better quality forest inventory information.

With the advent of formal³⁵ JFM in India, forest departments now prepare micro-plans with participating communities.³⁶ These plans are also prepared on a 10-year cycle and generally include basic socio-economic information about the village, local forest resources to be shared with the community, development needs, and proposed forest management treatments over the planning period. Local inventory assessment is usually quite limited, with little or no field measurements. Prescribed silviculture treatments such as planting, thinning, and where permitted, harvesting, are guided by the management regimes identified for the division-level working circles. Non-timber forest products are often included in the micro-plan, but this may range from a simple listing of species used by the community, to an assessment of market potential and development strategies for emerging products. The micro-plans are usually prepared by the district forest officer, with assistance from local Foresters and Range Officers over a period of 1-3 weeks, depending on the level of interaction with the JFM committee and Executive Committee. The plan is approved by the regional forest department Conservator of Forests. The 10-year forest management goals are then translated into annual work plans by the local district forest officer and staff for implementation. As funds become available from State and central sources, forest-based activities identified in the annual plan are delivered.

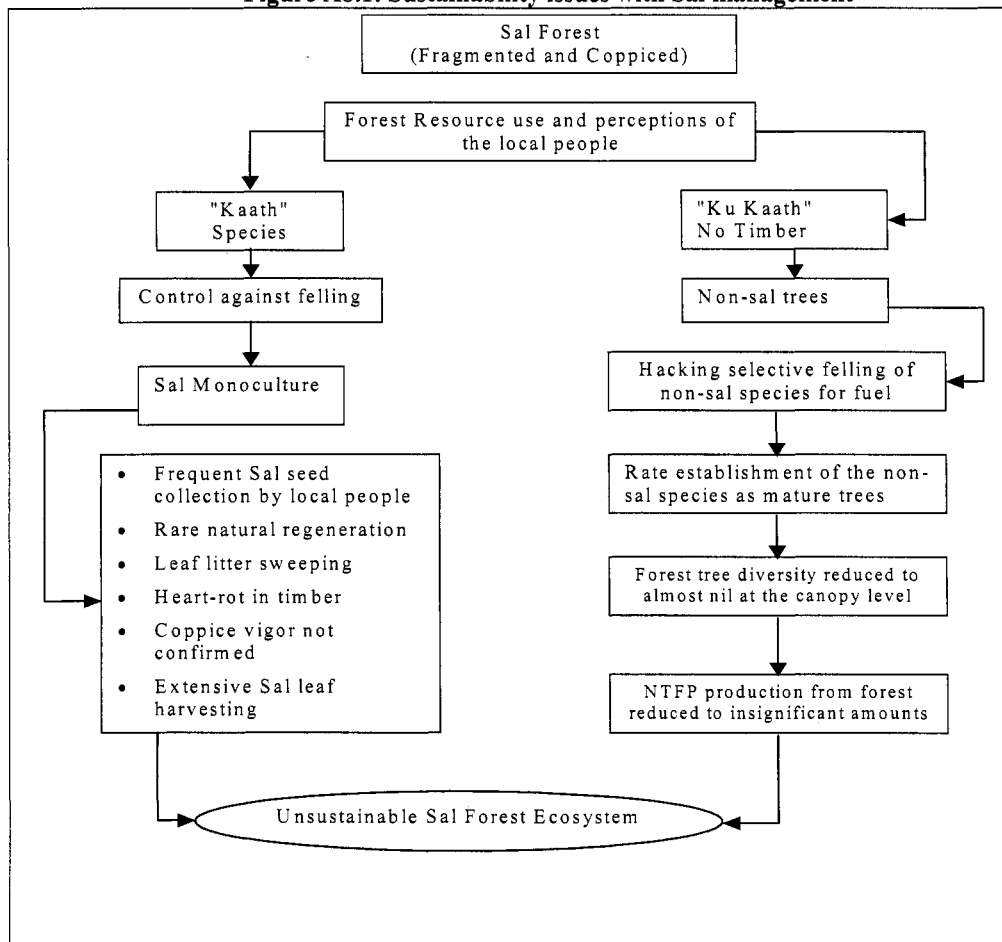
³⁵ As opposed to informal systems where some communities were managing surrounding forests without forest department assistance and without a formal JFM framework

³⁶ According to most JFM Resolutions, these plans are supposed to be prepared with the cooperation of community members through the JFM Committee. The level of community participation varies however, by state and by the interest of the local forest department officer; in some states, the forest department writes the plans without much local input. In others, communities are more active participants.

Appendix 8. Linking Overstory Management to Nontimber Forest Production

A study in Orissa (Bhattacharya and Prasad 1998) suggested that longer term forest sustainability can be put at risk from both a traditional focus on managing a Sal dominant monoculture³⁷ for timber, and an alternative where communities may be following inappropriate management practices for other nontimber forest products (figure A8.1).

Figure A8.1. Sustainability issues with Sal management



Source: (Bhattacharya and Prasad 1998).

Adhering to traditional Sal closed canopy management with controls against felling can eventually result in a lack of natural regeneration and poor coppice vigor that will reduce Sal timber yields. On the other hand, where Sal forests are deemed to have low timber potential in the first place, poor management of non-Sal species can reduce forest diversity and nontimber forest

³⁷ Although Sal is not the dominant tree species in Assam, it presently forms the majority of sawlogs. The lessons of the Orissa study in Figure A8.1 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.

product. In both cases, longer-term ecological sustainability is at risk and sustainable livelihood opportunities diminished. Management prescriptions for other species that may provide ecological support to important nontimber forest products are usually given little prominence (Bhattacharya and Prasad 1998). Many field and senior forest department staff recognize the importance of these “nontraditional” forest species. Yet forest management goals directly expressed through traditional rehabilitation and plantation working circle silviculture prescriptions are often to develop a forest suitable for pole and timber production with crown closure greater than 40 percent and where the dominant trees comprise over 80 percent of the stocking (Kumar 2002). The problem with nontimber forest products is that many species can flourish in forest openings (where crown closure is less than 40 percent). A strong case can be made therefore, that following traditional management regimes for commercial poles and timber, may ultimately reduce the quantity of nontimber products available to villagers for subsistence or commercial sale. It is also important for traditional knowledge of forest management to be integrated into forest management components of micro-plans. Over time, local people will often devise their own silviculture and forest production systems that in many instances lead to biologically sustainable outcomes (Foppes and Ketphanh 2000). Field studies seemed to suggest that few foresters had any knowledge of traditional silviculture practices, nor were mechanisms in place to systematically record local management approaches, link them to ongoing research programs for field testing and refinement, and ultimately disseminate this knowledge to both field foresters and other communities.

Appendix 9. Market Analysis for Selected Products and States

SAW TIMBER - Jharkhand and Madhya Pradesh Case Study

Market Structures

In terms of market structure in India, timber is a relatively undifferentiated commodity, with competition for domestic markets from overseas suppliers such as 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, Teak and Sal account for about 41 percent of the total growing stock in dense forests. The state is the largest producer of natural forest timber in the country; and its Teak timber is of exceptional quality. Teak and Sal account for over 60 percent and 80 percent respectively of the sales value of timber harvested in the state. The sustainable cut for the next five years has been estimated by the Forest Department at about 190,000 cubic meters per year.³⁸ About 40 percent of log sales are to other states. In addition, a large but nonquantified proportion of the timber sawn within the State by 2,400 sawmills, is sold in semi-converted form to out-of-state buyers. Total revenues from timber harvesting by the Forest Department each year are about Rs3.8 billion (\$84 million).³⁹ As indicated earlier in the report, about 75 percent of total nonplan expenditures are to support timber harvesting and marketing. From 2002 budget figures, this works out to roughly Rs2.7 billion (\$59 million). Another organization, the Madhya Pradesh Rajya Van Vikas Nigram Limited (State Forestry Development Corporation (FDC)) is the second largest owner of teak plantations in India. The FDC has 232,000 hectares of forestry land and is currently planting 4,000-5,000 ha/year. It is currently obtaining thinning revenue from sales of poles and small sawlogs. In 2002/03, sales revenue was Rs173 million (\$3.8 million). The FDC logs and poles are auctioned using the same system and upset pricing levels as those set by the forest department. The FDC has been a relatively innovative financier of plantation forests in the State. The Central and State Governments have contributed Rs98 million of equity funds to establish and expand the FDC. In March 2003, it borrowed a further Rs400 million of bank funds to finance expansion. It is now able to raise loans without government guarantees and repay loans from thinning revenue. In effect it has been a useful vehicle to augment State budgetary funding available for rehabilitation of degraded forest department forestry land.

In Jharkhand, the dominant timber species is Sal. The state's climate and soils can produce very high quality, large diameter Sal logs for the sawmill industry. At present however, only 3,000 cubic meters of logs are legally harvested from salvage cutting operations in the state, with an additional 2,000 cubic meters estimated to be cut illegally.⁴⁰ A small part of the domestic supply originates from private farms in the state. Out of the about 150 licensed sawmills and wood cutting shops in the state, only 60 are currently operating full-time and produce about 20,000

³⁸ Currently augmented by another 200,000 cubic meters from harvesting operations ahead of dam projects.

³⁹ Statistics relating to production from private farms, sales of logs and sawn timber to other states, and the import of timber from other states and from overseas, although obtainable from transit permit data, is not compiled.

⁴⁰ Prior to the 1997 Supreme Court restrictions on clear felling in India, annual log production in Jharkhand was estimated at 30,000 cubic meters. Log production is constrained pending approval of working plans by MOEF

cubic meters of rough lumber.⁴¹ Logs from Jharkhand's forests represent about 30 percent of total input for the 60 full-time mills. The remaining balance of log input (27,000 cubic meters) is from overseas (mainly Nigeria, Malaysia and Indonesia), and neighboring states where sawlog production is occurring. The economic hauling distance for logs in India is an estimated 500 kilometers, which provides a log source to Jharkhand mills from an areas covering all of West Bengal and Bihar, most of Chhattisgarh and Orissa, and about one-half of Uttar Pradesh and Madhya Pradesh. Foreign logs tend to be shipped through Calcutta. Local lumber production of 20,000 cubic meters meets only 20 percent of the domestic demand in Jharkhand. The remaining lumber demand of 80,000 cubic meters is met through imports from other states. In addition to timber for lumber production, an estimated 25,000 poles are produced from local forests, mainly Sal but also species such as eucalyptus from private farms.

Market Conduct

In Madhya Pradesh harvesting is seasonal, normally undertaken from September to June.⁴² Selling is mainly by auction through 38 major commercial depots in the State. Material available for auction is graded in to lots varying from 0.5 cubic meters to 5 cubic meters. Attendance at auctions is normally in the range of 100 to 300 potential buyers, many from other states such as Jharkhand. Minimum or "upset" prices are set based on an average of previous sale prices. At this time, 80 to 90 percent of product is sold at auctions with the balance sold at upset prices after auctions. The Forest Department auction system appears to be working well. From interviews undertaken with sawmillers, there is general acceptance and satisfaction with the auction system. Several complained that upset prices were too high. Recent changes in the auction rules allow the department to sell unsold logs at less than the upset price after three auctions has helped substantially reduce the incidence of unsold old and decaying logs. Log prices vary considerably between species, depots and grades due to wide ranging differences in product length, diameter and quality. Over the past three years Teak log prices have remained relatively stable. The weighted average price for teak logs is Rs13,550 per cubic meter (within a range of Rs5,275 per cubic meter to Rs28,133 per cubic meter), about three times that of Sal logs, and 7.5 times that of miscellaneous species.

In Jharkhand, prices along the Sal log/lumber value chain vary considerably between suppliers and producers due to wide ranging differences in product length, width and quality. For example, the price of Sal logs purchased on the open market (FOB mill) from domestic, other states or other countries ranges from Rs7,800 per cubic meter to Rs16,000 per cubic meter. The Forest Department depot price ranges from Rs5,164 per cubic meter to Rs17,010 per cubic meter. Field data show that prices from logs supplied from department depots were significantly higher than logs imported from other states or even overseas suppliers like Nigeria or Malaysia. Prices for Sal logs and lumber in Ranchi markets appear to be 20-40 percent higher than in most other regions of India. The Indian Council of Productivity and Research publications show that prices reported for Ranchi for Sal logs and sawn timber, are above average prices for the other eight centers for

⁴¹ Calculations are based on an estimated lumber recovery factor of 60 percent. This means that 1 cubic meters of logs yields 212 foot board measure of lumber (1.2 cubic meters). The remainder of the log remains as sawdust, slabs and ends. Mill owners suggested a LRF of as much as 80 percent, but this did not match with the antiquated equipment and wide saw kerf observed. Efficient sawmills in North America with the best technology can usually only achieve LRFs of 60-75 percent.

⁴² The work was hampered by limited data available in each state on the timber product market structure, for example volumes, origins and prices of log supply, lumber production, sales volumes and market demand. This reinforces the problem cited in the previous chapter of inadequate forest sector information.

which they collect prices. Ranchi appears to have the highest log prices and is second only to Kolkata for Sal sawn timber prices.

Market Performance and Impact on Livelihoods: Key Issues

In comparison with Jharkhand, the production and marketing of timber in Madhya Pradesh is performing well and is a net exporter of sawn timber. Most of the wood that can be sustainably cut from state commercial forests is being marketed. There is also little evidence of illegal wood in the market.⁴³ Significant supply expansion will occur from commercial plantations owned by the government in the next several decades. A critical point with the Madhya Pradesh system is whether an approach that accounts for Rs2.7 billion in operating costs for harvesting and marketing operations, financed by state budget allocations, and generating Rs3.8 billion in gross revenues, is the most efficient approach from a public policy perspective. If the state were to gradually ease itself out of the commercial timber harvesting and marketing business, three principal questions arise; first, what could the Rs2.7 billion in state transfers to the forest department be used for; second, how could the state generate an equivalent net revenue of Rs1.1 billion from alternative marketing systems; and third, what alternative systems could be used? In Jharkhand and Assam, the same questions apply, but on a much smaller scale. In Jharkhand, there is a significant imbalance between local sawmill capacity, active production levels, local log supply, and local lumber demand. In both states, log and lumber prices from the open market and government depots have become more aligned in the past decade as the volume of imported logs and lumber has increased, particularly in Jharkhand. Government harvesting and marketing structures carry high overhead costs. In Jharkhand for example, the fixed harvesting overheads for one coupe could be as high as Rs51,000 over nine months for wages, and small structures on site. With small marketing depots, the fixed costs for a year could be as much as Rs195,000 for staff wages, land rental, and maintenance. As indicated earlier in this report, 76 percent of Madhya Pradesh's recurrent nonplan budget (or \$65 million) is supporting timber production, harvesting, and territorial structures, a high proportion of which is for staff costs. Two key issues need to be addressed with respect to improving community livelihoods through timber market systems.

First, communities need space to engage in timber marketing. Timber provides a huge opportunity for communities to generate forest revenues. At present however, neither state provides mechanisms for JFM communities to easily engage in commercial timber marketing for nominated species outside of government structures with its inherent restrictions and opaque revenue sharing systems. In Madhya Pradesh, plantations of the Forest Department and Forest Development Corporation are integrated with JFM operations, but committees in dense, high quality forests generally only provide protection functions in return for minor forest produce, the chance to be employed in forest operations, and a share of final net timber revenues.⁴⁴ The Forest Department presently sees little space for communities in these forests to assume more management and marketing responsibilities. There is general resistance to upset an existing marketing system that is competing reasonably well with imported logs, albeit with state subsidies. Committees in degraded forests however, may have more flexibility in forest design through the micro-planning process, but timber marketing is still constrained by the legal and regulatory framework. In Jharkhand, there is almost no legal timber harvesting at present. The

⁴³ In discussions with sawmillers, they estimated that the level of illegal wood in the Bhopal market was less than 10 percent

⁴⁴ It was understood from field exercises that only one community had shared in timber revenues from high quality forests. Details on the volume of timber, quality and net revenue shared with the community were not available from the Forest Department.

future could offer a much different scenario however, as more working plans are approved and assuming communities are given greater opportunities for harvesting and marketing timber from forests. The current JFM resolution allows an option for communities to market nonlisted timber, however, there are presently no structures or institutions in place to provide effective market intelligence, access to marketing channels within and outside the state, and technical assistance to improve log quality. Also, the legal framework restricts sales to lower-valued nonlisted timber species. The opportunity for value addition, where communities group together and operate a small sawmill to capture economies of scale and higher resource rents, has not been given serious attention within the government. In both states, a transition period will occur over the next decade with JFM committees having gained additional institutional experience and, timber from formerly degraded forests beginning to enter the market as poles and small sawlogs. The challenge is to establish market systems that allow communities to choose marketing channels for all timber species, and values the efficiencies of community managed timber (flexibility of volumes, multiple delivery points and low costs associated with harvesting and protection of logs) as well as low cost value addition to cater to differentiated clientele.

Second, restrictions on timber felling and transport need to be relaxed. This issue affects timber supply from both communities and private farms. Part of the problem is the ambiguity that still exists over the ownership of trees on private land and Forest Department land. The laborious permitting system to remove privately grown trees provides a strong disincentive to private commercial growing of trees on private land (box A9.1). In Jharkhand, private farmers can sell Sal logs under the terms of the Bihar Forest Produce (regulation and Trade) Act, 1984. However, they must be offered for sale to the Forest Department first at the scheduled rates less a 15 percent commission for marketing. If the department does not wish to handle the sale it can give clearance for the private grower to harvest and sell on his or her own behalf but transit permits are still required. In both states, a point will eventually be reached where JFM committees become the principle tenure form on forest land and in providing many forests management functions. The transit permit system together with the rules governing the hours of operation of sawmills and the elaborate perpetual inventory record system that sawmills have to keep are all examples of outdated regulations that should be reviewed in the light of JFM and enlightened regulatory development.

Box A9.1. Impact of harvesting and transit rules in Jharkhand

The Forest Department can provide clearance for a landowner to do the harvesting and marketing independently. The farmer must however, prove ownership of the land in order to be issued with harvesting and transit permits. This process can take several weeks and provides a fertile ground for rent-seeking behavior and middlemen to provide "permit facilitation" services. A number of sawmill owners indicated that without the services of middlemen, it was difficult for private farmers to market their timber to the mills. The issue of permits also affects lumber. Sawmills wishing to transport lumber outside of their municipality must also obtain a transit permit. There is little rationale for this requirement, which simply raises transaction costs and shifts efforts from finding and maintaining markets to finding ways around the permit.

Source: Background studies for Jharkhand.

KENDU LEAF - Jharkhand and Madhya Pradesh case study

Market Structures

The leaves of *Diospyros melanoxylon*, popularly known as kendu (or tendu), are of high economic value because of their use in rolling *bidi* (country cigarettes). Throughout India, kendu

leaves and *bidis* are estimated to provide 106 million person days in collecting activities and 675 million person days in processing of products. The Kendu leaves sought by the market are normally collected over a 15- to 20-day period between late April and early June, depending on when the first monsoon rains fall. The long term prospect for Kendu leaf trade (and *bidi* cigarettes) is considered by traders to be stable to slowly reducing, with a longer term outlook of further slow reductions in volume, because of increasing competition from regular cigarettes, chewing tobacco, *pan masala* and government publicity to reduce smoking (International Labor Office 2003). Both Madhya Pradesh and Jharkhand regulate the trade in Kendu leaves (box A9.2). In 2003, Jharkhand production represented about 10 percent of the Indian market with an estimated 90 to 95 percent sold to manufacturers in neighboring states. Madhya Pradesh State is the largest producer of tendu leaves in India with about 25 percent of the Indian market. Although local producers and forest department officials feel the trend in *bidi* production is declining, data on *bidi* tobacco production do not support this view. On the other hand, the longer-term domestic demand outlook is not optimistic due to anti-smoking, tobacco-free programs, and competition from chewing tobacco gradually taking hold in India (International Labor Office 2003).

Box A9.2. Kendu leaf regulatory system

In Jharkhand a grower has to be registered if their annual production is greater than one standard bag. Every trader and/or exporter of leaves, and every manufacturer of *bidi* cigarettes also is required to be registered to ensure that produce is only collected and traded by licenced operators. In Madhya Pradesh, written authorization from the State is required by any agent of the State that grows, purchases or transports leaves. Wide powers are contained in the Act to levy registration fees, confiscate leaves and make other rules to maintain the State monopoly. Prior to 1964, tendu leaves growing on Government land were sold unplucked to contractors, and those grown on private land were disposed of by the owners of that land, with no controls.

Source: Background studies in focal states

The Kendu market structure in Jharkhand involves interaction between the Jharkhand State Forest Development Corporation, licensed traders who operate as middlemen between the corporation and communities and manufacturers, and insurgents. The collection begins at village level with the Jharkhand State Forest Development Corporation nominating collection villages in designated forest areas. A number of collection villages are then aggregated into lots, which are tendered out to a small and well-established group of licensed traders in the private sector. During the collection season, the leaves are plucked manually by the forest dwellers, sorted and tied in small bundles. The leaves are delivered to collection centers and wages paid by traders to the collectors at the rate per bag fixed by the corporation at the beginning of the year. Leaf bundles are then dried and packed in gunny bags. These are then stored in an official bonded warehouse for grading and forward sale to *bidi* manufacturers outside the state. A system of advance auctioning has been in place since 1994. Naxalites allow villagers and traders to operate in insurgent areas in return for a share of the traded value.

The Madhya Pradesh State Minor Forest Produce (Trading and Development Cooperative Federation) oversees a supporting structure of cooperative unions and primary cooperative societies who handle collection and storage of leaves. Membership of these societies comes only from leaf pluckers. One cooperative society generally serves 10 to 15 villages. At the secondary level, 83 district forest produce unions were formed mainly as a conduit for financing and for auctioning leaves. The Federation is the apex level institution. After the formation of the separate Chhattisgarh State in 2000, the new Madhya Pradesh State remained with 58 district unions and 1066 primary forest produce societies. Up until 2003, all leaves were transferred from the cooperative societies to cooperative union rented warehouses, where the leaves were auctioned. In 2003, 302 out of the 1,033 selling units moved to a system of advance tendering/selling of the

whole production of a unit prior to the commencement of the season with the purchaser being responsible for storage and transport. Under the new pre-season bidding system the purchaser bids for an agreed fixed quantity of bags and can be required to purchase up to a further 25 percent of bags if available at the tender price per bag. Payment for both methods is by installment or (if sooner than uplifting dates) when the leaves are removed from the warehouse. The reason for the change in methods was to encourage greater competition, and increase efficiency in drying and transport.

Market Conduct

In Jharkhand, the value chain for Kendu leaves involves critical stages and a wide range of costs. The first main payment is made to the primary collector (that is, village/household collectors) by the trader and is set by the Jharkhand State Forest Development Corporation 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/bag. The second main cost component is the royalty payable by the trader to the JSFDC. In 2003, the average royalty per bag was Rs168. The third major step in the value chain is the sale of the product by the traders to *bidi* manufacturers. The selling prices depend on grade and quality, and ranges from about Rs1,120/standard bag to zero. Traders bear a high risk with no assurance of profit. 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 at Rs40 per bag, extortion payments to Naxalites of about Rs60 per bag.⁴⁵ While some traders suggest they can earn an average 15 percent profit per bag, the data suggest that on average, the total cost structure adds up to about Rs908 per bag, which is near the high end of the price range. Clearly, some traders would have lost money on their sales.

In Madhya Pradesh,⁴⁶ cooperative societies receive Rs518 per bag from the apex federation, of which Rs400 is paid to collectors. The remaining Rs118 are used to offset society costs, 20 percent of which are for administration and overheads. Since 1995, the Federation has also been returning 20 percent of its net income to societies, who in turn pay out the amount as a bonus to collectors after deducting administration expenses. In 2003 this payment was Rs82.2 million or equivalent to a further Rs40 per standard bag. In addition the Federation operates a life insurance scheme for collectors. The Federation pays a 20 percent of net income into a fund for “Development of Nonwood Products and Regeneration of Forests.” In 1999, Rs124 million was distributed with 6 percent spent on various nontimber forest product related projects and the balance on forest protection.⁴⁷ The remaining 30 percent of Federation net income is placed into a fund designated as being for infrastructural projects including, warehouses, schools, cooperative society offices, office equipment, road construction/maintenance, residences, water supplies, medical centers, irrigation, and similar works.

Market Performance and Impact on Livelihoods

There are five critical inefficiencies in the current Kendu marketing system in both states.

Market signals do not reach collectors. First and foremost, the current system does not allow market forces to operate at all points along the value chain, where quality would be rewarded

⁴⁵ In some insurgent areas, traders are “asked” to pay an additional surcharge per bag to collectors for high quality leaves. This can be as much as Rs175/bag.

⁴⁶ A full value-chain cost analysis was not possible for Madhya Pradesh, given the data available.

⁴⁷ The most recent year where a breakdown of expenditure from this fund could be obtained was 1999

with higher prices, and signals would be sent to villagers that quality is important, with an incentive to improve quality. Collectors are simply paid a wage per bag and are pure price takers in a monopsony where they must sell their product to the designated trader (in Jharkhand) or Society (Madhya Pradesh). In Jharkhand particularly, most villagers are totally disconnected from market information about price and quality relationships; interviews with communities suggest most people have little or no idea about market trends and price structures based on grade and quality. Given low education and literacy levels, the collectors are also in a very weak position to ensure they receive even the listed price per bag from traders. The system of an average fixed payment to all collectors does not encourage quality differentiation and quality improvement by the collector. The current system encourages maximum quantity collection at village level with the main concern of the villager being to ensure that the leaves are only above minimum reject quality. It ensures the villager a guaranteed price, but these prices bear no relation to the wider market trends in India for Kendu leaves and *bidi* manufacturing.

Limited technical services are available to communities. On the supply side, there are very limited technical advisory services available to villagers on how to improve product quality. The current system of fixed payment with no premiums for quality to the collectors does not encourage better management of coppicing of Kendu bushes. Cutting of coppices about 45 to 50 days before harvesting is recognized as the main mechanism for improving leaf quality. The best quality leaves only appear 2 to 3 years after coppicing is commenced. Neither the Jharkhand State Forest Development Corporation nor Madhya Pradesh Federation have been consistently promoting and training collectors in coppice management in recent years. There is a need for more systematic capacity building at the community level.

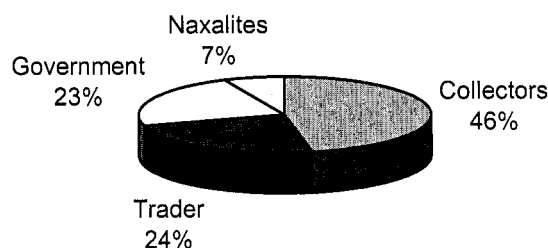
Unsold lots result in high wastage. An outcome of the current market system is that in some years a proportion of the crop goes unsold by traders to *bidi* manufacturers. In 2003, an estimated 51 percent of all Kendu lots in Jharkhand remained unsold by traders after collection from villagers due to poor quality and subsequent low prices from *bidi* manufacturers relative to the cost structures involved. This represents about 400,000 bags purchased from villagers at a cost of Rs170 million (\$3.8 million) that were not onward sold by traders to *bidi* manufacturers. The problem also exists in Madhya Pradesh but at a much smaller scale.

Trading organizations are overly dependent on Kendu. Although Jharkhand State Forest Development Corporation and the Madhya Pradesh Federation have a legislated marketing monopoly over several nontimber forest products (Kendu leaves, Sal seed, mahua seed, harra nut and mahulan leaves), they are totally dependent on Kendu leaf marketing for operating revenues. On average, these organizations generate close to 100 percent of their total revenues through Kendu marketing. In the case of Jharkhand, the JSFDC employs between 600 and 700 staff throughout the state, and for the 2003 fiscal year generated a net profit of only Rs300,000 (\$6,700), which represents less than a one percent return on sales revenue. In Madhya Pradesh, the market structure appears to be dominated by Forest Department influence with no clear plans to further empower and ultimately let community producers manage their business affairs. 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 respective union/cooperative management committee. The current collection and marketing system, in the eastern tendu patta belt of the state deploys virtually all department field staff during the six-week collection season, which is a questionable use of department field staff relative to more appropriate core business functions such as forest monitoring and protection. 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 incentives to improve product quality.

Collectors could receive a higher share of total revenue. A central issue in Jharkhand is the share of total revenue going to community collectors. In 2003, village collectors received Rs425 per bag, or about 46 percent of the total costs of Rs908 per bag along the value chain (figure A9.1). In terms of local

livelihoods, it means that an average adult collector can earn about Rs2,000 per season.⁴⁸ Surveys in communities suggested that the average net returns to people, after allowing for time for collection and carrying to depots, ranged from Rs70 to Rs150 per bag, or between 16 percent and 35 percent of the farm gate price. The average royalty paid to corporation by traders for the allocation

Figure A9.1. Cost allocations for Kendu leaf, Jharkhand



Source: Background studies, Jharkhand

of licenses in 2003 was Rs168, which represents a loss of Rs168 per bag that communities could have received in the absence of the royalty, or an additional 28 percent in gross income per bag under a different marketing system. Based on 800,000 bags auctioned under lots in 2003 and assuming they would all be filled, this represents a potential incremental gain of Rs134 million (\$3 million) that could have flowed to participating communities as additional income. A counterpoint however, is that even if private traders could deal directly with communities without having to pay the Jharkhand State Forest Development Corporation a royalty, how much of the Rs168 would actually be captured by communities as opposed to higher margins for the traders? The answer to this question would depend on the marketing system used, for example an auction by communities (perhaps through a marketing cooperative) with strong competition from private traders where higher market prices might result, versus a system with little competition, or worse, collusion by buyers where market prices would likely be lower. In contrast, the systems used in Madhya Pradesh provide a lower base price Rs400 per bag but also allow for a share of overall Federation profits, which for the previous season were Rs40 per bag. In terms of which system is better for collectors, the Madhya Pradesh approach of creating cooperative societies and unions provides similar payments per bag, and the added benefits of subsidized life insurance, plus modest technical input from department staff. On the other hand, there is still a considerable way to go to fully empower villagers at the society and union levels to manage the collection, distribution and finances associated with Kendu marketing.

BAMBOO - Assam Case Study

Market Structure

The North East region has the largest reserves of bamboo in India but little has been done to fully commercialize its potential. Assam has 29 species of bamboo, covering an estimated 8,213 square

⁴⁸ A person, on an average, can collect 100 to 200 bundles per day, depending upon supply of the leaves (Prasad and Bhatnagar, 1991). Usually the whole family is involved in leaf plucking but on an average an adult can make up to Rs 100 a day in the season. For a 20 day season, this represent about Rs2,000.

kilometers representing about 10 percent of the area of the State, or 35 percent of the forest area. The current growing stock has been estimated by the forest department as 13 million metric tons. The annual harvest of bamboo in the State is estimated at 7.5 million green metric tons. Some 2.5 million households are engaged in the production of bamboo in the state. Technically the trade in bamboo grown in reserve forests is governed by the Assam Forest Regulations, 1891. The Assam DEF does not enforce its legal right to control bamboo trade from bamboo grown on private land. In addition it does not enforce its right to require transit permits under the powers vested to it for the transport of privately grown bamboo. Assam has a diversified and a slowly growing market for bamboo, but no comprehensive end-use analysis has ever been done for bamboo in the state. The largest single market for bamboo is the manufacture of pulp and paper. Other important markets in order of importance are housing construction (including temporary structures), rural fencing/implements, fuel, packaging and baskets, and nonresidential construction. The 100 percent Government owned Hindustan Paper Corporation has two medium sized pulp and paper mills in the State located at Nagaon and Cachar, utilizing about 800,000 metric tons of green bamboo. About 450,000 metric tons or 55 percent of this input is supplied from reserve forests in Assam (45 percent for the Nagaon mill and 60 percent for the Cachar mill). The remaining 45 percent is drawn from private farmers. The Hindustan Paper Corporation harvests about 60 percent of the reserve forest bamboo volume that is currently available and economically viable. The remaining 40 percent is regarded as sub-economic when compared with private household bamboo that can be purchased.

Market Conduct

Bamboo from reserve forest areas, although technically available for sale on a tender system to any market, has been harvested in the past under lease agreements and "Industry Orientated Plans" between the government and the corporation as fiber for their two pulp and paper mills in the State. Bamboo is purchased on a stumpage basis with the corporation arranging harvesting and transport. The stumpage was revised from Rs62.50/metric tons to Rs300 per metric ton in September 2003. The revised price agreement applies until 2007, and allows for an annual 5 percent stumpage increase from 2003 until 2007. An examination of the corporation pulp mill at Nagaon shows an 11 percent return on historical investment and a 10 percent return on sales. Both these ratios are regarded as above average in the international pulp and paper markets. The mill has an historical investment cost of Rs.2,870 million and the 2002/03 sales turnover was Rs3,100 million. Its profit return in term of paper sold is Rs2,890 (about \$65) per metric ton; in the current depressed world paper market this is also regarded as reasonably high.⁴⁹ It has recently announced plans to increase capacity and output by 30 percent over the next two years. A brief Strengths-Weaknesses-Opportunity-Threats analysis in terms of future outlook for the mill indicated a relatively strong outlook (table A9.1). Growing and marketing of farmer grown bamboo for pulp and paper production is an important source of farmer income in the State. In 2003 about 200,000 metric tons of green bamboo to the Nagaon Mill was farmer grown. About 150,000 metric tons of privately grown bamboo was supplied to the Cachar Mill. Privately grown bamboo is preferred as it is from species that have a higher basic density (yielding a higher weight of fiber) and using the buying systems applied by the mills it is marginally cheaper than bamboo from Reserve Forests. The corporation operates a relatively complex collection and buying system for farmer grown bamboo. For the Nagaon Mill, the corporation operates a system of 10 "checkpoints" or delivery centers through the state. The operation of these delivery points is tendered every two years and minimum volumes to be supplied to each checkpoint are contracted

⁴⁹ Pulp and paper mills in India are shielded from international competition by import tariffs, which at 35 percent, are the highest in the South Asia region

out to a single bidder who organizes “Working Agents” at each checkpoint to manage the cash payments to farmers/village headmen and also the transport to mill.

Table A9.1. SWOT analysis of Hindustan Paper Corporation Nagaon mill

| <i>Strengths</i> | <i>Opportunities</i> |
|---|--|
| <ul style="list-style-type: none"> • Located in the centre of a favorable bamboo resource growing area. • Monopoly access to bamboo in an oversupplied resource situation. • By international standards the weighted average cost of pulpwood landed at mill (currently about Rs1170 per metric ton (\$26) for a weighted average transport distance of 200 kilometers) is below average. • Self sufficiency in electricity and not subject to the unreliable electricity situation being faced by most industries in the state. • Strong domestic markets for its production. • Twenty years of experience and established production infrastructure in the state. | <ul style="list-style-type: none"> • Expansion of the Nagaon mill to take advantage of the abundant Reserve Forest and increasing farmer-grown resource. • An opportunity to rapidly increase resource through the promotion of fast growing hardwoods in conjunction with JFM support activities on degraded forest land. • Privatization should allow greater autonomy in decision making/less political interference, ease of raising increased capital, greater responsiveness to market signals and probable longer term cost efficiencies. • Paper and paperboard demand in India is expected to grow at about 7 percent a year from the current 7 million metric tons a year to 10 million metric tons a year by 2010. • An opportunity to increase the quality and unit value of paper production through the incorporation of fast growing hardwood in the fiber mix |
| <i>Weaknesses</i> | <i>Threats</i> |
| <ul style="list-style-type: none"> • Seasonal resource supply resulting in the need for large stockpiling for the wet season from April to October. • State ownership with the inherent political interference and bureaucracy. • Poor roads and logistical problems with rail/river transport. • Heightened unrest in region. • A need to import from other states all production inputs except wood fiber and coal. | <ul style="list-style-type: none"> • A relatively old, small and low technology mill by international standards. • An urgent need for refurbishment, expansion and greater mechanization if the mill is remain internationally competitive. • Reduced tariffs and increased competition in the future from imported paper as India reduces its protection to local industries. |

Market Performance and Impact on Livelihoods

The commercial market for bamboo reveals some interesting anomalies:

The system for purchasing bamboo for pulp supports farmers, but has cross-subsidies. A system of cross-subsidization is used to purchase private bamboo; higher cost supplies from the more distant parts of the state are subsidized by lower cost bamboo closer to the mills. The pricing system is aimed at securing an adequate volume of bamboo to meet production targets, from the closest sources to the mill, but at the lowest weighted average cost. The average landed cost of reserve forest bamboo at the Nagaon mill is Rs1,275/metric ton. Growers within 5 kilometers of the Nagaon mill receive Rs979 per metric ton (paying their own transport) while growers 85 kilometers from the mill receive Rs1,175 per metric ton. From the viewpoint of farmers and JFM communities involved in bamboo production, the current pricing system allows more distant suppliers of bamboo to receive a fair price covering the cost of production. On the other hand, in common with most subsidies, it distorts normal market pricing signals and creates anomalies. The total costs for delivered bamboo from both suppliers are Rs773 per metric ton and

Rs336/metric ton respectively. Based on notified mill prices for bamboo from these distances, the net revenue for the grower 5 kilometers away is Rs64 per metric ton, and for the growers 85 kilometers away it is Rs402 per metric ton (table A9.2). If both growers received the average mill price of Rs1,275 per metric ton, the net revenue position of the growers would change. Growers 85 kilometers would have a net revenue of Rs502/metric ton and those 5 kilometers Rs939 per metric ton away respectively. Compared to the actual situation, the growers close to the mill are “losing” Rs296 per metric ton while growers 85 kilometers away are losing Rs100 per metric ton. If a highly competitive market for bamboo existed and prices paid to farmers actually reflected cost differentials, the growers closer to the mill would have a stronger incentive to produce bamboo, while farmers further from the mill might look more carefully at their decisions to invest in bamboo.

Table A9.2. Bamboo Supply Chain Pricing Analysis: Comparison of Growers Based 5km and 85 km

| Value Chain Process | Grower 85 km from mill - traders | Grower 5 km from mill - direct supply |
|------------------------------|--|--|
| | Rs402 Net revenue | Rs643 Net revenue |
| Grower household in village | Rs120 Felling and cleaning Rs30 Loading local transport Rs53 for 8.8% purchase tax | Rs120 Felling and cleaning Rs30 Loading local transport Rs86 For 8.8% purchase tax |
| ↑ | | |
| Designated headman/organizer | Rs20 for headman/organizer Rs100 for transport to checkpoint | Rs100 for transport to mill |
| ↑ | | |
| Working agent at checkpoint | Rs20 for working agent | |
| ↑ | | |
| Contractor for mill | Rs350 for transport Rs80 for contractor | |
| ↑ | | |
| Pulp mill | Rs1,175/tonne delivered at mill | Rs979 delivered at mill |

Source: Background studies, Assam

New market opportunities for bamboo exist but are difficult to exploit. Three examples from Assam illustrate this point and highlight key lessons (box A9.3). First, Timpack Private Ltd, set up a bamboo based panel product mill in 2001 across the border in Meghalaya. Main products are woven bamboo mat board, woven bamboo mat composite with wood veneer plywood, bamboo mat corrugated sheet, and bamboo particle board utilizing fines of bamboo from the Nagaon pulpmill. It is an exciting attempt to use modern equipment for bamboo products that can compete directly with wood based products. It has an investment of Rs140 million (\$3 million) in the plant and working capital and currently employ 75 staff but is yet to return a profit. Some of their main challenges to date have been market resistance to bamboo based products as a quality product; bamboo is more difficult and expensive to process than wood; e) the species of bamboo available in the North East Region are relatively difficult to utilize compared with species available in China.

Second, a small bamboo processing industry manufactures raw joss sticks for sale to industries that make incense sticks for religious and cultural purposes. It has invested about Rs1.5 million and employed a staff of 30 people. It purchases bamboo stems directly from local farmers within a 5-kilometer radius. The business is one year old and only marginally profitable. It sells mainly to manufacturers in Kolkata with reasonably strong markets. Its main challenges are a lack of

reliable machinery (it was using small-scale Indian and Taiwanese manufacturing equipment) and unreliable electricity (the area was prone to lose electricity supply for three to five hours a day).

Third, a bamboo cottage industry makes small seats (stools) at a refugee camp at Lampara about 1.5 hours to the west of Guwahati. The small operation employs 400 people. Stool makers purchase their bamboo stems from farmers within a radius of 1.5 kilometers of their camp. The average return on labor for a person day of input is Rs30–Rs40. Village craft workers sell partly to wholesalers in Guwahati, and partly at a local “haat.” Wholesalers provide transport and mark up their stools by 40

to 50 percent. Prices for their stools have gone up by about 30 percent over the past 5 years, however over the same period they claimed that the price of bamboo had risen by 50 percent. The business is seasonal with low demand and low prices during the dry season and vice versa.

Box A9.3. Challenges for developing new bamboo products

Bamboo offers a number of exciting market opportunities in India, but there are several challenges to be overcome:

- Intensive market research is needed. The Indian market although large, is very conservative with building materials and penetration of a market can involve complex promotional issues and education of end-users, builders, building supply stores and building finance sources
- Feasibility studies are needed to analyze risks
- Piloting production is useful where raw materials being utilized are not identical to proven inputs being used by other manufacturers
- New products and processes for utilizing bamboo are not usually the “green gold” being promoted and are likely to have long and more costly learning curves before adequate profitability is attained.

MEDICINAL PLANTS AND AROMATIC OILS – Madhya Pradesh and Assam

Background

India has 16 agroclimatic zones, 45,000 different plant species and 15,000 medicinal plants. The “Indian Systems of Medicine” have identified 1,500 medicinal plants, of which 500 species are widely used in the preparation of drugs. The effectiveness of these drugs mainly depends upon the proper use and sustained availability of genuine raw materials. The domestic market of Indian systems of medicine and homoeopathy has been estimated at about Rs40,000 million (\$890 million). There is also a growing demand for natural products including items of medicinal value/pharmaceuticals, food supplements and cosmetics in both domestic and international markets. According to ICS-UNIDO (2004), the international market of herbal products is estimated to be \$62 billion. Yet India's share in the global export market of medicinal plants related trade is just 0.5 percent. Aromatic oils are another potentially important forest product, with expanding global markets and limited supply. The market structures for medicinal plants and aromatic oils in most states of India are generally weak and largely focused on local trading. External market channels are not well identified and communities have little information about how to exploit them. There are inherent complexities involved in managing harvesting and marketing of these products. First, the supply varies from year to year and is usually seasonal. Second, products often have a lack of uniformity in color and quality. Third, people gathering these products from the forest can usually produce small volumes, raising a number of collection, pricing, and transport challenges. Fourth, the supply chains tend to be long and the primary collector often gets only a fraction of the final price due to monopsony situations with middlemen. The middlemen are also usually the moneylenders that provide credit to the villagers during lean season with the crop or land as collateral. Fifth, lack of grading mechanisms, storage

facilities, market information, and restrictions on harvesting, transport and marketing of some nontimber forest products reduces the incentive for people to invest time and resources in sound management. Until recently, most forest departments took little interest in these products as they fell outside the traditional nationalized timber and nontimber forest products (such as kendu), and appeared to have little revenue potential. As such, most of these products fall outside the restrictive legal and regulatory framework associated with so-called listed or nationalized species such as Teak or Kendu. Of the three states examined, Madhya Pradesh has made the most progress in reforming market systems for medicinal plants. For aromatic oils, Assam has developed a model that shows good promise.

New Approaches for Marketing Medicinal Plants: The Case of Madhya Pradesh

In 1995 the Madhya Pradesh State Minor Forest Produce (Trading and Development) Cooperative Federation took a leading role in the development of minor forest products and in particular important developments in the marketing of medicinal and aromatic plants. The Federation began by assisting primary collection societies in selling nonnationalized nontimber timber product by offering fixed purchasing rates for a small selection of plants with market potential including aonla, mahul patta, mahua seeds and achar. Taking the example of aonla, prior to the intervention of the Federation, collectors were receiving Rs0.50–Rs1.00 per kg from market traders. Payment rates by the Federation were fixed at Rs2.50–Rs6.50, depending on location and market demand. The range of nontimber forest products was then gradually widened. The state government has recently approved a “Strategy for Development of Medicinal and Aromatic Plants (MAPs) from 2004/05 to 2008/09.” The strategy plans an increase in area under cultivation of MAPs from the present 10,000 hectares to 50,000 hectares, and the production of MAPs from the present 20,000 metric tons to 40,000 metric tons. Related to this is the desire to increase employment by about 2 million person days/year and attract herbal industries to the State. The strategy has several main elements relating to MAPs:

- **Develop People’s Protected Areas (PPAs) in 12 locations in 10 districts.** These would utilize funding from the 20 percent net income redistributed from Kendu trading. At present, PPAs are protecting about 45,000 hectares of forests for MAP collection. Harvesting of MAPs from these areas is linked to other Federation-funded processing, and marketing initiatives to increase the income of collectors and other rural people involved in adding value. A center is being developed in the Katni⁵⁰ district for conservation and development of medicinal plants as well as providing health cover to people of the area utilizing traditional medicines.
- **Initiate a funding scheme for farmers.** The National Medicinal Plants Board (NMPB) in 2002 started a contestable funding scheme of financial assistance to farmers for cultivation of medicinal plants. With assistance from the Federation, 367 proposals have been approved by the NMPB with financial assistance of Rs87 million (\$2 million) flowing to small farmers.
- **Establish marketing outlets.** To improve marketing of MAPs, the Federation has funded a series of retail outlets known as *Sajeevani Ayurved*. The first outlet was set up in Bhopal in 2002 and has been followed by similar outlets in Balaghat, Chhindwara, Satna, Katni and Seoni. Currently 80 different herbal products are being sold. The centers also have ayurvedic doctors providing low cost consultations and medical advice to customers. Products produced by the primary societies are being marketed under the brand name Vindhya Herbal, which is being promoted by the Federation as an umbrella brand and with distinctive packaging and

⁵⁰ Katni is in the Amarkantak plateau region that is richly endowed with medicinal plants – some of which are exclusive to the region

labeling. The Federation is also participating in national and international trade fairs with its branded range of products.

- **Facilitate value addition through processing.** Ten value addition initiatives have been supported by the Federation including incense sticks, honey processing, bamboo handicrafts, traditional medicine manufacturing, and aromatic oil distillation. A state-of-the-art processing plus training centre was completed in December 2004 at Barkheda Pathani on the outskirts of Bhopal. This center is planned to act as a model for other similar centers in the State.
- **Promote private farmer participation.** The NMPB has sanctioned four promotional projects with the twin objectives of development and conservation of medicinal plants. The Federation has been designated to coordinate these four projects, which aim to promote private participation in on-farm cultivation of medicinal and aromatic plants to reduce the pressure on natural forest extraction where sustainability is at risk. The Federation is providing a 30 percent subsidy on the total project cost. Following preparation of district plans, soft loan funding is provided to primary societies to take up identified opportunities. By the end of 2004, Rs20 million had been lent by the Federation.
- **Improve market information.** A Marketing Information System for 37 medicinal plants and 44 other nontimber forest product is being operated by the State Forest Research Institute. Funding assistance has been provided by the Federation. Price information is collected from about 100 markets through the State and published quarterly. Unfortunately no email or website system for distributing data has yet been established. The institute has also supported MAP developments through: a) identification of endangered species; b) mass multiplication of commercially important MAPs; c) studies on the variability of aonla fruit; d) processing techniques for various MAPs and other nontimber forest product.

New Approaches for Marketing Aromatic Oils: The Case of Assam

Patchouli (*Pogostemon cablin*) is a perennial herbaceous plant of the *Lamiaceae* family and grows in a number of South East Asian countries. The dry leaves of the species can be distilled to yield aromatic oil used in perfumes, medicine and processed food. Patchouli oil has remarkable staying power and is an important fixative ingredient in the manufacture of fine perfumes and cosmetics. Consumption of patchouli worldwide is about 2000 metric tons per year with the USA being the largest market (about 500 metric tons per year). In India, consumption of patchouli oil has reached 300 metric tons per year. India has an import requirement for about 290 metric tons per year and currently produces the balance of 10 metric tons per year. India's production level is expected to rise to 20 metric tons in 2004. Indonesia remains the world's largest producer and exporter at about 1,500 metric tons per year and thus supplies about 75 percent of the world requirement. Indonesia however, has continued to source most of its supply from wild uncultivated sources and is seeing a decline in production and oil quality. Up to the year 2002, patchouli oil had a world market price of about Rs800/kg. (\$17–\$18 per kilogram). After a sharp increase in 2002, prices have remained stable at between \$35–\$40 per kilogram. (Rs1,500–1,800). The plant is suited to Assam's climate and soils, and as an aromatic plant, it can be established on reserve forest land as part of accepted forest management activity. Also, as a nonindigenous plant to the State there are no issues of royalties or possible restrictions relating to endangered species status. There are many positive attributes relative to modest risk factors (box A9.4). Once in production, one hectares of patchouli can generate an average of Rs44,000 each 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 partnership has the following features:

- **Forest department takes a lead role in applied research.** The forest department Silvicultural Division is conducting trials as part of its research into germination, propagation and standardization of nursery techniques for patchouli. It also works closely with the Research and Development Centre for Medicinal and Aromatic Plants, at Khetri, established recently by the North East Development Finance Corporation (NEDFI).

Box A9.4. Positive and negative features of Patchouli

Patchouli is a relatively new product on the market and appears to have a significant number of positive features and few negative characteristics:

- Relatively large markets already exist and they are growing
- Is not grazed by animals due to its characteristic odor
- Does not require pesticides except at planting for nematodes
- Remains productive and profitable for three years
- Harvested dry leaves can be stored for a considerable period without deterioration before oil is distilled, thus allowing continuous sales to distillation facilities
- Can be distilled at remote sites to reduce transportation volumes
- Essential oil can be stored at ambient temperature for a considerable period without deterioration and in fact proper storage improves the aroma and thus oil quality
- Is a shade-tolerant plant and therefore suited as a crop in conjunction with tree crops of natural forest, plantation forest or fruit trees

BUT

- With high profitability and a short growing cycle, new market entrants can produce large quantities quickly and threaten the stability of the market.
- Pests and disease risks associated with growing a new crop on a major mono-cultural basis are emerging

Source: Unpublished reports and material from NEDFI

- **NEFDI is the main networking and development partner.** NEDFI has the mandate to both provide credit and facilities for promotion, expansion and modernization industrial, certain agricultural, fisheries, and agrihorticultural activities. Its prime objective is to attract new investment into the region. Their interest started with feasibility studies of 43 products/processes that appeared to have prospects in the region. Medicinal and aromatic plants were ranked very high in this analysis. More detailed work on medicinal and aromatic plants identified Patchouli as one of six prospects that should be further researched and promoted. This was followed by independent market research including visiting the USA and then planting two pilot patchouli projects. Once they were convinced that patchouli had high potential, further steps were initiated (box A9.5).
- **The AJMAL Group establishes local processing facilities.** AJMAL has core businesses in agarwood and perfumes, and the largest buyer of patchouli in India. It has set up a research centre, part of its Flower Valley Agrotech Ltd. subsidiary, at Hojai for a range of medicinal and aromatic plants. It has 20 hectares of its own plantings, and a distillation plant for extracting oil. It is also actively promoting contract production.
- **A community support organization works with small farmers to help build local capacities.** The Shanti Sadhana Ashram is active with patchouli farmers to provide training.

Box A9.5. What role does NEDFI play in patchouli marketing?

NEDFI is a major player in the patchouli sector in Assam. Its main roles include:

- Publicizing the patchouli opportunity to private sector growers;
- Provision of finance through both a micro-credit scheme and their "North East Equity Fund", which increases a farmer's equity contribution to allow borrowing through normal commercial sources;
- As part of its package to growers has offered a grower buy-back minimum "safety net" guarantee price. The buy-back price was set at Rs1000/kg, but the open market is now paying Rs1400/kg;
- Providing genuine best provenance propagation materials at a nominal price;
- The provision of laboratory testing of oil for quality to prevent buyers dictating to producers on surreptitious aspects of oil quality;
- Assisting with branding of "Assam Patchouli";
- Establishing a joint venture with the private sector to export patchouli. NEDFI is a director of the company and is controlling margins.

Source: NEDFI unpublished material and discussions between author and NEDFI officials

Patchouli is a case study that has a number of interesting lessons for the development and marketing of other plants that could benefit forest fringe communities. The work being undertaken by the Government, development banks, research and promotion agencies and the private sector to find a new, profitable and appropriate crop for small farmers is an excellent model of what can be achieved through collaboration between State and the private sector. The development of patchouli has been market lead and then followed by intensive research of all factors affecting production and profitability; Its need for shade makes it ideally suited as an intercrop under tree crops, or suitable for growing under programs for reforesting degraded forest areas. Under JFM, patchouli appears to have a potential to be a significant future source of income to forest-dependent communities. The above program is still operating at a very small scale. The challenge in Assam is to extend the patchouli model to other high potential nontimber forest products, where the forest department role is supportive, around a core business function of applied research and development in an environment that empowers communities, rather than focusing on appropriating marketing functions, rents and decision making.

FUELWOOD

At the national scale, the fuelwood business is estimated to have an annual turnover of about \$17 billion (MOEF 2000) and is a source of livelihood for over 11 million people, making it largest employer (formal and informal) in the Indian energy sector. About half the fiber supply is obtained from timber plantations; the other half from natural forests, both as log removals and lopping of branches and sweeping forest residue (Mahapatra 2003). Fuelwood is the primary drain on forests in India. In Assam for example, the estimated sustainable harvest of fuelwood is 1.5 million metric tons per year versus consumption of 5.2 million metric tons. The community surveys in Jharkhand and Assam revealed that households relied on fuelwood for about 80 percent of their energy needs, primarily for cooking. National surveys suggest a figure of 75 percent among all rural households for cooking (UNDP/World Bank 2003). An estimated 59 percent of rural households obtained their wood from home grown sources or free collection. Only 21 percent paid for their wood, with the balance a combination of the two sources. From the same study, nearly one-quarter of households reported nobody purchasing fuelwood, which suggests a lack of commercial markets. A household will purchase fuelwood if the cost of collecting and transporting it to their homes by themselves is greater than the local market price. Households selling fuelwood will do so when the cost of transport to markets is fairly low, based on distance and road condition. Markets are generally of two forms. One is a semi-commercial market through forest department channels where plantation supplies are sold to large commercial

buyers. The second and more common approach is with individuals (usually women) engaged in smaller-scale fuelwood trading to other households or middlemen. The women usually receive very low returns on investments of time and energy. An example from Orissa highlighted the case of one woman who walked an average of nine kilometers each day to collect and deliver 35 kilograms of fuelwood for a net return of Rs15 (\$0.33). This is about 20 percent of the official wage rate for unskilled labor (Mahapatra 2003).

Meeting fuelwood demands in states such as Assam and improving livelihood opportunities requires innovative solutions. The lack of organized community institutions, particularly for women, means that collection and sales are left to individuals with little market power when dealing with commercial collectors who will transport the wood to more distant urban markets. There is virtually no private sector investment in fuelwood plantations with communities at present but for a state like Assam, the need for investment is overwhelming. It is estimated that it will take up to one million hectares of fuelwood plantations in Assam to satisfy the domestic demand and completely eliminate the pressure put onto natural forests. Financing these investments and incorporating the plantations into a community forest model are pressing needs.

Appendix 10. Forest Fiscal Systems and Analysis

What Is a Forest Fiscal System?

An efficient forest fiscal system, coupled with resource tenure and security, should underpin the allocation and use of public forest resources by communities and the private sector. Forest resources have an inherent economic value, defined as economic rent (see box. A10.1). The fiscal system will identify a range of measures governing the capture and distribution of this initial resource value, for example, by identifying various taxes, fees and royalties on the resource, and/or the underlying forest land. In addition, the fiscal system will identify where revenues can 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 meters cut and hauled to the roadside. The royalty and any permit fees would capture a portion of the economic rent value. These logs would then be sold to sawmills, which would then transform the logs to lumber and sell it to distributors or tertiary producers such as furniture manufacturers. Along the value chain, governments could assess various sales taxes, additional permit fees, etc, to generate further public revenues from the wood products. In addition, the income tax system can capture more revenues from downstream production. The fiscal system will identify how these revenues are then distributed, to whom, and for what purpose. Experience shows that a well designed and effectively implemented forest fiscal system can be more progressive instrument to increase the forest sector contribution to growth and development than a narrow regulatory-based approach (Oksanen 2004).

Box A10.1. What is economic rent?

Economic rent is the residual value of a forest product on site (such as standing timber), after taking the market price of an intermediate or final product (lumber for example), and deducting costs of harvesting, transport, production, and marketing, and allowing for a reasonable profit margin. The residual is what the timber is worth on the stump, to the land owner. In many jurisdictions, this approach is used to estimate the economic rent (sometimes called stumpage) for standing timber. Stumpage should be higher in forests of better quality, volume, harvesting conditions, and closer access to a processing mill, than in a forest with opposing conditions.

What Are the Main Issues in India?

The system is not efficient. With respect to JFM, the current forest fiscal system in India can be described as highly regulated, with high transaction costs, and focused on a narrow range of revenue generation. Considering the primary forest resources, under JFM Resolutions the DEF returns a percentage of net revenues from commercial timber and pole sales to communities after accounting for their own harvesting, marketing and certain overhead costs. Benefit-sharing schemes are promoted by DEF 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 are not trying to derive stumpage estimates to charge the resource user; the principal goal is more to recover operating costs and distribute part of the surplus back to communities for forestry and social development. Second, costs used in deriving the net returns to communities and the state are based on administered DEF averages rather than actual costs by division or block, which would vary by timber size, operating conditions, transport distances to the log yard, and so forth Third, the costs are based on government systems, which may be more inefficient than comparable operations in the private

sector. Calculating resource rents with inflated costs would reduce the rental value. Problems extend beyond commercial timber; the current fiscal system does not usually assess royalties or other forest products such as medicinal plants, which may have fairly high commercial values. Only modest permit charges may be assessed, which would likely not capture the rent value of these resources. Finally, subsistence products are provided free of charge to communities.

Current benefit-sharing schemes need to be more transparent. Most states are gradually improving the share of benefits from forest production to communities over time, but in the absence of a national policy,

individual states apply different share ratios (table A10.1). As mentioned earlier in this report, allocating communities free access to subsistence nontimber forest products is not really providing new benefits, but it does reduce potential conflicts with the forest department and allows the community to protect their assigned forest more vigorously. Commercial products such as timber provide financial benefits to communities but field surveys indicated many villagers were not clear on the actual sharing ratio and virtually nobody seemed to know how the actual revenue share would be derived. A common practice across the three states (and in all other states) is for the forest department to calculate timber revenue shares based on net values, that is, the

gross revenues less certain costs incurred by the forest department in the establishment, maintenance, felling, and marketing of the timber stand over one full rotation, including department overheads. In theory, this is reasonable. The state is investing in timber production and may wish to recoup some or all of its costs from final product revenues. At the same time, the community should be compensated for its costs (for protection and stand maintenance) through its share. But the process for deriving the actual net shares tends to be very complex and opaque. The team was unable to find documentation that presented a clear and consistent description of how net revenues are derived and in particular, what costs are included. In the absence of this kind of information, communities are in an exceptionally weak position to challenge revenue sharing results. It is entirely possible that net revenues returned to communities could be very low, or even zero, depending on what costs are included. Providing better and more transparent information to communities would allow them to judge the merits of any benefit-sharing scheme and gauge their level of support.

Table A10.1. Benefit sharing schemes in the focal states

| <i>State</i> | <i>Community shares for subsistence poles, fuelwood, NTFP</i> | <i>Community shares for commercial timber and bamboo products</i> |
|----------------|---|---|
| Assam | <ul style="list-style-type: none"> • Free access and consumption | <ul style="list-style-type: none"> • 50 percent of net revenues for thinning revenues and 25 percent of net revenues from timber on existing high forest to individual community • 100 percent of net revenues for second rotation to individual community |
| Jharkhand | <ul style="list-style-type: none"> • Free access and consumption | <ul style="list-style-type: none"> • 90 percent of net revenues to individual community |
| Madhya Pradesh | <ul style="list-style-type: none"> • Free access and consumption | <ul style="list-style-type: none"> • VFPC in degraded forests: 100 percent of net revenues at district level shared by all JFM communities in district • FPC in high forest: 80 percent of net revenues at district level shared by all JFM communities in district |

Source: Background studies for focal states.

Evaluating benefit-sharing on a year to year basis may not follow sound economics. Assam and Jharkhand pro-rate costs and revenues on an annual basis back to individual communities. Madhya Pradesh calculates net revenues on a district basis. These approaches may yield the wrong results. Costs and revenues flow over the entire rotation period. If a forest is established on degraded lands, both the community and the forest department will bear costs for several years until revenues begin to flow, perhaps from certain nontimber forest products and bamboo. Revenues from timber thinning and poles could take as long as 20 years, and the final timber harvest 60 years or more. Evaluating benefit-sharing over one year ignores initial capital investments and subsequent maintenance costs that would have occurred. With costs, how are major capital investments (such as planting) that occur once in a selected forest handled, compared with annual costs such as plantation maintenance? An alternative approach is to estimate the present value and distribution of revenues and costs over the full rotation. To promote wider debate, Assam was used as an example based on the three models in the analysis of forest management options (Appendix 9); the scenario with the highest NPV was evaluated in terms of present values of net revenues. For all scenarios, communities were assumed to be responsible for forest protection costs. The forest department was responsible for forest establishment and maintenance costs, harvesting and overheads during felling and marketing. To simplify the analysis, an average revenue sharing of 50-50 was applied to all species, thinning, and final felling. The results (table A10.2) show that for the models and scenarios selected, none achieve a 50-50 ratio based on the present value of net revenues. Model 1 comes closest to attaining the 50-50 ratio. In model 3, the community actually accrues more than 100 percent of the net revenues (forest department accrues a negative percentage share). In all case, the community has the highest percentage of net benefits and the trend shows that as forest management shifts from managing existing high forest to establishing new forests on degraded areas, the community share of net revenues increases. The results are sensitive to changes in forest structure, costs and revenue contributions, and in particular timber prices. The analysis suggests that a blanket benefit-sharing scheme, while conceptually simple, may not represent the wide range of forest conditions in any state when basic economic analysis is applied.

Table A10.2. Estimated net revenue shares for alternative forest models and scenarios.

| <i>Model type</i> | <i>Forest management scenario</i> | <i>Percent share of present value of net revenues</i> | |
|--|---|---|------------|
| | | <i>Community</i> | <i>DEF</i> |
| Existing, regulated forest on 159 hectares | Timber plus subsistence nontimber forests product | Community | 57 |
| | | DEF | 43 |
| Planting to restock degraded forest of 159 hectares | Mixed forest, balance with all products | Community | 69 |
| | | DEF | 31 |
| Manage regeneration to restock degraded forest of 159 hectares | Mixed forest, balance with all products | Community | 111 |
| | | DEF | -- |

Source: Author's calculations

Forest revenues captured by state governments are low. Data for 1999–2000 suggest that the revenue generating capacity of forest resources is quite low in India (table A10.3). The data represent revenues collected by the forest department on behalf of the state government; expenditures are state nonplan outlays. Revenues do not include those from marketing corporations, only from forest departments. While a range of revenue flows are evident (from Rs4 per hectare in Manipur, to just over Rs1,000 per hectare in Kerala), the mean for all of India is Rs277 per hectare (\$6.16). Evaluating the selected states, the mean revenue per hectares is Rs199 per hectare (\$4.42 per hectare), and the median only Rs103 per hectare (\$2.29). Assam and

Jharkhand are well below the all-India mean, as well as the mean and median for the selected states. Revenue flows are logically going to be variable across states, as it depends on factors such as the area of productive forest within the total recorded forest area, actual forest productivity, the scale of timber and nontimber forest product extraction, product mix, and level of revenue capture by the forest department. In this regard, it is easy to see why Madhya Pradesh has fairly high revenues per hectare, given its large commercial Teak and Sal timber operations.

Table A10.3. Mean revenue and expenditure per hectare, selected states, 1999-2000

| <i>State</i> | <i>Revenue per hectare (Rs)</i> | <i>Expenditure per hectare (Rs)</i> | <i>Net revenue per hectare (Rs)</i> | <i>Expenditure per unit revenue (Rs)</i> |
|------------------------|---|---|---|--|
| Gujarat | 150 | 1570 | -1419 | 10.43 |
| Jharkhand | 69 | 847 | -778 | 12.27 |
| Goa | 74 | 798 | -724 | 10.81 |
| Karnataka | 243 | 777 | -534 | 3.20 |
| Tamil Nadu | 465 | 866 | -401 | 1.86 |
| Assam | 54 | 277 | -222 | 5.09 |
| Andhra Pradesh | 133 | 307 | -175 | 2.32 |
| Jammu and Kashmir | 224 | 386 | -162 | 1.72 |
| Rajasthan | 70 | 208 | -138 | 2.99 |
| Kerala | 1009 | 1137 | -127 | 1.13 |
| Manipur | 4 | 127 | -123 | 33.53 |
| Madhya Pradesh | 404 | 525 | -121 | 1.30 |
| Nagaland | 19 | 127 | -108 | 6.58 |
| Arunachal Pradesh | 30 | 59 | -30 | 1.99 |
| Meghalaya | 65 | 72 | -7 | 1.11 |
| Orissa | 164 | 160 | 4 | 0.98 |
| | | | | |
| All India | 277 | 388 | -111 | 1.40 |
| | | | | |
| Mean selected states | 199 | 515 | -317 | 6.08 |
| Median selected states | 103 | 347 | -150 | 2.65 |

Source: MOEF 2001a; www.indiastat.com

With expenditures, the mean for all India is Rs388 per hectare, while the mean and median for the selected states are Rs515 and Rs347 respectively. Jharkhand has one of the highest expenditure figures, while Madhya Pradesh is well above the mean for all India. Assam is below the mean, reflecting the small budget allocations relative to its forest area. The net revenue per hectares figures show that with the exception of one state (Orissa), all states spend more money on forest management than they earn. The negative states range from Rs-1,419 per hectare in Gujarat to Rs-7 per hectare in Meghalaya. In terms of spending per rupee earned from the forest, the mean for all India is Rs1.40. Madhya Pradesh is close to the national average, while the ratios for Assam and Jharkhand are fairly high. These figures are meant to illustrate that at the state level, the forest departments are not covering their costs, represented by state government allocations. It is important to emphasize that the “negative” figures are neither good nor bad. Such a judgment must be weighed against current state policy for fiscal performance of line departments. If the current policy goal is cost recovery or to earn positive net revenues then the states are in general,

failing miserably. Conversely, the state of the forest may limit revenue generation, while also demanding high levels of investment to improve sustainability. In this regard, if the central plan expenditures were taken into account, which for most states is the main source of capital investment funds, then the negative values would be significantly higher.

Appendix 11. Preliminary Economic Appraisal of JFM Forest Management Options

As a means of encouraging debate, three simple models were developed for a Sal/Teak dominant forest using Assam cost and revenue data to compare financial returns from different traditional forest products across several alternative management scenarios (table A11.1).⁵¹

Table All.1. Estimated economic returns to alternative forestry options

| <i>Model</i> | <i>Poles and timber (hectares)</i> | <i>Bamboo (hectares)</i> | <i>Nontimber forest products (hectares)</i> | <i>NPV (million Rs)</i> |
|--|--|------------------------------|---|-----------------------------|
| Model 1. Existing, regulated forest on 159 hectares | | | | |
| Pure timber focus, no other products | 159 | 0 | 0 | 35.7 |
| Timber + subsistence nonforest timber products | 159 | 0 | 63 | 36.3 |
| Timber, bamboo, commercial nontimber forest products | 95 | 16 | 48 | 21.0 |
| Model 2. Planting to restock degraded forest of 159 hectares | | | | |
| Commercial timber focus only | 159 | 0 | 0 | 6.1 |
| Mixed forest, bamboo focus over nonforest timber products | 95 | 47 | 17 | 11.5 |
| Mixed forest, balance with all products | 53 | 53 | 53 | 10.7 |
| Model 3. Manage regeneration to restock degraded forest of 159 hectares | | | | |
| Commercial timber focus only | 159 | 0 | 0 | 13.3 |
| Mixed forest, bamboo focus over nonforest timber products | 95 | 47 | 17 | 15.8 |
| Mixed forest, balance with all products | 53 | 53 | 53 | 13.2 |

Source: Background studies, author's estimates

⁵¹ The model is based on a forest of 159 hectares (the average size of a JFM forest in Assam). Three management scenarios are used. One is an existing, good quality, Teak dominant forest already under uneven-aged management for timber, poles, minor forest produce and bamboo production. Bamboo has a 10 year rotation. Poles are assumed to be harvested when they reach 20 years of age from nontek species, teak timber at 60 years. The second scenario is a degraded forest entirely planted for timber, poles and bamboo. The third scenario is a completely degraded area where natural regeneration is managed for poles, and timber. Bamboo is also planted in gaps. With model 2, commercial teak poles are harvested from thinnings at ages 15, 20, and 30 years. nontimber products are available after 15 years, subsistence and nontek commercial poles after 30 years. In model, 3 the comparative commercial thinning ages for teak are 10, 15, and 25 years. Other poles (from nontek species) are harvested after 20 years. Nontimber forest product revenues flow from year 10. All scenarios are evaluated over a 60 year period. Costs include forest protection by the community, site preparation, planting, maintenance and harvesting. All costs and production estimates were derived from available DEF data in Assam, inferences from other states, and consultant reports. Revenues are based on very conservative average farm gate prices. Teak commercial poles are Rs7,000 per cubic meter. Other nontek poles for subsistence, are (Rs50 per stem), timber (Rs11,000 per cubic meter), and bamboo (Rs80,000 per hectare). Subsistence poles and nontimber forest product values are accounted for in revenue calculations. The opportunity cost of capital is assumed to be 12 percent and is used to calculate net present value. Information on bamboo growth and yield supplemented from Mohamed and Appanah (1998).

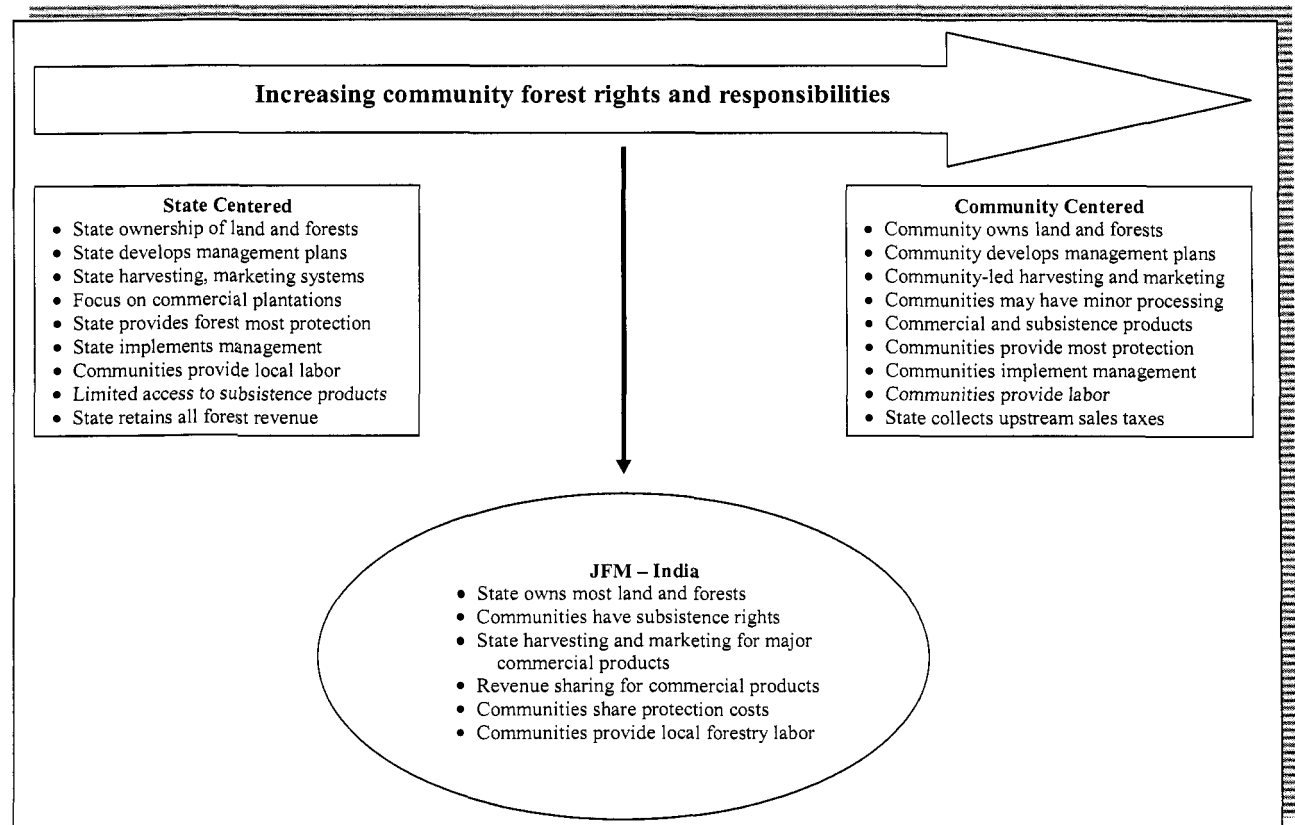
Model 1 represents a situation where resource holders are managing an existing, good quality (dense) teak dominant forest already under effective regulation, and using uneven-aged stand management and selection harvesting. This model would certainly be close to some of the high quality teak or mixed teak plantations under JFM management in Madhya Pradesh. Models 2 and 3 represent an alternative situation where JFM communities and DEF are faced with rehabilitating degraded forest land and need to establish a new forest. In these situations, greater flexibility exists to establish a new forest in terms of species selection and distribution across the site. Model 2 is the traditional approach of afforestation with high investment costs for planting stock and planting operations. Model 3 offers an alternative approach of managing the existing natural regeneration with enrichment planting on part of the area. These situations parallel the case where degraded forests are assigned to JFM committees. The results illustrate a number of interesting trends. First, model 1 shows that pure timber production yields a NPV of Rs35.7 million. Manoharan (2000) suggests that managing multi-species forests for timber and nontimber products can increase annual revenue flows by between 20 and 32 percent compared with forests management solely for timber. By augmenting timber production with subsistence nontimber product in part of the forest understory, the NPV increases to Rs36.3 million. However, if the area of timber production is reduced to allow more intensive production of nontimber product for commercial sales (at higher prices) mixed with a small amount of bamboo, then the NPV declines. For a high quality forest managed primarily for teak sawlogs, under regulation on a selective cutting basis, commercial timber and pole production offers extremely high returns to the resource holder; the nontimber products under the managed forest can add incremental economic value. A clear policy recommendation is to allocate participating communities a forest area already regulated and under sustainable forest management and timber and/or production (with enrichment planting or other minor treatments. Second, when faced with degraded lands, the most efficient option is to try and manage the existing natural regeneration rather than undertake expensive forest planting operations. Third, with the last two forest models, bamboo is a lucrative investment; but overall, a mixed forest with timber, and/or poles, bamboo and nontimber product offers the highest returns. The results suggest that during micro-planning, the JFM communities and DEF should consider putting at least some of the allocated forest area into bamboo and nontimber product production. This would also provide diversity against forest product market fluctuations in any one product, and against species-targeted insect and disease attack. However, decisions about long-term forest structure should be market driven. The simple economic models used in these estimates illustrate the kind of analyses that DEF should be undertaking to provide department field staff and communities with better information about forest management options in the micro-planning process.

Appendix 12. Community Forestry Models and Forest Poverty Pathways

JFM represents one model for community-based forestry. A range of community forestry approaches exist within a continuum where a government centered model is on one side and a community centered model on the other (figure A12.1). The government centered model roughly represents the old command and control model in India a few decades ago with a focus on industrial forestry and commercial plantations. The community centered model approximates several examples of community forestry that have developed in Latin America, particularly in Mexico where communities own the land and resource, develop management plans and market their own forest products (see GTF, GTZ and WWF 2001). The current JFM model in India appears to sit somewhere in between these two endpoints with shared roles, responsibilities and benefits. The primary focus of JFM in India is still largely around forest protection and conservation with the state retaining most of the control over forest management, regulation, monitoring, timber harvesting, and forest product marketing. JFM is a dynamic process however, and is continuing to evolve.

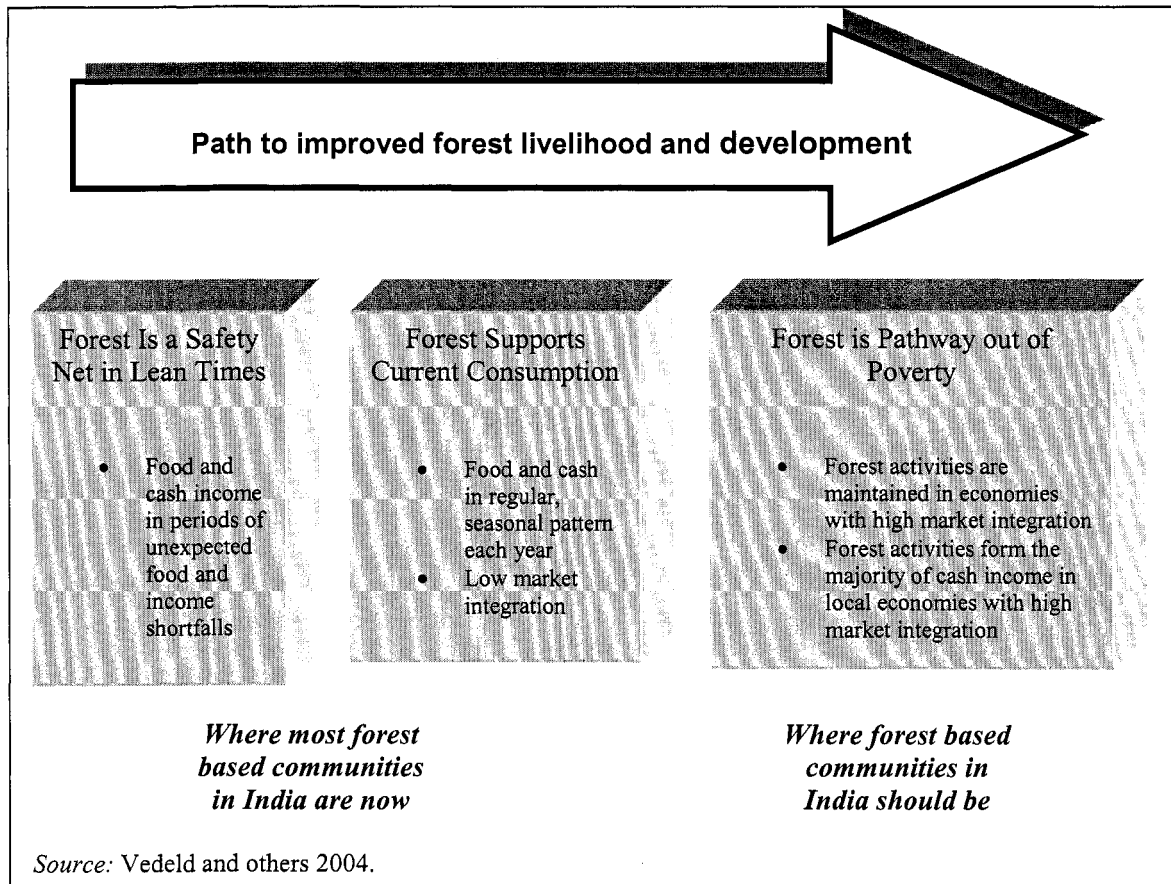
Generally, rural communities around the world use forest resources in three ways (figure A12.2). First is exploiting forests as a safety net, where food and cash income are obtained during periods of short-term hardship such as cutting fuelwood or fodder to sell in local markets during a drought or when the household head loses his or her job. Second is when forests support ongoing consumption through subsistence and cash income, for example nonforest timber products (fruits, medicinal plants, etc), fodder, or selling a few poles.

Figure A12.1. Community-based forest continuum



These consumptive forest uses might be a seasonal activity as part of the household's normal livelihood pattern, mixed with agriculture or wage employment. Income may be limited however, due to poor integration with open markets. Typically, most commercial sales of minor forest products would be in local trading markets. The third way a community can use forests is when the resource provides a major source of household income. Forest activities would be maintained in economies with a high level of integration to more developed markets in the region and beyond, perhaps even offshore for specialized products.

Figure 12.2. The forest livelihood path and community forestry



The broader goal of community-based forestry is to move from the left side of Figure 12.2 toward the right side, where forests are a major part of the community's economic base and in addition to subsistence products, commercial forest products are sold in local urban, national, and in some cases, even international markets.

Appendix 13. Poverty Impact Monitoring System

To measure the success of community-based forestry to deliver improved livelihoods to people, a monitoring system is required. The current JFM system is characterized by a fairly weak system for monitoring changes in livelihood and contributions to poverty reduction. Ongoing work by CIFOR, funded by the World Bank, is developing a simple method and set of tools for monitoring forest-based livelihoods and poverty impacts from community forestry. The pilot work is being undertaken in Jharkhand, India.



Poverty Impact Assessment of Joint Forest Management in Jharkhand India

Rural Week hosted by PROFOR and ESSD Forests Team
Session on “Forest Livelihoods and Vulnerability”

Washington, D.C.

March 31, 2005, 2:00-4:00 pm

Deep Narayan Pandey

Center for International Forestry Research (CIFOR)

Bogor, Indonesia

d.pandey@cgiar.org

Four conceptual positions on forests and livelihoods...

1. Livelihoods and forests as separate policy realms
2. Livelihoods insecurity as a constraint on forest conservation
3. Forest conservation must not compromise livelihoods
4. Livelihoods improvement depends on forest conservation



But, more or less, the consensus is that:

“...a purely conservation approach to natural resources, including forestry, is not likely to work.” *India CAS 2004; Para 77.*

(Sayer and Campbell 2004, Adams et al. 2004, Warner 2000, Pandey 1996)

But the synergies on ecological and human-wellbeing are required...

- Both forest conservation and livelihoods improvement are necessary.
- Need to monitor livelihoods impact and operate in an adaptive and socially accountable manner.
- Policies and systems that ignore diverse – but inseparable relationships between forests and livelihoods, risk collapse.
- **“In further scaling up Bank support for rural livelihoods it will be important to have a strong feedback loop to build lessons learned in to the design of new projects”** --India CAS 2004; Para 81.

... But, how to find “win-win combinations for conservation and poverty reduction” as CAS, Para 77 desires?

We need to learn and adapt...

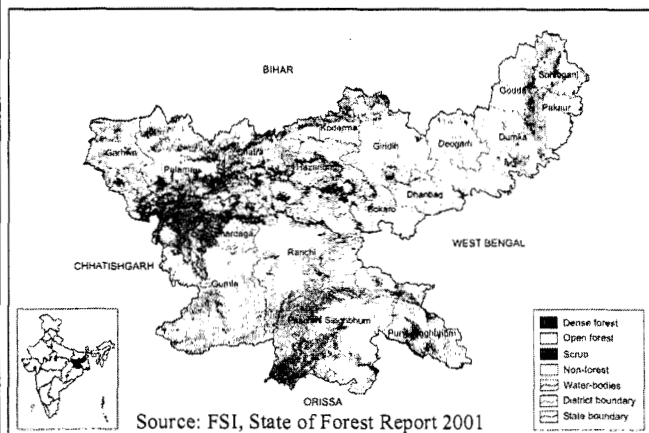
Objectives of the CIFOR/PROFOR Study, Jharkhand

1. Develop livelihoods assessment tools
 - Livelihoods measurement (baseline and impact assessment)
 - Livelihoods monitoring (indicators–based)
2. Conduct livelihoods assessment and analysis
3. Spatial analysis of poverty and forests

Why Jharkhand?

- 22.5% of the total state's population (26.91 million) are tribals
- 28.5% of total geographic area (79,714 km²) is forested.
- Forest-fringe communities represent 60% of the total population and over 90% of the tribal people.
- More than 60% of state's population is placed below the poverty line.
- **Yet, no studies on forest livelihoods; no monitoring systems to help stakeholders pursue adaptation**

Why Jharkhand?



- Forest-fringe communities represent 60% of the total population and over 90% of the tribal people.
- More than 60% of state's population is placed below the poverty line.

Yet, no studies on forest livelihoods; no monitoring systems to help stakeholders pursue adaptation

Why Jharkhand?

- Rural Infrastructure Development Index in Jharkhand is among the poorest compared to other states in India.
- Thus, at least to begin with, there are limited opportunities for livelihoods away from natural resources.
- **Therefore, forests will continue to play a crucial role in livelihoods.**
- The dynamics need to be studied.

Livelihoods Focus of JFM in Jharkhand

- JFM has great potential, but also strong critics
- Working plans and Microplans have explicit livelihood objectives
- Forest Department makes strong claims about their contributions to livelihoods, but no credible studies
- Forestry and foresters are under increasing scrutiny – need to be able to monitor/evaluate impact and adapt
- World Bank emphasizes poverty alleviation

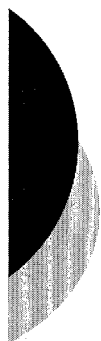
Building a livelihoods monitoring tool

- Vigorous attempts are being made to understand the contribution of natural resources to poverty reduction.
- JFM is attempting to integrate forestry and livelihoods.
- The achievements of these initiatives may be difficult to assess without a credible system for monitoring
- **If JFM is to meet the twin objectives of ecological and human well-being, monitoring holds great promise.**



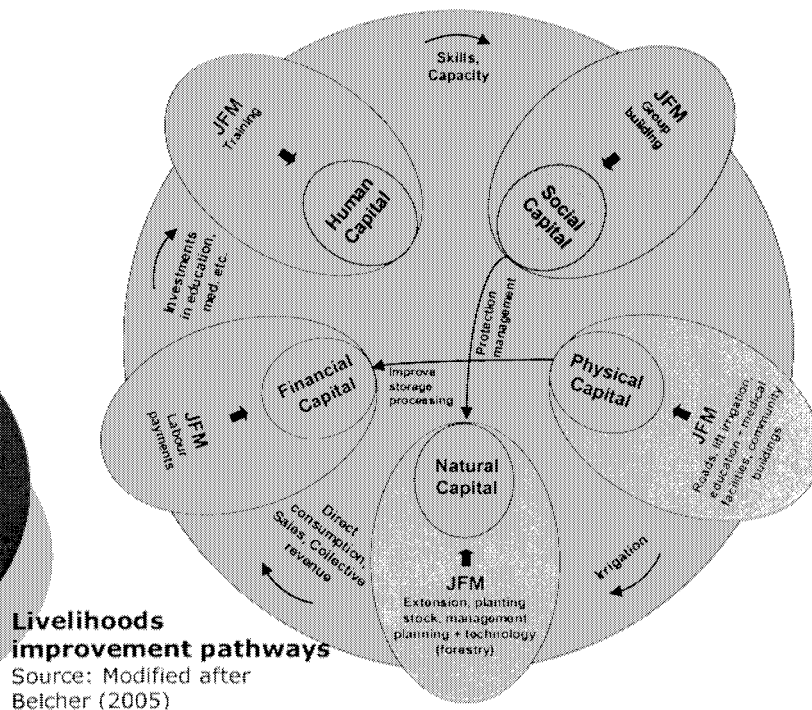
Indicator-based monitoring tool

- **Quick, frequent, and low cost village-level assessment of livelihoods status and change.**
- Household level indicators are more difficult and much more costly to implement.
- But, monitoring will be done in conjunction with the household-survey which will allow:
 - detailed, household level analysis of livelihood status and change, and
 - calibration of the indicators-based monitoring tool.



The iterative process

- CIFOR's proposal on indicators-based approach in a workshop in Ranchi 2004 (FD, NGOs, Academics).
- Discussion document (workshop output)
 - ◆ anticipated mechanisms and pathways by which JFM is expected to impact livelihoods
 - ◆ a draft list of indicators.
- Discussion document circulated for comment.
- Broader consultation (villagers, NGOs, FD, Forest Guards, Rangers).
- **Most recent version is to be used in 50 pilot villages**



“SMART” indicators

- **Simple and specific:** to be collected by Forest Guards and/or VFMP
- **Measurable:** can be assessed with little effort and should allow for ranking or quantification.
- **Adapted to local conditions:** locally meaningful and appealing to users
- **Relevant and Reliable:** should have a direct link to the livelihoods model
- **Time-scale appropriate:** indicate changes on the appropriate time scale

Financial capital

- Forest Dept. wages/capita (3 year rolling average)
- Forest revenue/capita (3 year rolling average)
- Number of kiosks selling consumer goods
- Average price of 5 most expensive items

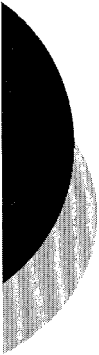
Physical Capital

- Number of pukka houses/capita
- Number of houses with electrical service/capita
- Number of motorcycles/capita
- Number of Functioning wells/capita
- Average travel time(or cost?) to nearest market
- Area of irrigated land/capita
- Number of functioning tractors/capita
- Number of functioning water pumps/capita


Natural Capital

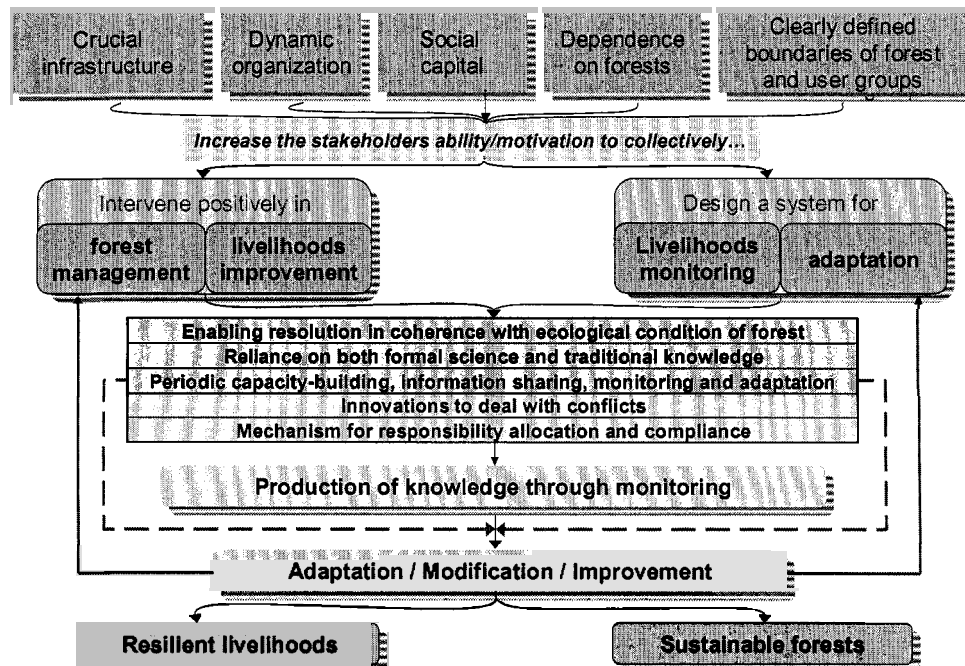
- Standing volume of timber/capita
- Area of productive fruit tree plantation/capita
- Area of key NTFP/capita
- Number of livestock (in cattle equivalents)/capita
- Average time spent collecting fuelwood per household per month
- Average time spent collecting water per household per month
- Value of annual timber production (3 year rolling average)/capita?
- Value of annual firewood production/capita
- Value annual NTFP (nationalized NTFPs) production/capita
- Annual rice production (kg.)/capita

Human capital

- 
- Infant mortality/capita
 - Number of deaths during dry season/capita
 - Percentage of school age children attending school
 - Average age of school leaving
 - Number of people that work outside village on a daily basis per capita
 - Number of people that leave village to work outside for extended periods per capita

Social capital

- 
- Proportion of adult population participating in VFMP
 - Proportion of VFMP members that are women
 - Number of VFMP meetings and attendance
 - Number of other citizens' groups active in the village
 - Collective selling of agricultural or forest products results in improved prices (y/n)



Reducing vulnerability/increasing resilience

Source: Pandey 2005

Pre-conditions for implementation of the monitoring tool

- The key challenge is a lack of accountability and motivation to apply science/new learning.
- Donors action to build innovative **mechanisms of accountability in lending projects for monitoring livelihoods** impact of JFM
- Large investments of time and money for **capacity-building**, for both:
 - enhancing the understanding about the inseparable relationship between the ecological and livelihoods dimensions of forestry, and
 - training in the implementation of the livelihoods monitoring tool.

Caveats and caution!

- Indicators-based tool is useful to get quick and comprehensive (large number of villages) overviews of conditions and directions of change at the village scale, but the detail will be limited.
- Household survey will give details, but it is sample-based and so also not appropriate for monitoring.
- We need a trade off to balance the need of knowledge production through monitoring and household survey tools.
- **Finally, livelihoods monitoring tool is not something that will meet all needs related to the production of knowledge, but as one element of that.**

Emerging Opportunities

- CIFOR has developed and pre-tested the tool incorporating the science and local knowledge.
- **The World Bank is planning major, multi-state investment in forestry and livelihoods**
- **Monitoring tool may provide baseline and subsequent studies to know the status and impact of interventions.**
- Learning in Jharkhand will provide critical insights for the effective implementation of multi-state projects.

Appendix 14. Institutional Options – Roles and Responsibilities for Key Actors in Reformed Community Forestry

Table A14.1. Options for revised institutional roles and responsibilities for community-based forestry

| <i>Institution and role</i> | <i>Transfer of rights</i> | <i>Establishment of local committee</i> | <i>Micro plan preparation</i> | <i>Plan review and approval</i> | <i>Local forest inventory</i> | <i>Silviculture in local forests</i> | <i>Forest protection</i> | <i>Enforcement</i> | <i>Monitoring of forest management</i> | <i>Timber and non-timber production</i> | <i>Timber and non-timber product marketing</i> |
|---|--|--|--|--|--|---|---|--|---|---|---|
| Forest Department | Working with government to identify historic land rights where they exist; where they don't, help develop system of renewable forest rights system | Work with CSOs to raise local awareness of community forestry options, tenure, rights, management obligations, marketing arrangements, etc | Establish plan and performance criteria, format, maps, quality standards, integrate with other rural development agencies, technical help to village | Review and approve micro-plans, then link to revised strategic working plans, ensure linkage with other rural development agencies | Develop guidelines, manuals, take local data and use in division inventory and plans, technical aid to village | R&D to support silviculture to enhance growth and yield and sustainability, identified in micro plan; help finance silviculture and other forest management | Provide technical guidance to communities on fire protection and silviculture to reduce insect and disease loss | Detain people caught illegally cutting, promote arbitration and other conflict resolution measures | Review performance monitoring reports, undertake random field checks in communities | Provide technical information on sustainable harvesting methods | Provide communities with market information, set up links with private sector. May act as market of last resort |
| Community | Sign CFM agreement, fully aware of contents and obligations | Commit to CFM program after internal discussions | Work with private forestry consultants, CSOs, DEF on plan | | Collect baseline and change data from local forest | Implement silviculture activities identified in micro-plan | Provide forest protection against fire | Protection from encroachment and illegal cutting | Work with private consultants on reports | Harvest products and/or hire contractors | Access new market channels with private sector |
| Certified forest consultants | Capacity building in communities | | Work with community to prepare micro-plan | | Assist communities as may be needed | Assist communities as may be needed | | | Work with communities to do performance reporting | | |
| Private contractors | | | | | Outsourced digitizing work from DEF | | | | May be hired by some communities for harvest products or transport to markets | | May act to help market logs from private farmers |
| Community support organizations | Capacity building in communities | Support group formation and social mobilization | Help in microplan preparation | | | | | Help in conflict resolution | | | Help in value addition training |
| Local authorities and autonomous councils | Responsible for forest management on PRI lands | Work with DEF, NGOs, and communities | | Collaborate on development service delivery and financing | | | | Could act as local arbitration body | Hire qualified professionals for monitoring on PRI forests | | Marketing role under PESA |
| FIDA or similar body | | | | Coordinate rural development programs for micro-plans | | Funding for forest resource establishment | | Could act as arbitration body in disputes | | | |
| Private firms | | | | | | R&D for specific products | | | | Co-financing investments in forests | Sales, R&D, technical support |

Table A14.2. Proposed key functions of forest department to support community-based forestry

| <i>Key functional areas</i> | <i>Suggested activities to be strengthened</i> |
|--|---|
| Forest management, technical advisory and extension services | <ul style="list-style-type: none"> • Providing community liaison and general support services • Reviewing and approve micro-plans • Providing targeted extension services to communities (possibly shared with outsourced agencies, or eventually on contract to communities) • Delivering field demonstrations, technology transfer focused on community needs • Supporting community enforcement efforts against illegal access and cutting • Providing support for major conflict management |
| Applied research and development | <ul style="list-style-type: none"> • Delivering applied research and development on silviculture in key species identified in micro-plans, especially nontimber forest products, and building links with regional and national institutes |
| Forest monitoring, mapping and information management | <ul style="list-style-type: none"> • Maintaining forest inventory baseline and change data from micro-plans, working plans, Forest Survey of India and other sources • Maintaining functional geographic information systems to support community level and division level management planning and mapping |
| Forest marketing technical services | <ul style="list-style-type: none"> • Facilitating linkages with strong research organizations, development banks and private sector for marketing and value addition, quality improvement • Gathering regular local and external market data • Disseminating market data to communities through mass media, web based services |
| Policy, planning, and economics | <ul style="list-style-type: none"> • Informing forest management planning and decision-making at community and division level, and guide forest policy development. • Undertaking economic analyses of alternative silviculture models for non-traditional livelihood species, agro-forestry options, fuelwood plantations, mixed cropping systems, bamboo plantations, and so forth • Maintaining a data base of forest statistics, • Producing annual reports, and publishing periodic statistical reports on forestry for public dissemination, • Developing and maintaining a web site to provide another medium for public access to this information |

Appendix 15. What Is the Potential for Increased Revenues from Community-Based Forestry?

Background

Major opportunities exist for achieving the livelihood potential from the forest through appropriate reforms. It is important to see how the long-term productive potential of the forest can be achieved, identifying the appropriate institutional arrangements, what species and products are best suited for the forest eco-types in the State, and how product flows can be increased to meet market demands. It must be remembered that the economic contribution from JFM forests at present is minimal, reflecting the original program goals of forest protection and rehabilitation. But, as these forests mature, especially on formerly degraded areas and for nonlisted forest species that are not subject to restrictive marketing arrangements, the scope for increased forest revenues is felt to be fairly high.

Case Study from Jharkhand

An example from Jharkhand illustrates the potential gains in total income from increasing forest productivity and market access. The stated objective of the forest department Vision 2010 is to increase the number of JFM committees to 10,000. Currently, the average forest area under a JFM committee is about 252 hectares. Extending this average to 10,000 JFM committees would put virtually all of the recorded forest area under co-management. This expansion is unlikely to happen in the next six years. A more conservative and perhaps, realistic scenario might be to have 6,000 committees operating by 2012 and 10,000 committees operating effectively through community-based management by the year 2020. Also, the projected increase in well-stocked forest from Vision 2010 could be assumed to occur over a longer time period, say to 2020 as well. Based on these conservative assumptions, average community forest area of 252 hectares, and the estimated number of committees, the projected total forest area and area of well-stocked forest could see very significant increases in the next 16 years (table A15.1).

Table A15.1. Potential forest product supply from reformed JFM programs: Jharkhand

| <i>Parameters</i> | <i>2004</i> | <i>2012</i> | <i>2020</i> |
|--|-------------|-------------|-------------|
| Number of CFM committees operating effectively | 3,358 | 6,000 | 10,000 |
| Estimated co-managed area (ha) | 846,216 | 1,512,000 | 2,520,000 |
| Percentage dense, well-stocked forest (percent) | 51 | 63 | 75 |
| Area of well-stocked forest under co-management (ha) | 431,571 | 952,560 | 1,890,000 |
| Mean annual increment (cubic meters per hectare per ar) | 0.75 | 1.00 | 1.50 |
| Potential sustainable fiber production (cubic meters per ar) | 323,678 | 952,560 | 2,835,000 |

Source: Jharkhand Forest Department.

These projections of forest growth can be used to develop various scenarios of forest production and income growth for communities and the state to the year 2020. Each scenario is based on a modest area of well-stocked forest assigned to a community that would be under active management for timber and nontimber forest products as well as a certain area of forest land under bamboo production. Not all the forest is assumed to be used for timber production due to slope, poor quality sites in some areas, and so forth. Also, communities may set their own priorities for forest production, conservation, and so forth. Timber production is based on a selective felling regime. Nontimber forest products are produced under the timber cover and/or

degraded forest land. Bamboo is grown on degraded forests. Fuelwood and fodder are gathered from the timber production forest.

A scenario of low growth assumes that communities manage and market 20 percent of their forest for sawlog production, 20 percent for nontimber forest product, and a 5 percent for bamboo production. The remaining half of the forest is held for broader conservation. A moderate growth scenario assumes with better market access, communities manage and market 35 percent of their forest for timber, another 35 percent for nontimber forest product, and 10 percent for bamboo production. A high growth scenario assumes fairly high market integration allowing 50 percent of the forest is managed and sold for sawlogs, 50 percent for nontimber forest product (under the timber cover), and 15 percent for bamboo on degraded forest land. Given the average community forest size of 252 hectares in Jharkhand, these percentages are not unrealistic.

For sawlogs, a real stumpage value of Rs7,500 per cubic meter is assumed. For nontimber forest products, an average value of Rs2,000 per hectare is used, based on Chopra and others (2002). With bamboo, it is assumed the material is used for pulping, with an average stumpage value of Rs300 per metric ton and an average of 8 metric tons per hectares harvest. Timber stumpage is based on average log price at mill of Rs15,000 per cubic meter and allowing 50 percent deductions for harvest and transport costs. For bamboo, average production is 20 metric tons per hectare, with felling volumes of 40 percent, and farm gate prices for pulp of Rs300 per metric ton.

No value addition is assumed for nontimber forest product so the prices are very conservative. Timber quality is average and reflects reasonable prices for Sal logs for timber. Bamboo is for pole production rather than pulp and paper. Subsistence fodder and fuelwood are not included to simplify the analysis. Environmental service values such as carbon sequestration are not included.

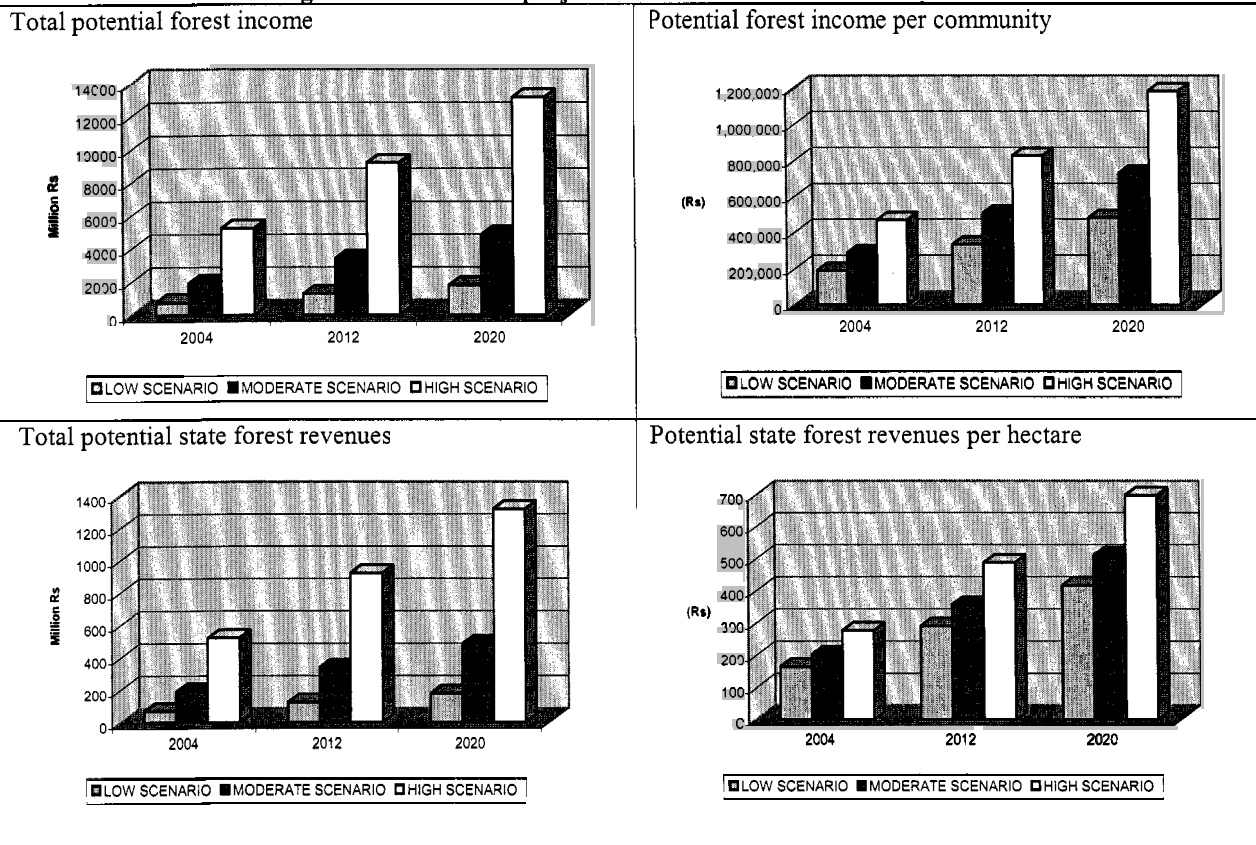
For simplicity, it is assumed that communities retain 90 percent of commercial revenues and pay the state a 10 percent tax on income on all commercial sales. Subsistence production is free of charge.

The three scenarios are not meant to be precise but rather should be viewed as a tool for stimulating debate, indicating the magnitude of potential revenues that can be unlocked, even with very conservative assumptions. The mix of species, farm gate prices, etc, can all be revised in many combinations. But, using the models and assumptions chosen, the results are instructive for longer-term forest policy in Jharkhand. Based on the three scenarios, the total potential annual income from the forest ranges from Rs710 million to Rs13,200 million (figure A15.1). Depending on the scenario, total revenue per community ranges from about Rs190,000 to Rs1,200,000 per year. Finally, the total revenue for the state (based on a 10 percent share of total income) and income per hectare increase significantly both over time, and as a higher proportion of the forest is under active community management.

These projections should be viewed as highly conservative. Actual potentials could be many times higher if nontimber forest products are more aggressively managed and marketed, including value addition and local processing. Similarly, bamboo production and income could increase significantly if local processing capacity was established in some communities or groups of communities. Further, the estimates only refer to potential commercial values. Subsistence values of fuelwood, medicinal plants and forest foods are not included. The main message is that the asset value of Jharkhand's forest resources has great upside potential as community forestry expands and forest productivity improves. Communities could conceivably be earning commercial incomes of an average of half a million rupees per year under fairly modest growth and market assumptions, and well over a million rupees annually under more optimistic

assumptions. Finally, the state could increase the current average revenues per hectares from the present Rs69 to several hundred rupees per year. In the longer-term, the annual incremental production from community co-managed forest areas could far exceed local state demand projections. This raises the opportunity to develop export markets for forest products (other Indian states and for some products offshore markets), which in turn would generate increased local direct and indirect incomes. Even with this simple analysis, it is clear that community forestry, coupled with investments in increasing forest productivity could be a mechanism to substantially expand rural incomes and provide enhanced revenues to the state through downstream taxes. Yet this potential will not be realized until state governments begin to address a number of fundamental issues and constraints that are hindering more effective development of community forestry livelihood opportunities.

Figure A15.1. Income projections for Jharkhand case study



Extending The Model To A National Level

Applying the same assumptions to a national level is possible from data in Volume I, Chapter II on national JFM. The same percentages of dense forest and improvements in mean annual increment are used from the Jharkhand case. However, the number of committees remains static at just under 85,000; in the national case, the analysis will therefore eliminate growth effects from increasing scale (Table A15.2). In this case, growth is due only to improved forest productivity and access to markets for basic timber, bamboo and nontimber forest product commodities. Results are shown in table A15.3 and following charts (Figures A15.2 -A15.4).

**Table A15.2. Potential forest product supply from reformed JFM programs –
National perspective**

| <i>Parameters</i> | <i>2004</i> | <i>2012</i> | <i>2020</i> |
|--|-------------|-------------|-------------|
| Number of CFM committees operating effectively | 84,632 | 84,632 | 84,632 |
| Estimated co-managed area (ha) | 17,331,950 | 17,331,950 | 17,331,950 |
| Percentage dense, well-stocked forest (percent) | 51 | 63 | 75 |
| Area of well-stocked forest under co-management (ha) | 8,839,295 | 10,919,129 | 12,998,963 |
| Mean annual increment (cubic meters per hectare per year) | 0.75 | 1.00 | 1.50 |
| Potential sustainable fiber production (cubic meters per year) | 6,629,472 | 10,919,129 | 19,498,446 |

Table A15.3. Data and assumptions for national projections of revenue from reformed JFM

| | Jharkhand | | | National | | |
|--------------------------------------|-----------|--------|---------|----------|----------|----------|
| Number of CFM Committees | 3358 | 6000 | 10000 | 84,632 | 84,632 | 84,632 |
| Area of well-stocked forest | 431571 | 952540 | 1890000 | 8839295 | 10919129 | 12998963 |
| mean annual increment forest | 0.75 | 1 | 1.5 | 0.75 | 1 | 1.5 |
| | 2004 | 2012 | 2020 | 2004 | 2012 | 2020 |
| <i>LOW SCENARIO</i> | | | | | | |
| Sawlog income (million Rs) | 486 | 1429 | 4253 | 9944 | 16379 | 29248 |
| Bamboo income (million Rs) | 52 | 114 | 227 | 1061 | 1310 | 1560 |
| NTFP income (million Rs) | 173 | 381 | 756 | 3536 | 4368 | 5200 |
| Total income (million Rs) | 710 | 1924 | 5235 | 14541 | 22057 | 36007 |
| Average income per ha (Rs) | 1645 | 2020 | 2770 | 1645 | 2020 | 2770 |
| Total revenue per community (Rs) | 190274 | 288620 | 471177 | 154629 | 234556 | 382910 |
| Total revenue for state (million Rs) | 71 | 192 | 524 | 1454 | 2206 | 3601 |
| Average state revenue/ha | 165 | 202 | 277 | 165 | 202 | 277 |
| <i>MODERATE SCENARIO</i> | | | | | | |
| Sawlog income (million Rs) | 850 | 2500 | 7442 | 17402 | 28663 | 51183 |
| Bamboo income (million Rs) | 104 | 229 | 454 | 2121 | 2621 | 3120 |
| NTFP income (million Rs) | 302 | 667 | 1323 | 6188 | 7643 | 9099 |
| Total income (million Rs) | 1255 | 3396 | 9218 | 25711 | 38927 | 63402 |
| Average income per ha (Rs) | 2909 | 3565 | 4878 | 2909 | 3565 | 4878 |
| Total revenue per community (Rs) | 336450 | 509371 | 829663 | 273421 | 413957 | 674239 |
| Total revenue for state (million Rs) | 126 | 340 | 922 | 2571 | 3893 | 6340 |
| Average state revenue/ha | 291 | 357 | 488 | 291 | 357 | 488 |
| <i>HIGH SCENARIO</i> | | | | | | |
| Sawlog income (million Rs) | 1214 | 3572 | 10631 | 24861 | 40947 | 73119 |
| Bamboo income (million Rs) | 155 | 343 | 680 | 3182 | 3931 | 4680 |
| NTFP income (million Rs) | 432 | 953 | 1890 | 8839 | 10919 | 12999 |
| Total income (million Rs) | 1801 | 4867 | 13202 | 36882 | 55797 | 90798 |
| Average income per ha (Rs) | 4173 | 5110 | 6985 | 4173 | 5110 | 6985 |
| Total revenue per community (Rs) | 482626 | 730122 | 1188149 | 392213 | 593358 | 965568 |
| Total revenue for state (million Rs) | 180 | 487 | 1320 | 3688 | 5580 | 9080 |
| Average state revenue/ha | 417 | 511 | 699 | 417 | 511 | 699 |
| <i>Price assumptions</i> | | | | | | |
| Logs (Rs/m3) | 7500 | | | | | |
| NTFP (Rs/ha) | 2000 | | | | | |
| Bamboo (Rs/tonne) | 300 | | | | | |

Figure A15.2. Total forest income projections, reformed national JFM

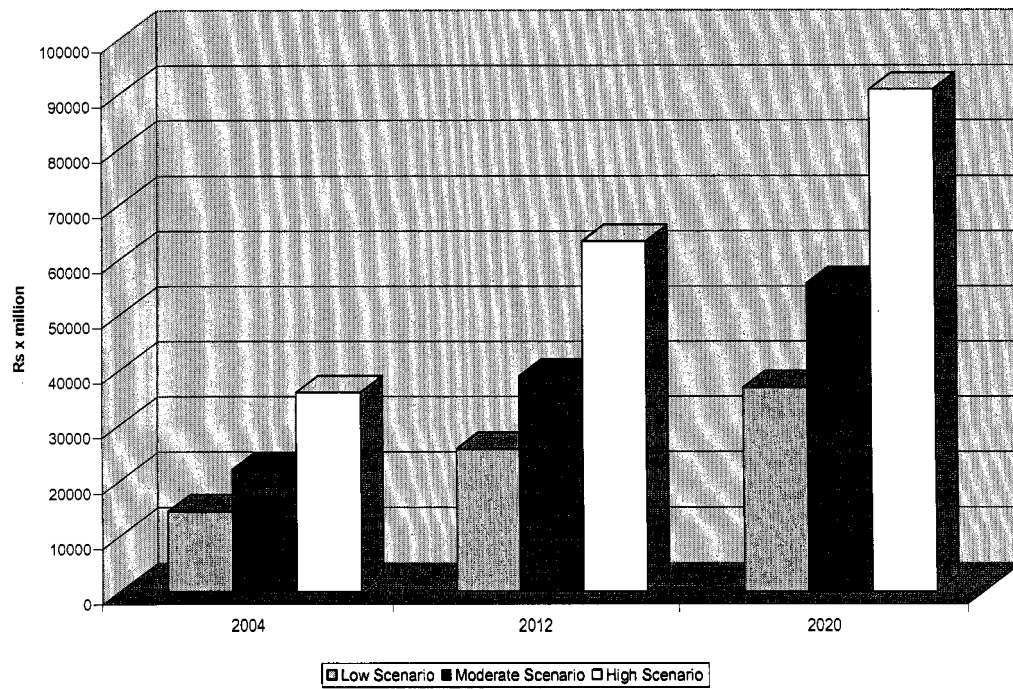


Figure A15.3. Total State revenue projections, reformed national JFM

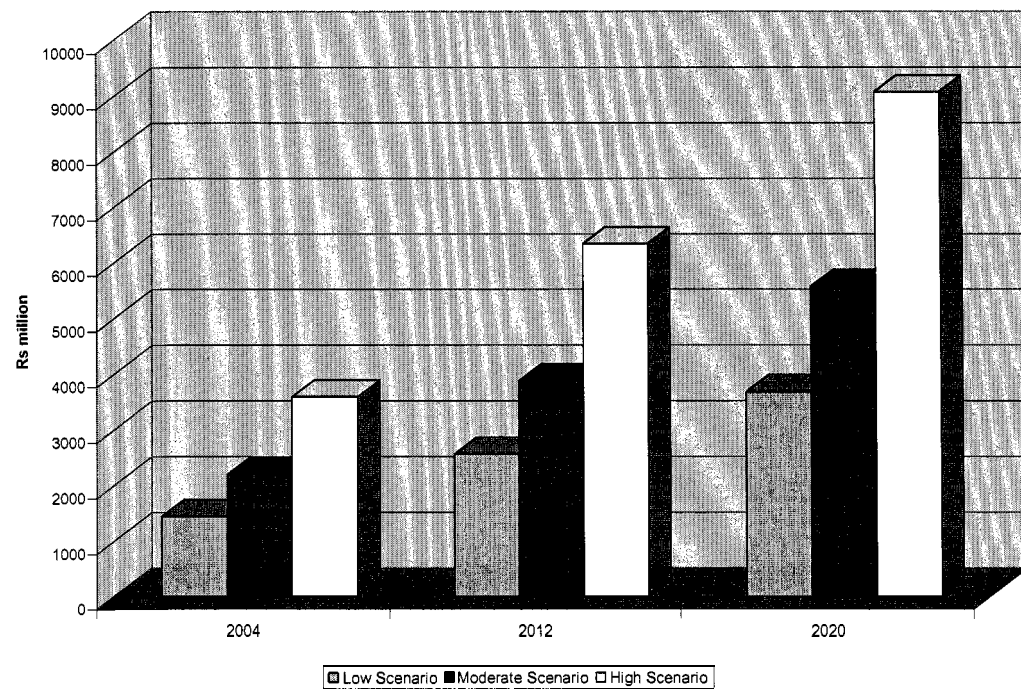
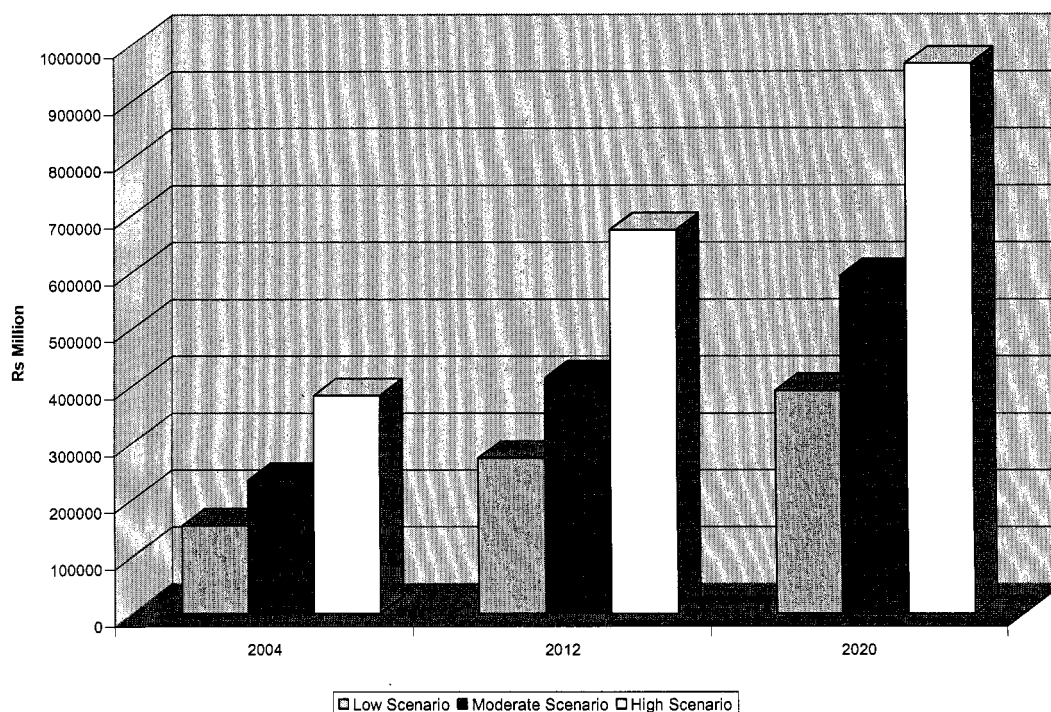


Figure A15.4. Income per community projections, reformed national JFM



The results show significant increases in total forest income, revenue per community, state revenue and state revenue per hectares when forest productivity is improved and communities have access to direct markets. Simply by considering the low scenario as one where JFM reforms are limited, and the high scenario where reforms are broader and market potential is being more fully exploited, the benefits of reforms are clear. Total forest income could rise from an estimated \$222 million in 2004 (with the lowest scenario) to about \$2 billion per year in 2020 (under the most optimistic scenario). Further, with a 20 percent increase in nonforest timber 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 increase by just over 11 percent or \$220 million in 2020 in the most favorable scenario. Communities will continue to enjoy subsistence benefits from the forest. The imputed net subsistence values of fuelwood and fodder would continue and is valued at \$1.1 billion per year.⁵² Conservation values are also important. From Chopra and others (2002) ecological and eco-tourism benefits increase net income from 1.07 percent to 2.40 percent of GDP; this represents a difference of \$6.2 billion from the entire forest cover in India. Given that JFM forests currently represent 27 percent of total forest cover, a simple assumption is that 27 percent of these gains (\$1.7 billion) could be derived from JFM forests as they mature and begin to generate these conservation values. This model is very simple and produces order of magnitude estimates. More complex models could be based on refined growth and yield estimates, more precise data on prices and costs, and different assumptions about how the “typical” JFM forest is allocated between various outputs.

⁵² Based on 8.4 million families (or households) involved with JFM (from Bahuguna and others 2004); average gross subsistence value for fuelwood and fodder from case studies in Jharkhand and Assam (see Appendix 5); and assuming net values are a conservative 50 percent of gross values to account for collection time.

Commercial fuelwood could be another option for increased value addition from the forest. Also, with better market access, villagers could be induced to increase forest stocking on their private land holdings. If some communities engage in lucrative aromatic oils or medicinal plants for international markets, net returns could rise dramatically. Another avenue that could open up to allow some communities to increase incomes would be secondary processing. There is no reason why more progressive communities (or a small consortium of communities) could not develop sawmilling capacity on site. Despite the simplicity of the model, it shows the potential livelihood improvement and state revenues.

As with Jharkhand, communities could earn up to Rs1 million per year from sustainable production, based on very conservative assumptions about prices, markets, and so forth. Assuming 200 households, this represents Rs5,000 per household per year from forestry, assuming revenues are shared equally. If land-owners got involved in agro-forestry to supply commercial pulp, fuelwood or timber markets, they could easily increase their net earnings by several thousand rupees per hectares per year.

Another benefit is the contribution to balance of payments. Given the current timber deficit of up to 39 million cubic meters, the potential timber production from existing JFM forests by 2020 could meet up to half this deficit. If community forestry continues to expand nationally, it is possible for domestic production to meet most of the domestic demand for timber, assuming it can be produced at competitive costs compared to imports.

References

- Adams, W. M., Aveling, R., Brockington, D., Dickson, B., Elliott, J., Hutton, J., Roe, D., Vira, B. and Wolmer, W. 2004. Biodiversity conservation and the eradication of poverty. *Science* 306: 1146-1149.
- 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.
- 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
- Banyopadhyay, S. and P. Shyamsundar 2004. "Fuelwood Consumption and Participation in Community Forestry in India." World Bank Policy Research Working Paper No. 3331, Washington
- Battacharya, P., and R. Prasad. 1998. "Integrated Options for Forest Management in India." Indian Institute of Forest Management, Bhopal.
- Belcher, B. 2005. Monitoring Livelihood Impacts of Community Forest Management: Definitions, Criteria and Indicators, February 2005, Center for International Forestry Research, Indonesia.
- Centre for International Forest Research. 2002. "Planning for woodcarving in the 21st century." CIFOR Infobrief. April 2002. No.1. Bogor, Indonesia.
- 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
- Darlong, V., and I. Roy 2005. "Improving Linkages: Local Government, forest department, and Indigenous Communities." In *Community Forestry in Northeast India: Recommendations for Action*, ed. M. Poffenberger. Community Forestry Alliance for Northeast India and Community Forestry International, Santa Barbara, California
- Divan, S., and A. Rosencranz 2001. *Environmental Law and Policy in India*. New Delhi: Oxford University Press.
- Falconer, J., and John Arnold. 1988. "Forests, Trees and Household Food Security." Social Forestry Network Paper 7a., Food and Agriculture Organization, Rome.
- Federation of Indian Plywood and Panel Industry 2004. Industry statistics for 2001. New Delhi.
- Foppes, J., and S. Ketphanh 2000. "Forest Extraction or Cultivation? Local Solutions from Lao PDR." Paper prepared for seminar The Evolution and Sustainability of Intermediate Systems Between Extractivism and Plantations. CIFOR-FOREASIA, 28 June-1 July 2000, Lofoten Norway

- 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 India. 1976. Report of the National Commission on Agriculture, 1976, Part IX, Forestry. New Delhi.
- . 2001. Census of India. Delhi.
- GTF, GTZ and WWF. 2001. "Toward Policies of Community Forest Management and Certification in Latin America." Proposal for Santa Cruz Workshop.
- Indian Agro Paper Mills Association. Various years. Pulp and paper statistics, India.
- 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/.
- International Labour Office. 2003. "Making Ends Meet: Bidi Workers in India today: A Survey of Four States." ILO Working Paper, Geneva.
- JPS Associates. 2002. "Madhya Pradesh and Chhattisgarh Forestry Fiscal Trend Analysis." New Delhi.
- 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.
- 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.
- Lawbuary, J. 1999. "Reclaiming the Forests? People's Participation in Forest Management, East India." Thesis submitted in partial fulfillment of Bsc. Honors, Human Environmental Science, King's College, London.
- 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
- Maps of India 2004. Political map of Jharkhand. Mapsofindia.com
- Mandelbaum, D.G. 1970. *Society in India. Vol. II: Change and Continuity*. Berkeley and Los Angeles: University of California Press.
- 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.

- Ministry of Environment and Forests. 2000. "National Forest Action Plan." Delhi.
- _____ 2001a. Forest Statistics of India. Delhi
- _____ 2001b. Forest Survey of India. Dheradun.
- Mishra, R.K. 2001. Selected Plan Statistics of Jharkhand, Bihar and India at a Glance. Data Bank, BAU-ATCO.
- Mohamed, A., and S. Appanah 1998. "Bamboo Resources Conservation and Utilization in Malaysia." In A.N. Rao and V. Ramanatha Rao, eds. *Proceedings of Training Course Cum Workshop*, May 10–17, Kunming and Xishuanbanna, Yunnan, China.
- Mosse, D., S. Gupta, M. Mehta, V. Shah, and J. Rees. 2002. "Brokered Livelihoods: Debt, Labour Migration and Development in Tribal Western India." *Journal of Development Studies* 38 (5): 59–88.
- 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.
- National Planning Commission. Various years. "Budget Estimates for Government of India." Delhi
- 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
- Pandey, Deep. 2003. *Livelihood Improvements through Multifunctional Forestry Systems in India*. Unpublished research background paper for World Bank
- Pandey, D. N. 1996. Beyond vanishing woods: participatory survival options for wildlife, forests and people. Himanshu Publications, Udaipur, India, pp 222.
- People's Daily Online. 2004. "China Becomes One of World's Biggest Furniture Exporters." September 20. www.english.peopledaily.com.cn/
- Pradhan, G. and K. Barik, 1999, 'Total Factor Productivity Growth in Developing Economies: A Study of Selected Industries in India ', *Economic and Political Weekly*, July 31, 1999, pp. M92-M97.
- 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.
- Rao, H.K. 2001.. "A Study on Agrarian Structure, Agricultural Growth, and Rural Poverty Linkages." National Institute of Rural Development, Hyderabad.

- Ribot, J. 2004. *Waiting for Democracy: The Politics of Choice in Natural Resource Decentralization*. Washington, DC: World Resources Institute.
- Roy, S.C. 1912. *The Mundas and Their Country*. Calcutta: Thacker & Co.
- Sachidananda, P. 1979. *The Changing Munda*. New Delhi: Concept Publishing Company.
- Saxena, N.C. 2002. "Fuelwood Production through Wasteland Development: Some Policy Issues." In *Institutionalizing Common Pool Resources*, D.K. Marothia, ed. New Delhi: Concept Publishing Company.
- Sayer, J. A. and Campbell, B. M. 2004. *The Science of Sustainable Development: Local Livelihoods and the Global Environment*. Cambridge University Press, Cambridge, UK.
- 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.
- Sharma, B.D. 2001. *Tribal Affairs in India: A Crucial Transition*. New Delhi: Sahyog Pustak Kuteer Trust.
- The Energy Research Institute 2004. Social and institutional assessment for Assam. Background paper prepared for World Bank.
- . 2005. "Socioeconomic and Institutional Assessment for Forest Sector Analysis in Assam." Report prepared for World Bank, October, Delhi.
- Tiwar, 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.
- Verardo, B. 2003. "Rebels and Devotees of Jharkhand: Social, Religious and Political Transformations among the Adivasis of Northern India." Unpublished Ph.D. thesis, University of London.
- Vitebsky, P. 1993. *Dialogues with the Dead: The Discussion of Mortality among the Sora of Eastern India*. Cambridge: Cambridge University Press.
- Weiner, M. 1978. *Sons of the Soil: Migration and Ethnic Conflict in India*. Princeton, NJ: Princeton University Press.

World Bank 2004. Fiscal decentralization to rural governments. South Asia Rural Development Unit. World Bank. Report No. 26654-IN. January 2004. Washington Dc.

World Bank 2005a. Small-medium scale forest enterprises in India – Opportunities for IFC and World Bank engagement. Discussion note. Agriculture and Rural Development Forest Team. Washington DC.

———. 2005b. “Project Performance Assessment Report : Madhya Pradesh Forestry Development Project. Operations Evaluation Department, March 7, Washington, DC.

World Wildlife Fund 2003. Relevance of Forest Certification to the Wood carving Industry in India. Discussion paper. Delhi.

wb13057

M:\GRANT\India ESW_Forestry\Jharkhand\FINAL DRAFT REPORT\Final Report Annexes_Edited Vol2 Nov30.doc
12/01/2005 10:47:00 PM