

Sub-study of the India country study of the
international collaborative research project:
Instruments for sustainable private sector forestry

INDIA
COUNTRY
SUB-STUDY

Potential for commercial production from forests under joint forest management

Hema Arora
Anjali M. Bhatia
Snigdha Chakraborty

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Rajendra's Mahaveer Tower-I
B-2, Local Shopping Complex
MMTC/STC Colony, Geetanjali Enclave
New Delhi 110 017, India
Tel. +91 11 669-1091, 669-2092,
669-1793
Fax +91 11 6691794
e-mail ecotech@del2.vsnl.net.in

Forestry and Land Use Programme
International Institute for
Environment and Development
3 Endsleigh Street
London WC1H 0DD, UK
Tel. +44 20 7388 2117
Fax +44 20 7388 2826
e-mail forestry@iied.org
<http://www.iied.org>

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Preface

The present study is part of a wider international project entitled ‘Instruments for Sustainable Private Sector Forestry’ which is being co-ordinated by the International Institute for Environment and Development (IIED), London. The overall aim of the project is to identify effective market and regulatory instruments that ensure that the private sector produces social and environmental benefits from forest management and to promote these instruments.*

In the first phase of the project, a **Global Review of Private Sector Participation in Sustainable Forest Management** was undertaken. This provided a snapshot of status and trends regarding private sector participation in sustainable forest management in 23 countries from all regions of the world.

In the second phase of the project, detailed country specific studies were carried out in five countries: **Brazil, China, India, Papua New Guinea** and **South Africa**. The present study forms a part of the India Country Study, which is being co-ordinated by Ecotech Services (India) Pvt. Ltd. (ETS), New Delhi. The India Country Study is funded by the Department for International Development (DFID), India.

* In this project, the term ‘private sector’ is interpreted broadly such that it includes all those who engage in commercial activity concerning forest goods and services—be they individuals, community groups, informal sector groups or the large-scale corporate sector.

The broad objectives of the India Country Study are to understand the current situation, trends and potentials with respect to private sector participation in sustainable forest management; to review the impact of sectoral and extra-sectoral policies on private sector participation; and to explore strategic options for the private sector to contribute to sustainable forest management in India. The country study is divided into three broad themes: emerging new private sector players; policy provisions for private sector participation in sustainable forest management; and market-based instruments to encourage the private sector's contribution to sustainable forest management (see pages ix–x for a list of the 6 sub-studies).

The present study is part of the theme 'Emerging new private sector players', which analyses potential new sources of supply of forest goods, with a view to identifying a range of options to ensure future sustainable supplies. This study focuses particularly on the potential of Joint Forest Management areas to supply forest goods commercially.

It is hoped that the insights gained from this study will help policy makers to arrive at appropriate policy responses to further strengthen Joint Forest Management in the country.

The Directors of ETS would like to formally acknowledge the institutional support by IIED, financial support by DFIDI, individual efforts made by our consultants Ms. Hema Arora, Ms. Anjali M. Bhatia and Ms. Snigdha Chakraborty in completing this report and Mr. Sushil Saigal in assisting CTD for co-ordinating this sub-study.

R. P. Mattoo
Chief Technical Director
Ecotech Services (India) Pvt. Ltd.

Sub-studies under the India Country Study

The New Foresters: the role of private enterprise in the Indian forestry sector is the India country study prepared under the project **Instruments for sustainable private sector forestry**. This study derives from a series of sub-studies that were commissioned under the project. The sub-studies are:

1. *Policies affecting private sector participation in sustainable forest management*. Daman Singh. Ecotech Services (India) Pvt. Ltd. 2002.

The private sector's participation in forestry activities is determined by policies at the central and state levels, not only those directly related to forests but also policies and legislation introduced for other sectors e.g. land ceiling on agriculture lands, export-import policies, tax laws etc. This study provides an overview of the policy environment for the private sector participation in forestry activities.

2. *Potential for commercial production from forests under Joint Forest Management*. Hema Arora, Anjali M. Bhatia and Snigdha Chakraborty. Ecotech Services (India) Pvt. Ltd. 2002.

Around 15 per cent of India's forestland is already under joint forest management (JFM). Given the considerable area under JFM, these forests could well be important sources of raw material in future. This study examines the potential for commercial production from JFM forests by analysing the situation in Haryana and West Bengal—two states where the JFM programme first started and has reached a level of maturity.

3. *New hope for private forestry: Policy and practice of Lok Vaniki in Madhya Pradesh*. S. Raghavan and P. Srivastava. Ecotech Services (India) Pvt. Ltd. 2002.

The state of Madhya Pradesh has recently introduced significant policy changes to encourage private sector participation in forestry. This study analyses the process of policy change and attempts to highlight the factors that made positive policy change possible.

4. *The ayurvedic medicine industry: Current status and sustainability*. Niraj Subrat, Meera Iyer and Ram Prasad. Ecotech Services (India) Pvt. Ltd. 2002.

Ayurvedic industry is an important forest-based industry, which uses a large quantum of medicinal plants that are mainly procured from the wild. The domestic market for *ayurvedic* formulations is expanding rapidly and the government is planning to substantially increase exports. There is danger of overexploitation of the medicinal plant resources if corrective steps involving the industry are not taken. This study examines the potential of application of certain market-based instruments to promote sustainable utilisation of these resources.

5. *Review of company-farmer partnerships for the supply of raw material to wood-based industry.* Sushil Saigal and Divya Kashyap. Ecotech Services (India) Pvt. Ltd. 2002.

The national forest policy clearly indicates that forest-based industry should meet its raw material needs by establishing direct relationships with farmers. This study analyses the experience with partnership schemes started by four companies and provides suggestions for improvement.

6. *The second green revolution: Analysis of farm forestry experience in western Tarai region of Uttar Pradesh and coastal Andhra Pradesh.* Sushil Saigal and Divya Kashyap. Ecotech Services (India) Pvt. Ltd. 2002.

Farm forestry was actively promoted by the government during the 1970s and 1980s, and farmers in several states planted trees on a large scale. Due to a variety of reasons, tree planting by farmers declined by the end of the 1980s. In recent years, farm forestry has again become popular among farmers. This study documents the farm forestry experience in the '70s and '80s and, through detailed case studies of two districts, analyses the reasons behind the popularity of farm forestry among local farmers.

These studies are available from Ecotech Services (India) Pvt. Ltd. and the Forestry and Land Use Programme of IIED (contact details are given behind the title page).



Executive summary

In recent years, Joint Forest Management (JFM) has emerged as an important forest management strategy and the area under JFM now exceeds 14 million hectares or 18% of forest land. The JFM forests of the country are being managed by around 63,000 JFM groups. Although this large area has the potential to meet a substantial part of the country's forest product requirements, it is yet unclear whether JFM forests can or even should be managed to yield any commercial produce.

In this study, the commercial potential of JFM forests is examined by analysing the experience of two states, Haryana and West Bengal, where the JFM programme has reached a level of maturity and regular harvests from JFM forests have started. Within each state, one region which offers the best learning opportunity is studied in detail—namely the Shivalik Hills in Haryana and south West Bengal in West Bengal. The JFM groups in the Shivalik Hills are called Hill Resource Management Societies (HRMSs) and those in south West Bengal, Forest Protection Committees (FPCs).

The main products extracted from JFM forests in the Shivalik Hills include *bhabbar* grass (*Eulaliopsis binata*), fodder grasses and bamboo. Of these, only *bhabbar*, which is an excellent pulping material and is also used for making rope, is extracted on a commercial scale. The JFM forests of south West Bengal yield a much

wider variety of products including poles, cogging sleepers and Non-Timber Forest Products (NTFPs) such as sal (*Shorea robusta*) leaves and seeds, cashew nuts, tendu (*Diospyros melanoxylon*) leaves and medicinal herbs. Cogging sleepers and poles are the most important commercial products extracted from the area.

An analysis of the current production trends indicates that the nature of commercial production from JFM forests is no different from the Forest Department managed forests except that JFM forests tend to be more productive due to protection provided by the local communities. It is also revealed that both states are facing serious problems related to production and marketing of commercial products.

In the Shivalik hills, *bhabbar* yields are declining due to closing tree canopy and the market for *bhabbar* has shrunk due to a range of factors. These include an increase in its price due to changes in tax and lease rules, and technological changes introduced by the major buyer—BILT paper mill—due to which it is no longer the preferred raw material for producing paper pulp.

In south West Bengal, the sal forests are being managed on a short coppice rotation of 10–15 years yielding good quantity of poles, posts and cogging sleepers, which are mainly used in the local coal mining industry. However, serious doubts have been raised regarding the sustainability of such a short coppice rotation for sal. The current management system is heavily biased towards pole and timber production whereas it is income from NTFPs that is sustaining the interest of local communities in JFM. A study in Midnapur indicated that NTFPs contribute as much as 22% and 16% of the annual income of tribal and non-tribal families respectively. Several commercially valuable NTFPs such as sal seeds and tendu leaves are nationalised, meaning that these can only be supplied to government appointed agents at prescribed collection

charges. The inefficiency of this system is resulting in the loss of valuable income for the local communities. The difficulty in marketing poles and cogging sleepers has restricted the annual harvest to just a fifth of its potential. Due to a glut of poles in the market, the price of sal poles dropped from Rs. 166 in 1992–93 to Rs. 140 in 1997–98 and that of eucalyptus poles from Rs. 110 to Rs. 85 during the same period.

An assessment of the future potential of commercial production indicates that *bhabbar* will continue to be the most important commercial produce from the Shivalik Hills due to ecological fragility of the area and consequent ban on the commercial harvest of trees. However, unless management prescriptions are changed, *bhabbar* yields may decline considerably in the future due to the shade effect of growing trees. There are also likely to be marketing problems unless lease and tax rules are changed and/or new markets explored. In spite of being degraded, the sal forests of south West Bengal have good productive potential. However, the future product mix will depend on the outcome of the current debate over short coppice rotation. There are also serious concerns regarding forest floor sweeping by the local communities for collecting fallen dry leaves for use as fuel. It is estimated that 0.8 million tonnes of leaf litter is collected annually in south West Bengal. It might be advisable to increase the production of fuelwood to reduce this ecologically damaging practice. Although it is not easy to project NTFP production, it is likely that significant quantities of many NTFPs such as mushroom and medicinal plants may be available though there is a very real danger of over exploitation in the absence of any regulatory system. Yields of some NTFPs such as sal and tendu leaves will decline on account of growth of trees and closing canopy cover unless management prescriptions are changed.

On the basis of insights gained from the two states, it is clear that

the potential commercial production will depend on many factors including the kind of land brought under JFM, its productivity, management system followed, the availability of harvested produce for sale and the market (or demand) for the saleable produce. The scope for commercial production from ecologically fragile areas (such as Shivalik Hills) is limited and at best restricted to certain NTFPs. There is also a need to re-examine the demand-supply situation in the context of price and market conditions. The assumption that demand exists and will absorb all new supplies does not seem valid. There may be a need to either change the product mix in accordance with the current commercial needs or set up new enterprises to utilise surplus production.

While increase in income through commercial production is likely to be an important incentive for the participating communities, it is critical to ensure that meeting the subsistence and livelihood needs of the village communities remains the first charge on JFM forests if the programme is to be sustained in the long run. Safeguards need to be built into the system to ensure that interests of the poor, marginalised and other disadvantaged groups are not sacrificed in pursuit of monetary gains.

In order to achieve sustainable commercial supplies without jeopardising the interests of the poor and other disadvantaged groups, it is essential to:

- unambiguously state subsistence needs as the first charge on JFM forests;
- carry out a demand analysis and to either suitably adjust the product mix or to set up new enterprises;
- review policies such as those enabling nationalisation of commercially important NTFPs, and cheap imports.

In addition, there is a need to provide a firm legal basis for the JFM

programme and a legal identity to JFM groups. In order to maximise the production linked incentive to the local communities, the maximum possible share of income from JFM forests should go to the local community. It is hoped that these measures will go a long way in ensuring sustainability of the JFM programme in the long run.

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This study has been made possible with the help of a wide range of people and organisations. We would specifically like to thank the Joint Forest Management groups visited during the course of the study and the various Forest Department officials without whose cooperation the study visits could not have been organised (listed in Annex 1). The insights and data provided by the Forest Department and Forest Development Corporation helped us in understanding the various issues involved. We are also grateful to the team at Tata Energy Research Institute which has been involved with the Joint Forest Management programme in Haryana. Our special thanks to Dr. T.P. Singh.

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Authors

Acronyms

BILT	Ballarpur Industries Ltd.
DFO	Divisional Forest Officer
ETP	Entire Transplant of Poplar
FD	Forest Department
FPC	Forest Protection Committee
GoH	Government of Haryana
Gol	Government of India
ha	Hectare
HRMS	Hill Resource Management Society
JFM	Joint Forest Management
LAMPS	Large-scale Adivasi Multi-Purpose Cooperative Society
Mha	Million Hectares
MoEF	Ministry of Environment and Forests
NABARD	National Bank for Agriculture and Rural Development
NCA	National Commission on Agriculture
NGO	Non-Government Organisation
NTFP	Non-timber Forest Produce
TERI	Tata Energy Research Institute
VFC	Village Forest Committee
WPWC	Watershed Protection Working Circle



1. Introduction

1.1 About the study

This study is part of a wider international project **Instruments for Sustainable Private Sector Forestry** co-ordinated by the London-based International Institute for Environment and Development. The international project aims to understand the current situation, trends and potentials with respect to private sector participation in sustainable forest management; to review the impact of sectoral and extra-sectoral policies on private sector participation and to explore strategic options for the private sector to contribute to sustainable forest management in India.

One of five country case studies, the India country study, *The New Foresters: the role of private enterprise in the Indian forestry sector*, is organised into three themes: emerging private sector players; policy provisions for private sector participation in sustainable forest management; and market-based instruments to encourage the private sector's contribution to sustainable forest management. The research for this sub-study was undertaken within the first theme of the study. The sub-study seeks to analyse the opportunities and constraints for areas under Joint Forest Management (JFM) to undertake commercial production for supply to industry. In order to do so the study looks in-depth at two states, *viz.*, Haryana and West Bengal, where harvests have already started in some areas under JFM, to gain insights about the present and future potential of commercial production. Based on the findings from

these two states and additionally from secondary data available on these and other areas of the country, the study attempts to analyse the opportunities and constraints for such an endeavour.

The need for such a study arises because in recent years JFM has emerged as an important forest management strategy and the area under JFM now exceeds 14 million hectares (ha) or over 18% of forest land. There are nearly 63,000 Forest Protection Committees (FPCs) managing these JFM forests. However, it is as yet unclear whether forests managed under the JFM regime can or even should be managed to yield any commercial produce. Some of the unique features of JFM forests that make commercial production from these forests rather difficult are presented in Box 1.1. In spite of

Box 1.1: Unique features of JFM forests

Management objective: In case of JFM forests, usually the major objective of management is meeting the subsistence needs of the local community. Thus, instead of focusing on a few commercially valuable species, Forest Protection Committees (FPCs) generally prefer a mix of grasses, shrubs and trees, all of which may not necessarily be commercially valuable.

Quantity of output: The size of JFM forests is small, usually ranging between 100 and 200 ha. As the species and product mix is likely to vary from FPC to FPC, these forests are likely to produce a large variety of products, but each produced in a small quantity. The quantity available for commercial sale may be even lower, as a part of the produce may be consumed within the community. This may make commercial production unviable.

Large number of producers: As each FPC is a separate producer, the buyers may have to deal with a large number of small producers, thus increasing their procurement costs.

Quality of produce: At present the bulk of effort of the community as well as the Forest Department (FD) is directed towards forest protection with little or no emphasis on management practices to improve the quality of the product. Further, in many areas a very short tree rotation period is followed. This is likely to affect the quality of output and thus limit its commercial uses.

this, commercial harvests have taken place in some JFM areas. In some places this has had beneficial impacts, while in others the consequences have not been entirely favourable, giving rise to concerns regarding the impacts on subsistence needs of the local community, equitable distribution of benefits and costs among different sections of the community, and on the forest ecosystem.

1.2 Methodology

Data and information presented in this study was collected from both primary and secondary sources. Primary level information was gathered through fieldwork carried out in two states, Haryana and West Bengal, where JFM forests have started producing marketable outputs on a large scale.¹ Additionally, the two states also offered the opportunity to study production, management and marketing trends for a very diverse range of products.

In both states, field work was carried out in selected divisions. In Haryana, Yamuna Nagar forest division was selected for fieldwork as apart from being an important production area of *bhabbar* grass (*Eulaliopsis binata*)—the most important commercial produce from JFM forests of Haryana—the area also has a high concentration of forest-based industries. Commercial sale of *bhabbar* grass by Hill Resource Management Societies (HRMSs) was studied in detail in one range (Sadhaura) and two HRMSs in the same range were visited (Salepur and Thaska).² Discussions were held with the members of the HRMSs and also with professionals of the Tata Energy Research Institute (TERI), the main Non-Govern-

¹ Though harvests have started in some other states also, these are the only states where harvests have been taking place on a regular basis for the past 3–4 years. These states hence offer the opportunity to study the experience gained so far in this regard.

² The FPCs in Haryana are referred to as HRMSs.

ment Organisation (NGO) involved with the JFM programme. Among the forest-based industries, mainly paper industries were visited *viz.*, Ballarpur Industries Limited (BILT), Yamuna Nagar; Ruchira Papers Ltd., Yamuna Nagar; and PAMWI Tissues in Himachal Pradesh.

In West Bengal, the study was carried out in two phases: the first phase included discussions with various people from the Forest Department (FD), West Bengal Forest Development Corporation (WBFDC), West Bengal Tribal Development Cooperative Corporation (WBTDC) and other experts in this field. During the second phase, field visits were made to Midnapur and Bankura forest divisions of south West Bengal. These divisions were selected for the fieldwork as the two have a very high concentration of FPCs. Six FPCs, selected on the basis of discussions held with the FD officials and the production record of the FPCs, were visited for getting village level information.

A list of the people met during the course of the fieldwork is given at Annex 1.

1.3 Structure of the report

The report is divided into five sections. Following this introductory section, the status of JFM in the country and specifically in the two study states is described in section 2. Section 3 presents the current commercial production from the JFM areas in the two study states. Section 4 examines the potential for commercial production from the JFM forests in the study states on the basis of a set of technical, social and institutional criteria. An analysis of opportunities and constraints for commercial production from JFM forests and its likely impact on the JFM programme is presented in the concluding section.



2. Progress of JFM

2.1 Progress of JFM at the national level

The implementation of the National Forest Policy of 1988 was facilitated by the issuance of a circular by the Government of India (GoI) on June 1, 1990 urging the State FDs to involve people in the management of degraded forests.³ Since the issuance of this circular, considerable progress has been made in implementing JFM in the country. Twenty seven state governments have so far issued enabling resolutions permitting JFM partnerships between FDs and organised groups of local people. The JFM programme has already become a central focus of forest development projects supported by the international funding agencies and increasingly, by the GoI and some state governments (Khare *et al.* 2000). Table 2.1 presents the progress of JFM in these states.⁴

As Table 2.1 highlights, the official figures indicate the coverage of JFM to be over 14 million ha. This is indeed remarkable progress for a programme that is only about a decade old. However, it is important to say that all figures available regarding the spread

³ The forest policy announced in 1988 was radically different from the two previous policies. It proclaimed that forests are not to be commercially exploited for industrial purposes, but they are to conserve soil and the environment, and to meet the subsistence requirements of local people (Khare *et al.* 2000).

⁴ There is mismatch between this table and the state level figures used in subsequent sections. This is due to the fact that while this table reflects the latest status in 2002, the state level figures were collected during field work in 2000.

Table 2.1: Progress of JFM in the country

S. No.	State	No. of JFM Committees	Area under JFM (ha)
1	Andhra Pradesh	7,606	16,79,084.00
2	Arunachal Pradesh	13	5,810.00
3	Assam	245	6,970.00
4	Bihar	296	5,04,602.50
5	Chattisgarh	6,412	33,91,305.31
6	Goa	26	13,000.00
7	Gujarat	1,237	1,38,015.19
8	Haryana	471	65,852.42
9	Himachal Pradesh	914	1,11,247.20
10	Jammu & Kashmir	1,895	79,546.00
11	Jharkhand	1,379	4,30,463.00
12	Karnataka	2,620	1,85,000.00
13	Kerala	32	4,994.70
14	Madhya Pradesh	9,203	41,25,837.00
15	Maharashtra	2,153	6,86,688.00
16	Manipur	58	10,500.00
17	Mizoram	129	12,740.00
18	Nagaland	55	1,50,000.00
19	Orissa	12,317	7,83,467.00
20	Punjab	188	97,193.40

<i>S. No.</i>	<i>State</i>	<i>No. of JFM Committees</i>	<i>Area under JFM (ha)</i>
21	Rajasthan	3,042	3,09,336.00
22	Sikkim	158	600.00
23	Tamil Nadu	799	2,99,389.00
24	Tripura	160	23,476.79
25	Uttar Pradesh	502	45,025.44
26	Uttanchal	7,435	6,06,608.00
27	West Bengal	3,545	4,88,095.00
	Total	62,890	1,42,54,845.95

Source: Ministry of Environment and Forests (Unpublished data) 2002

of JFM are official figures and there have been no independent estimates of the actual coverage at the field level. It is likely that some of the FPCs may exist only on paper while in other cases the area brought under JFM may be lesser than the area allotted to the FPCs for undertaking JFM. These figures thus need to be treated with caution.

- Some of the most common reasons for non-functionality of FPCs include:
 - Formation of FPCs without adequate preparatory work like reorientation of forest staff (Guhathakurta and Roy 2000).
 - Formation of FPCs in areas where people are unable to abstain from using the forest area brought under JFM (whether for subsistence or income) and where no alternative arrangements have been made to take care of

the needs of the people (Planning and Statistical Cell, West Bengal n.d.).⁵

- Formation of FPCs in areas where people see no immediate benefits accruing to them (Guhathakurta and Roy 2000).
 - FPCs being given insignificant functional autonomy and little, if any, independent role.⁶
 - Formation of FPCs, normally under a central or state government scheme, with markedly less inputs and incentives than those offered to neighbouring villages under some externally funded project (Arora, Saigal and Singh 1999).
 - The FPCs not being given the benefits promised to them when due (Guhathakurta and Roy 2000).
- The figures for area under JFM do not adequately reflect the true situation on the ground. In many cases these figures represent the area that has been allotted to the FPC but not all of it is brought immediately under JFM. This may be because of several reasons e.g. the FPC may feel incapable of protecting the entire plot allotted to it, there may be dispute with neighbouring villages or other users over a particular patch or a part of the allotted area may be left open for meeting the subsistence needs of the FPC members. In such cases, official figures are likely to be inflated.
 - Many states are also forming FPCs for afforesting revenue wastelands and other common lands (as in Haryana and Karnataka), because of which not all the area under JFM consists of forest land.

⁵ In West Bengal, the first cases of cancellation of FPCs have taken place in Kurseong forest division (in the Darjeeling Gorkha Hill Council) as members of FPCs were involved in illicit felling of trees. Three FPCs have been cancelled by the Divisional Forest Officer (DFO).

⁶ The OECF supported project in Rajasthan, where about 2000 FPCs are protecting 200,000 ha of forests, is organised more on 'social forestry' principles, whereby the FD protects the areas for the first three years. There are serious questions about the sustainability of the FPCs being promoted under it (Khare *et al.*, 2000).

The above presents some of the conditions under which the FPCs might not be functioning properly or where the area protected is different from the area quoted in official statistics. However, findings from the field studies indicate that in Haryana all the HRMSs formed are functioning, though the area protected may be slightly less than quoted due to boundary disputes. In West Bengal, officials estimate that about 90% of the FPCs are functioning well. Needless to say, the field reality is very different in different states and it is not possible to conclude on the basis of the limited fieldwork undertaken for this study as to what percentage of FPCs can be, on an average, assumed to be functioning well for the country as a whole.

2.2 Progress of JFM in Haryana

Having begun in two villages of the state, *viz.*, Sukhomajri and Nada⁷, the JFM programme now extends to many villages in the Morni-Pinjore and Yamuna Nagar Forest Divisions in the Shivalik region⁸ of Haryana (see Box 2.1 for details on forest areas in Haryana). Started without any formal policy backing from the state government, the programme received formal recognition when the state government issued a memorandum in June 1990

Box 2.1: Forests in Haryana

Total Geographical area	44.2 lac ha
Recorded forest area	1.67 lac ha
* Reserved forest	0.25 lac ha
* Protected forest	1.10 lac ha
* Unclassed forest	0.32 lac ha
Actual forest area	0.60 lac ha
Area under JFM	0.58 lac ha
* Government forests	0.20 lac ha
* Common lands	0.38 lac ha

Source: FSI 1999, TERI 1999b.

Note: 1 lac = 100,000

⁷ Located in the Morni-Pinjore Forest Division (District Panchkula).

⁸ The Shivalik hill region extends over the states of Haryana, Punjab, Himachal Pradesh, and Jammu and Kashmir, covering an area of 3 Mha. The Haryana Shivalik hills have an area of about 68,000 ha spread along the northern border of the state. The elevation varies between 280 m to 1500 m above mean sea level. These hills merge into the Himalayas to their north and the Indo-Gangetic plains to their south.

(amended in 1998) laying down the policy for JFM in the state. Subsequently, the FD has also undertaken a project on rehabilitation of common lands, on similar principles, in the Aravalli hill areas.⁹ (For details on this project, refer to Annex 2).

Societies formed in the Shivalik hills are called Hill Resource Management Societies (HRMS) and the operational area of these societies is government forest. In the Aravalli hills these are called Village Forest Committees (VFCs) and their operational area is common lands. Latest figures obtained from the state indicate that there are 55 HRMSs in the state protecting around 20,000 ha of forest lands (around 12% of the recorded forest area) and 294 Village Forest Committees protecting 38,000 ha of common lands (see Table 2.2).¹⁰ A detailed list of the HRMS is given in Annex 3. Officials, both in the FD and at TERI said that all the HRMS listed in the state are working.

Table 2.2: Participatory institutions in Haryana

Area	No. of committees	Area under protection (in ha)
Morni-Pinjore	38	14,505
Yamuna Nagar	17	5,335
Aravalli Range	294	38,000
Total	349	57,840

(Source: TERI 1999b)

⁹ The Aravalli hills extend from Gujarat through Rajasthan to the southern part of Haryana. In Haryana, the Aravallis cover an area of about 113,000 ha. Categorized as tropical dry deciduous forest, about 88% of the Aravallis are classified as barren with only 12% highly to moderately degraded forest cover (Aravalli Project 1997). The major portion of the Aravalli hills in Haryana are common lands under the management of elected village *panchayats*.

¹⁰ The number of committees formed is as of February 2000 when the fieldwork was carried out. The MoEF figures presented in Table 2.1 indicate that as of 2002, there are 471 committees protecting 65,852 ha of land.

In order to get a better understanding of the progress of JFM in the state, one forest division was studied in detail, *viz.* the erstwhile Ambala Forest Division (parts of which are now reconstituted into the Yamuna Nagar Forest Division), whose working plan (1986–87 to 2000–01) was obtained from the FD.

2.2.1 The Case of Ambala Forest Division

The Ambala Forest Division has a total area of 13,932 ha. Of this, 4,836 ha (34.7%) have been brought under JFM. Nine HRMS have been formed for the management of these lands. Looking at the kinds of areas that have been brought under JFM in this division *vis-à-vis* the management prescriptions in the Working Plan of the division (abstracted in Box 2.2) and after discussions with

**Box 2.2: Working Plan prescriptions:
Ambala Forest Division (1986-87 to 2000-01)**

According to the Working Plan of the forest division, all the forests in this division are to be managed under five working circles:

- 1 *Sal* selection-cum-improvement working circle (3,033 ha): all the *sal* areas of the division have been allotted to this working circle.
- 2 *Khair* working circle (2,164 ha): *khair* plantations in the plain areas (birs) and some of the elevated plateaus with good density of *khair* have been kept in this working circle.
- 3 Plantation working circle (2,520 ha): includes areas that have been artificially regenerated with plantations of *eucalyptus*, *shisham* and *khair*.
- 4 Watershed protection working circle (6,078 ha): this circle has been newly created under this working plan and has been carved out of the *khair* working circle of the previous plan. It includes all the forests situated on steep, rugged, erodable and unstable hills. Under the plan there will be no felling except the removal of dead, dry, diseased and fallen trees.
- 5 *Bamboo* (overlapping) working circle (285 ha): includes all the bamboo bearing areas.

Source: Singh n.d.

officials at the field level, three important points emerge regarding the coverage of JFM.

- 93.8% of the area brought under JFM in this division belongs to the Watershed Protection Working Circle (WPWC), or to the most degraded and ecologically fragile area of the state forests.¹¹ This is despite the fact that the JFM order of the state government extends JFM to ‘all Government owned forest areas in the whole of the state of Haryana’ (State notification No. 3799 FTI 98/13358, dated 29–6–98). Even the earlier state order of 13–6–90 of the state government did not restrict JFM to only degraded areas. It only stipulated that ‘The basic philosophy underlying the proposed policy is to link the economic interests of villagers living adjacent to forest areas with sustainable management of those areas’ (GoH 1990 in SPWD 1998). It is clear that, in practice, JFM has been restricted to only degraded forest areas from where no revenue is expected through tree felling.
- Only about 25% of the reserve forests in the watershed protection working circle are covered by JFM; while 77% of the protected forests and 100% of the unclassified forests in this working circle are brought under JFM. Clearly, there is a tendency to keep reserve forests out of the purview of JFM.
- Despite a progressive policy that does not bar well-stocked forests from the purview of JFM, in practice, very few such areas have been brought under the programme. Discussions at the field level with various officials indicated that the situation in this regard is not likely to change in the near future.

¹¹ The remaining area belongs to the *Khair* working circle but has also been identified as that needing plantation in order to restore its productivity. This is also, hence, highly degraded.

2.3 Progress of JFM in West Bengal

West Bengal is one of the pioneering states where experiments with JFM were started in the seventies. The first experiment took place in the Arabari Range in the Midnapur district. Approximately 1,272 ha of degraded forests were selected for revival with the cooperation of village communities in 11 revenue villages under the Socio-Economic Forestry Project in 1972 (ETS 2000). The encouraging results of this experiment laid the foundation of the JFM programme in the state and the state government issued the JFM Order in 1989 for the south West Bengal region. In 1991, the state government issued three more orders to extend JFM to North Bengal plains, Darjeeling Gorkha Hill Council areas and Sunderbans.

By 1989, when the first JFM Resolution was issued, over 1,200 FPCs were managing 152,000 ha of forest land. (For details on forest areas in West Bengal, see Box 2.3). Presently, the state has about 3,545 FPCs protecting a forest area of 488,095 ha (for details, see Annex 4).¹² The

south West Bengal region accounts for approximately two-thirds of the area brought under protection in the entire state with the maximum concentration of FPCs in the districts of Bankura, Midnapur and Purulia. Mainly degraded forest areas in the state have been brought under JFM.

Box 2.3: Forests in West Bengal

Geographical area	88.75 lac ha
Recorded forest area	11.87 lac ha
* Reserved forest	7.05 lac ha
* Protected forest	37.72 lac ha
* Unclassed forest	1.05 lac ha
Actual forest area	80.15 lac ha
Area under JFM	48.80 lac ha
Source: Sarkar 1995, MoEF 2002	

¹² Annex 4 presents details of the committees formed in 2000 when the fieldwork was carried out. At that time there were 3,369 FPCs protecting an area of 481,759 ha.

The functioning of 60% of the FPCs is rated very good while that of 30% is rated as good. Only 10% are estimated to be functioning poorly (ETS 2000). Further, according to a committee formed by the Government of West Bengal in 1994, despite variations in motivation, differences in standards and levels in functioning from region to region, most of the FPCs were functioning satisfactorily (Guhathakurta and Roy 2000).¹³ The committee identified

Table 2.3: Major factors affecting the functioning of FPCs

<i>Positive/FPC Functioning well</i>	<i>Negative/Functioning not too well</i>
Acceptance of JFM at different administrative levels reflecting the commitment of the FD as a whole.	Close proximity of towns/semi-urban areas where there is a great demand for firewood and market for poles.
Adequate ratio of land (forest) to family (member) to maintain sustainability through harvest over a number of years.	Inadequate land (forest): family (member) ratio.
Possibility of increasing NTFP.	Area under FPC consists mainly of plantations of <i>Eucalyptus</i> or <i>Acacia</i> raised in a single or few years.
Existence of plantations of different years under the protection of one FPC, which may lead to establishment of normal series of age gradation.	Conflict of interest because of inherent factors of ethnic composition and different cultural background.

Source: Guhathakurta and Roy 2000

¹³ The committee was formed to review, *inter alia*, functioning of FPCs, reasons for success or otherwise, kinds and levels of support services needed by the FPCs and equity issues in sharing costs and benefits, harvesting arrangements and existing arrangements of disposal of NTFPs through the LAMPS.

the reasons for success and indifference in FPC functioning as presented in Table 2.3. Additionally, the lack of income generating sources other than sale of forest produce, particularly fuel wood, is another important reason for FPCs not functioning properly in some areas.

3. Current commercial production



This section gives an idea of the kind and quantum of commercial produce presently harvested from the study areas and highlights the important issues associated with their production, harvest and sale. This forms the basis for estimating the production potential from these and other areas. In the case of Haryana, state level information on commercial production from all forests (JFM and non-JFM) has also been included.

3.1 Haryana

3.1.1 Commercial production from state forests

Among the main marketable produce from the forest areas in the state (including non-JFM areas), are

1. *Timber*: The main timber species include *sal* (*Shorea robusta*), *sain* (*Terminalia tomentosa*), *shisham* (*Dalbergia sissoo*), eucalyptus (*Eucalyptus* hybrid), *mango* (*Mangifera indica*), *jamun* (*Eugenia jambolina*), *kikar* (*Acacia nilotica*), and *chal* (*Anogeissus latifolia*).
2. *Fuelwood*: All the miscellaneous species and lops and tops of the important species find a ready market as fuelwood.
3. *Katha*: Made from the heartwood of the *khair* (*Acacia catechu*) tree, *katha* is sold mainly in the markets of Saharanpur and Delhi.

4. *Pulpwood*: Eucalyptus forms the major pulpwood for the paper and allied industry.
5. *Bamboos*: Bamboos are used both for pulp and as poles. However, the output of bamboo from the forest is low.
6. *Bhabbar*: *Bhabbar* is the most valuable grass in the tract. Of the 68,000 ha of forest lands in Haryana's Shivalik belt, approximately 20,000 ha produce *bhabbar*. It is used for paper manufacture and rope making (locally called *baan*).
7. *Charcoal*: Charcoal is manufactured from miscellaneous hardwood species like *kikar* and *chal*.

While all the above products meet the needs of industry (small or large or both), some of them also meet the subsistence and cottage industry needs of the people. Fodder grasses, also harvested from the forest, are sold by the FD mainly to the village people themselves. Amongst the NTFPs sold by the FD, the sale of fodder grasses is a close second, in terms of grossing revenue, after *bhabbar*.

The main output from the state forests during the period 1990–1995 is given in Tables 3.1 and 3.2. On average the state has been producing about 46,000 cu.m of timber, 79,000 cu.m of fuelwood and 39,000 cu.m of pulpwood each year.

Table 3.1: Output of woody produce from state forests

S.No	Item	1990–91	1991–92	1992–93	1993–94	1994–95
1.	Timber (solid)	41,575	37,929	43,192	50,232	59,380
2.	Fuelwood (stacked)	74,842	80,518	89,518	70,466	79,502
3.	Pulpwood (stacked)	38,236	23,551	29,960	49,981	55,196

All figures in cu.m.

(Source: Records of the Haryana FD)

Table 3.2: Sale of NTFPs from state forests

(Rupees in lacs)

S.No	Item	1990–91	1991–92	1992–93	1993–94	1994–95
1.	Bamboo	7.34	9.40	12.53	17.70	15.30
2.	Fodder grasses	14.51	10.53	13.16	13.20	16.40
3.	<i>Bhabbar</i>	22.78	7.11	7.99	11.45	21.20
4.	Charcoal	9.12	4.92	7.11	2.85	2.30
5.	Others	0.59	0.29	1.92	0.71	0.50
	Total	54.34	32.50	40.67	45.91	55.70

(Source: Records of the Haryana FD)

3.1.2 Commercial production from JFM areas

The main products extracted from the forest areas under JFM include *bhabbar* grass, fodder grasses and bamboo. Of these, *bhabbar* is the only commercial raw material (for the paper industry) from the JFM areas. In small pockets, some other products like *tendu* (*Diospyros melanoxylon*) leaves for *bidi*¹⁴ making, *sarkanda* (*Saccharum munja*), herbs, fruits like *harar* (*Terminalia chebula*), *behera* (*Terminalia belerica*), *amla* (*Emblica officinalis*), etc. are also extracted. However, most of these are specific to some areas and at the state level there are no estimates on extraction and revenue earned from them.

Bhabbar Grass

Bhabbar grass is commercially valuable as it is an excellent raw material for paper pulp and is also used in rope making by the local

¹⁴ *Bidi* is a type of cigarette.

village communities. Trends in *bhabbar* production, harvesting and sale in the state (see Table 3.3 for the output of *bhabbar* from JFM areas in Yamuna Nagar Forest Division in Haryana) bring out the following important points:

- Of the 15 forest areas in Yamuna Nagar Division where 15 HRMSs have been constituted, *bhabbar* has been taken on lease only by six HRMSs.¹⁵ In the remaining areas, the *bhabbar* is being sold through open auction. Various studies and reports (Sarin 1996; TERI 1999; Mahapatra 1998) indicate a range of reasons for this trend. Among the important reasons are declining yields of *bhabbar*, increasing cost of extraction and declining markets and market prices, with no corresponding decline in lease costs. All this makes it uneconomical for many HRMSs to take *bhabbar* on lease. Additionally, many HRMSs do not have the managerial capability to deal with the operations involved in the harvest and commercial sale of the produce. The absence of any institutional arrangements to take care of the capacity building of the HRMSs in this regard and the general unacceptability of the HRMSs sub-contracting their forest area for better management have also resulted in many HRMSs not being able to take the *bhabbar* lease.
- Although the underlying philosophy of JFM in the state is based on giving the village people a major share in the increased production, the FD does not maintain any production records once the forest is given on lease to the HRMSs. There is some indication that grass yields have actually declined after a few years of protection. According to Sarin (1996), in a meeting of 17 HRMSs

¹⁵ On payment of a certain amount of money, the HRMSs can take on lease the *bhabbar* grass, which they are then free to harvest (according to prescribed norms) for local consumption or sale to outsiders. Taking the grass on lease also means that the HRMS has to protect the area in order to ensure that the grass grows well.

Table 3.3: Output of *bhabbar* from JFM areas in Yamuna Nagar district (1992–96)

	Forest	Area (ha)	1992–93		1993–94		1994–95		1995–96		Remarks
			Rs.	Quintal ¹⁶	Rs.	Quintal	Rs.	Quintal	Rs.	Quintal	
1	Darapur	810	31,459	976	36,495	1,053	54,093	1,307	40,685	1,475	Given to the society only in 1995–96; on lease to paper mill before that.
2	Thaska	342.4	18,019	541	24,185	675	41,551	1,004	28,000	1,340	
3	Salehpur	362.2	36,296	1,089	53,852	1,503	84,547	1,838	58,250	6,220	
4	Ram Pur Gainda	84.98	13,200	NA	14,190	NA	15,255	NA	16,400	125	Society control since 1992–93.
5	Kathgarh	213	11,500	NA	12,365	NA	13,295	NA	14,300	355	
6	Pamuwala	55.4	3,492	105	3,289	102	6,417	155	4,400	110	Given to society in 1995–96.
7	Khilawala	693	NA	NA	NA	NA	NA	NA	NA	6,300	Open auction.
8	Bagpath (C1–4)	353	NA	NA	NA	NA	NA	NA	NA	3,885	Open auction.

¹⁶ 1 Quintal=100 kgs.

	Forest	Area (ha)	1992-93		1993-94		1994-95		1995-96		Remarks
			Rs.	Quintal	Rs.	Quintal	Rs.	Quintal	Rs.	Quintal	
9	Bagpath	106	NA	NA	NA	NA	NA	130	NA	305	1992-94—society; 1994-95—lease to paper mill; 95-96—open auction.
10	Khijri	256	NA	1,500	Open auction.						
11	Barah, Faizpur	299	NA	845	NA	862	NA	925	NA	925	Open auction
12	Kansli	322	NA	819	NA	1,240	NA	1,350	NA	1,374	only in 1995-96; on lease to paper mill
13	Nagli	949	NA	1,600	NA	1,758	NA	2,110	NA	2,780	before that.
14	Ibrahimpur	198	NA	10	NA	12	NA	15	NA	20	
15	Nagalpati	557.7	NA	2,663	Open auction.						
	Total	5601.68	113,966	13,935	144,376	15,987	215,158	18,392	162,035	39,986	

of Pinjore Range, held in 1991, most HRMSs pointed out that their *bhabbar* yields were decreasing rather than increasing, largely due to proliferation of the weed *Lantana camara* and the shade effect of growing trees. This was also mentioned in the field visits made to the area.

Based on field observations and discussions, it can be concluded that:

- Under the current forest management practices, within a few years of protection, the yield of *bhabbar* is declining;
- Under the current lease price policy, not many HRMSs are interested in taking up the *bhabbar* lease (and, by the same logic, will not be interested in taking fodder grass lease either);
- Under the current arrangement for sharing of benefits between the HRMS and the FD, if the HRMS does not take the lease (*bhabbar* or fodder), there is little incentive in the short run for the HRMS to continue its protection efforts to improve productivity of these forest lands.¹⁷ Clearly, this would adversely impact on the sustainable management of forest areas.

3.2 West Bengal

In West Bengal, and more specifically south West Bengal, where harvests have started, the JFM forests yield a wide variety of

¹⁷ In most HRMSs in Haryana, the FD has made water harvesting structures to provide water for irrigation. If the catchment of these water harvesting structures is not protected, these structures get easily silted up and lose their water holding capacity. So, if the villagers want to get water for irrigation they would have to protect the forests that are in the catchment areas. This would then remain the only incentive for protection of forests. However, many studies have brought out that the water harvesting structures in many HRMSs are non-functional or benefit very few members of HRMSs. In such cases, the future of JFM is quite uncertain.

produce. Amongst the woody produce are poles, posts, cogging sleepers, fuelwood, pulpwood and timber. NTFPs include *sal* leaves, *sal* seeds, cashew nuts, *tendu* leaves, mushroom, *tussar*, resins, lac, gum, *mahua*, herbal medicinal plants, etc.

3.2.1 Woody produce

Information about production and harvests in south West Bengal (see Table 3.4) reveals that:

- The total area that is harvested annually is less than one-fifth of the full potential of annual harvesting.¹⁸ The main reason for this is the inability of the FD to sell all the products that are harvested from the JFM areas. The markets are limited and the enhanced production is depressing the prices of the produce in the market. This has major implications for the FPCs who are unable to get adequate returns.
- The maximum production, in terms of quantity, from the area is of cogging sleepers¹⁹ followed by poles and posts. Pulpwood and timber are harvested in relatively small amounts, while the harvest of fuelwood is substantial. Over 90% of the timber harvested was from plantation areas.

¹⁸ The total area harvested in 1996–97 in south West Bengal was 4673 ha, which was less than one-fifth of the full potential of annual harvesting, at an average rotation of about 12 years, in the proportion of 2:1 of coppice *sal* and plantations (Guhathakurta and Roy 2000). The proportion of area harvested is lesser still if we take a rotation of 10 years, which has been decided by the FD in order to give the benefit from felling on a regular basis (TERI 1999a). As presented in Table 3.4, the actual area harvested was even lower than this in the subsequent years.

¹⁹ The production of cogging sleepers is totally dependent on the demand that is received for these from the mining companies.

Table 3.4: Output of major forest produce in JFM areas of south West Bengal

Year	1996–97	1997–98	1998–99
Area harvested (ha)	4,673	3,145	3,900
- <i>sal</i>	2,819	1,159	2,066
- plantation	1,854	1,986	1,834
No. of FPCs harvesting	308	247	332
No. of poles ²⁰ harvested	849,528	690,836	987,748
- <i>sal</i>	NA	181,954	475,987
- plantation	NA	508,882	511,761
No. of posts ²¹ harvested	1,815,608	314,037	353,491
- <i>sal</i>	NA	35,321	47,219
- plantation	NA	278,716	306,272
Year	1996–97	1997–98	1998–99
Cogging sleepers ²² harvested	2,733,097	1,221,120	1,169,827
Fuel wood (cu.m)	100,303	71,308	99,387
Pulpwood (cu.m)	3,311	8,431	6,024
Pulpwood (MT)	1,733	3,096	1,517
Timber (cu.m)	2,023	3,637	5,876
- <i>sal</i>	260	74	252
- plantation	1,763	3,563	5,624

Source: Records of the West Bengal Forest Department (WBFD).

²⁰ Poles generally have a diameter above 6 inches and a length of 10/12/15 feet. One of the uses of poles in West Bengal is as mining props.

²¹ Posts have smaller dimensions than poles with a length of between 5 to 6 feet.

²² Cogging sleepers are used on railway tracks (now mainly in mine areas) and are prepared in 3 dimensions: 4 feet length and 4 inches cross-section, 5 feet length and 5 inches cross-section or 4 feet length and 5 inches diameter.

3.2.2 Non-timber forest produce

The production, collection and marketing of NTFPs is, to a large extent, a function of whether the NTFPs are nationalised or not. In West Bengal, *sal* seeds and *tendu* leaves come under the category of nationalised NTFPs, which means that only the government can trade in these products. Collectors can only supply these products for a collection charge to government appointed agents, which are *Large-scale Adivasi Multi-Purpose Cooperative Societies* (LAMPS) in the case of West Bengal. The LAMPS sell the NTFPs so collected and the profits are shared with the collectors who are members of the LAMPS. Production data regarding nationalised NTFPs is available at the state level and is presented in Table 3.5 (along with some data available on non-nationalised NTFPs). However, this data needs to be treated with some caution because not all

Table 3.5: Output of NTFPs in forest areas

Year	<i>Sal</i> seeds (Metric Tonnes)	<i>Tendu</i> leaves (Metric Tonnes)	Honey (Quintals)	Wax (Quintals)
1989–90	1,189	2,251	42	2
1990–91	345	2,080	148	9
1991–92	1,885	1,900	387	24
1992–93	1,488	2,100	509	36
1993–94	1,892	1,928	682	38
1994–95	1,436	1,250	380	20
1995–96	865	1,455	324	19
1996–97	290	1,033	447	27

Source: State report on West Bengal Forests 1989–90 and 1996–97 in TERI 1999a.

the *sal* seed and *tendu* leaves collected by the village people are sold to the LAMPS.²³ Hence, official data on production figures is likely to be much less than actual production.

There is generally a lack of data on the quantum of production of non-nationalised NTFPs in the state as a whole. This is mainly because these products are sold through unorganised markets, at a local level and cover a wide range of produce that is bought by a very large number of buyers. Some division level data is available for the west Midnapur division and this is presented in Table 3.6.

Despite the lack of aggregate data regarding the non-nationalised NTFPs, a number of studies have been carried out in the state that bring out the range and extent of NTFP collection as well as their importance and relevance to the tribals and the poor in the state. Many of these also bring out the problems associated with the production and marketing of NTFPs. Some of the more important findings are presented here:

- A survey conducted in the forests under JFM in Midnapur district revealed the immense potential of these forests to meet the subsistence and cash needs of the local communities (Malhotra *et al.* 1991, in Guhathakurta and Roy 2000). A total of 214 wild plant species were observed in the regenerating *sal* forests. Of these, 155 (72.43%) were being used by the local communities for different purposes. It was found that NTFPs contribute 22% and 16% of the income of tribal and non-tribal families respectively. It has been estimated that the potential earnings from NTFPs from one ha of regenerated *sal* forest comes to about Rs 16,000 over a period of ten years (Palit 1992,

²³ The informal market pays the people the market rate for the *sal* seed/*tendu* leaves collected, which is always higher than the rate paid by the LAMPS. People, therefore, prefer to sell to illegal traders (TERI 1999a; ETS 2000).

Table 3.6: Production of important NTFPs in West Midnapur division (1995)

S.No.	NTFP item	Production in quintals
1	Medicinal	6,704
2	Tendu leaves	5,207
3	Sal leaves	6,119
4	Oil seeds (<i>sal, mahul</i>)	5,885
5	Myrobalans	2,055
6	Edible seeds (<i>peal, bhela</i> etc.)	412
7	Fruits (mango, jackfruit, tamarind, aegle etc.)	5,974
8	Mushroom	337
9	Gums & resins	237
10	<i>Mahul</i> flowers	1,659
11	<i>Tassar</i> cocoons (No. in '000)	9,340

Source: DFO, West Midnapur Division in Guhathakurta and Roy 2000.

in ETS 2000). This is likely to be several times higher than the income from the community's 25% share in the timber revenues available after ten years.

- NTFPs from naturally regenerating forests usually yield more income to community members than monoculture plantations.
- NTFPs are more attractive to community groups than clear felling on 8–12 year rotation as these not only yield higher returns than timber but are also available in good quantities soon after forest protection efforts begin. The benefits from NTFPs also tend to flow disproportionately to low income families in general and women and children in particular.

3.3 Lessons from current commercial production

The nature of commercial production from areas brought under JFM, at present, seems no different from a position in which the forest areas were adequately protected and managed by the FD itself. Haryana continues to produce and sell *bhabbar* grass although there are indications that the quantities harvested are reducing over time because of closing canopy cover. Clearly, the change in the current commercial harvests is happening not because the forests are being managed to meet subsistence needs, or because the produce is being used for consumption. Neither is the change due to any man-made changes in species composition through plantation of new species, or a transformation in the management prescriptions. Rather, this is happening because of a more effective protection provided to these forests. However, this is not to say that JFM will not induce changes because, with JFM, local people have a greater say in the management of the forest areas. Any change in management prescriptions based on microplans might well result in a shift in the focus of harvests e.g: from timber to NTFPs and from poles to fuelwood.

Another important factor that is seen to influence the current levels of commercial production as well as the involvement of the village communities in the management of the forests is the marketing of the produce. Both Haryana and West Bengal are facing marketing problems for the present product mix. Price figures as a major factor in limiting the demand for the produce. The last couple of decades have witnessed imposition of felling bans, cessation of subsidised raw material supplies to the industry, growth of private forestry and import liberalisation, among other things. All these have resulted in one of the following effects: (i) closure/decline of many forest-based industries; (ii) change in the raw material mix of the industry; (iii) shift to alternative sources of supply (private/

captive forestry, imports, etc.). This highlights the need to re-examine the demand-supply situation in the context of price and market conditions. The presumption that demand exists and will absorb all new supplies does not seem valid.

Thus, while current harvest trends are fashioned on traditional management principles, the various ecological, social, silvicultural, institutional and marketing issues that are coming to light might well exert considerable influence on shaping the nature and extent of commercial produce that is available in the future. It seems logical to conclude that similar factors will influence both current and future production in other states as well. The level and extent of influence that each of the factors has on production will differ in different states as discussed in section 4.

4. Potential commercial production from JFM forests



In order to assess the potential of commercial production from JFM forests, six factors that seem to have played an important role in determining the current production levels in the two study states were examined.

- Site condition
- Growing stock of commercial species
- Future stock of commercial species
- Potential for harvest
- Availability of harvested produce for meeting subsistence needs/sale
- Market (or demand) for the saleable produce

Since management of the JFM areas, whether for meeting subsistence or commercial needs, inherently implies that the forest areas should be managed by the FPCs themselves, a brief discussion on the potential of the FPCs to undertake management for meeting commercial needs is presented for Haryana.

4.1 Haryana

An assessment is done on the first four points listed above for the 9 HRMSs that fall in the erstwhile Ambala Forest Division and are presently part of the Yamuna Nagar Forest Division. This covers



Photo: Sushil Saigal

Soil erosion in the Shivaliks in the pre-JFM days.



Photo: Mamta Borgoyary

People's priorities get reflected through participatory planning exercise undertaken before the start of JFM.



Photo: Mamta Borgoyary



Photo: Mamta Borgoyary



Photo: Ghazala Shahabuddin

Left and above: Non-timber forest produce is an important source of income for FPC members, especially women.



Photo: Ghazala Shahabuddin

FPC members collecting produce from JFM forests: there is a need to balance subsistence and commercial use of JFM forests .



Photo: Ghazala Shahabuddin

FPC member making rope from grass collected from the JFM forest.

about 82% of the forest area brought under JFM in the Yamuna Nagar district and about 25% of the total forest area brought under JFM in the whole state. A more general assessment for the entire JFM area is done on the last two points.

4.1.1 Site condition

As has been presented earlier, about 94% of the area brought under JFM in the Ambala division is from the Watershed Protection Working Circle (WPWC). This working circle includes all the forests located on steep, rugged, erodable and unstable hills. The major portion of the area occurs on the higher slopes of the Shivaliks, where growing conditions are difficult.

4.1.2 Growing stock of commercial species

According to the enumeration carried out by the FD in the WPWC, 75% of the trees growing in the circle belong to the miscellaneous species (i.e. commercially less valuable species), 12% are *khair* (*Acacia catechu*) and 8% are *sain* (*Terminalia tomentosa*) trees. The rest is accounted for by *sal*, *eucalyptus*, *shisham* (*Dalberfia sissoo*) and *chir* (*Pinus roxburghii*). In terms of volume, miscellaneous trees account for about 63% of the standing volume while *sain* trees account for another 23%. The trees are generally middle aged and mature, younger age classes being deficient. There is very little regeneration of the tree species. The average volume per hectare for the different species in this working circle is presented in Table 4.1. Both, in terms of numbers and volumes, the area is dominated by miscellaneous species. Any regeneration that comes up is likely to continue in a similar proportion. In the absence of any major planting programmes in this area, it is unlikely that the species mix would change dramatically to yield high value commercial species. The miscellaneous species growing in this tract are largely used for making charcoal and as fuel.

Table 4.1: Average number of trees & volume per ha in the WPWC

<i>Species</i>	<i>Average no. of trees per ha</i>	<i>Average volume per ha (in cu.m)</i>
<i>Sal</i>	3.1	1.3
<i>Sain</i>	13.2	5.7
<i>Khair</i>	19.8	1.7
<i>Eucalyptus</i>	2.1	0.3
<i>Shisham</i>	1.3	0.3
<i>Chir</i>	0.3	0.1
Miscellaneous	120.1	15.9
Total	160.1	25.2

Source: Singh n.d.

4.1.3 Future stock of commercial species

The working plan prescriptions do not indicate any intention of managing these forests for meeting commercial needs. The main objective of management is soil and water conservation. There is hence unlikely to be any major change in the species composition of the area.

4.1.4 Potential for harvest

In general, the extraction of timber is guided by the provisions of the Working Plan for the forest areas under which they fall. The kind of working circle and the silvicultural system that is in operation decides the harvest levels and the returns.

The prescribed treatment for the area brought under JFM (i.e., WPWC) says that ‘there will be no felling except hygienic felling. Only dead, dying and diseased (trees) will be removed’. If these

prescriptions continue during the next plan period also, then there will be no harvest of any trees from the area and the only commercial output will be *bhabbar*.²⁴ There is reason to believe that these prescriptions will continue as the area under consideration is hilly and erodable and in all working circles it is prescribed that ‘no trees will be marked (for felling) near the edges of the steep and precipitous areas or on erodable sites’.

This also brings us to a related aspect *viz.* the impact of a growing canopy cover on the grasses growing in the area. A rethink of the management objectives for the area is needed. Should the areas be managed for continual grass production or should the area be nurtured for encouraging mainly tree growth? Looking to the dependence of the villagers on the fodder grass growing in the forests and the potential of *bhabbar* for meeting commercial needs as well as providing some cash income to the HRMSs in the short run, it would seem that management should be undertaken to maintain a canopy cover that allows grass production and at the same time ensures tree growth at a lower density. However, whatever management system is ultimately adopted should also take into consideration the ecological needs of the area. Many foresters feel that the fragile ecology of the Shivalik hills needs a good canopy cover in order to minimise erosion in the area. Participatory microplanning can perhaps help to resolve this apparent conflict.

In case felling is allowed in the JFM area, as mentioned earlier, a large proportion of the harvest would comprise miscellaneous species. The tree produce can be estimated using figures of a study carried out in 1994 (Dhar 1994). As per this estimate, 2% of 820 trees/ha (on an average) would be ready for exploitation every 5

²⁴ Although some bamboo may be expected, the area under bamboo is so little that there is hardly likely to be any surplus for the market.

years.²⁵ This is about 16 trees/ha in JFM areas every 5 years or 3.2 trees/ha/year. Assuming a 10 years felling cycle, on an average, 2,000 ha of JFM area would be worked every year. This would result in the harvest of approximately 6,400 trees every year. Taking the species composition of the Ambala division, this would result in the harvest of about 4,800 miscellaneous trees, 768 *khair* trees and 512 *sain* trees every year. Given the ready market for *katha*, timber and charcoal, there should be no problem in selling this small amount of commercial production each year from the JFM forests in the state.

4.1.5 Subsistence vs. commercial needs

On the whole, it is expected that the forests should continue to yield the subsistence requirements for the people, and at the same time produce some surplus for sale in the market. No major conflict is expected between meeting subsistence and commercial needs from the JFM forests especially if the JFM notification of 1998 is followed in this regard. The notification mentions 'All members of HRMS(s) may be permitted to collect dry and fallen wood, fencing material, limited number of bamboo and poles free of cost from their respective joint management areas for their bonafide use and not for sale'. However, some concerns have been raised about the conflicts between the commercial sale of *bhabbar* and its availability for meeting the subsistence needs of the village community. There are also some concerns regarding declining fodder production in the area, which would need to be tackled if JFM is to continue successfully.

There are clear indications that the majority of the *bhabbar* that is

²⁵ This study estimates the average number of trees/hectare as 820, which is considerably higher than the Working Plan estimates of 160 trees/ha. However, in order to see the maximum possible production from the area, the calculation is done using the higher estimate.

produced in this tract will continue to be sold commercially in the future as was the case before the formation of HRMSs and the initiation of JFM. The *bhabbar* areas were traditionally leased to paper mills or sold in open auction. Villagers were allowed to cut a head load each for their domestic consumption. It is possible that villagers were removing quantities slightly more than this but it is unlikely that their unfulfilled needs would require the huge amounts of *bhabbar* removed by the mills. Even under conditions where more *bhabbar* is available to the villagers, there are limits to the use it can be put to since not many households traditionally follow the practice of rope making which is the main use of *bhabbar* in the villages.²⁶ So even under JFM, surplus *bhabbar* would be available for commercial sale and should be used for meeting commercial needs.

However, two issues are of importance here. One, the HRMSs must meet the bonafide needs of the members before considering sale to outsiders; and second, that it gives preference to meeting the subsistence needs and the raw material needs of artisans over increasing its cash income.²⁷ Both these stipulations have been included in the JFM notification issued by the state in 1998.

²⁶ For details regarding why it is unlikely that more HRMS members will shift to rope making as their occupation, see Sarin 1996.

²⁷ The latter stipulation becomes necessary in light of the fact that in the Sukhomajri village, the HRMS members were using freshly sprouted *bhabbar* (*mungri*) as fodder for their livestock. According to a report prepared by TERI in 1994, the practice of Sukhomajri villagers of cutting *mungri* decreased the yield considerably. 'Even one clipping done in July depresses the final fibre from the November cutting by about 45 percent'. This resulted in considerable conflict with the neighbouring HRMS which was sharing the *bhabbar* lease area with Sukhomajri. Finally, the FD banned the harvest of *mungri* as fodder which resulted in considerable hardship and financial expenditure for the villagers dependent on this fodder. According to an analysis done by Sarin (see Sarin, 1996), for the Sukhomajri HRMS to get a net income of Rs 18,550 from its *bhabbar* lease, individual households of the village had to spend an estimated Rs 40,000 from their pockets to buy dry fodder during the early monsoon period of acute fodder scarcity. Those with smaller land holdings and with fewer adult household members had to incur higher costs than the better off households.

4.1.6 Market (or demand) for the saleable produce

This section examines the demand for *bhabbar*, which is presently the only commercial produce harvested from the area, and collectively examines the demand for other produce that may be harvested in future if the Working Plan prescriptions are changed.

Demand for *bhabbar*

The following developments in the last two decades have greatly influenced the current demand for *bhabbar*:

(a) *Change in the bhabbar leasing policy*

In earlier years, BILT used to take most *bhabbar* producing areas on long-term lease to meet the raw material requirements of its paper mill located at Yamuna Nagar. The FD used to charge the company only a nominal lease rent. When the company's lease expired in 1980, the FD decided to auction annual leases for *bhabbar* areas. The average rate for standing *bhabbar* immediately increased from Rs. 6.67 per quintal (price paid by BILT in 1980 under its earlier lease) to Rs.18 per quintal in 1980–81.²⁸ Since there are a number of cheap substitutes available for *bhabbar* such as veneer mill waste, saw mill waste, eucalyptus etc., the increasing price of *bhabbar* has resulted in the industry turning to the use of alternatives, thereby affecting the demand for *bhabbar*.

(b) *Import liberalisation*

Until the mid-1980s the domestic market for most goods was closely protected by import restrictions and administered prices. With the introduction of economic reforms in 1991 and India's ratification of the World Trade Organisation agreement in 1994, trade policy

²⁸ In 1989, BILT negotiated a new five year lease with the FD. Under this, the mill paid Rs. 28.84 for each quintal of *bhabbar* harvested during the first two years followed by an annual increase of 7.5% during the subsequent years (Sarin 1996).

reforms have progressively simplified import licensing and reduced tariff protection. The import of wood, wood products and pulp is now virtually unregulated. Wood-based raw material attracts the lowest order of import duties (Singh 2002). This clearly impacts on the demand for indigenous raw materials by the wood-based industry.

(c) *Change in excise policy*

One of the important reasons for use of *bhabbar* as a raw material by the paper mills was the excise concession available on grasses. However, due to standardisation of the excise rates, the paper mills feel that use of grasses is no longer an attractive or profitable option (BILT, personal communication, 2000).

(d) *Change in technology of BILT*

BILT, which until recently was one of the largest consumers of *bhabbar*, has undertaken massive renovation of its paper mill, due to which its consumption of *bhabbar* has decreased and in a time span of 2–3 years it aims to discontinue the use of this grass altogether (BILT, personal communication, 2000).²⁹ The change in the technology at BILT has dramatically affected the *bhabbar* market. The price of *bhabbar* declined sharply after 1997 when BILT switched to wood-based pulp manufacturing. With the demand coming down and the HRMSs not agreeing to reduce the price of *bhabbar* (mainly because their lease prices were not reduced), many HRMSs have not been able to auction their *bhabbar*. While the demand for *bhabbar* from the paper mills is declining, there are hardly any alternative uses or consumers for it. On the other hand, *bhabbar*, being a perennial grass, regenerates on its

²⁹ BILT used to procure approximately 80% of the *bhabbar* production from the villages.

own in protected JFM forests, and has to be harvested each year, or it becomes a fire hazard in the summer months.

While the price at which the market is willing to purchase *bhabbar* is declining, the price at which the HRMSs can profitably sell it is increasing. This is mainly due to the following reasons:

- *Bhabbar lease pricing policy of the FD*: The present delinking of the lease price from the actual quantum of production of *bhabbar* has meant that the per quintal cost can vary considerably from year to year. In years of low yields, the HRMSs are unable to recover the costs and can go bankrupt.
- *Harvesting cost of bhabbar*: Increasing shade effect of trees, invasion of *Lantana* or poor climatic conditions have resulted in low clump density of *bhabbar* in many places. This, in turn, results in high extraction costs, which increase the per quintal cost of harvested *bhabbar*.
- *Duties and taxes on bhabbar*: According to an amendment to the Income Tax Act, it has become mandatory for the FD to collect 15% of the sale price of any commercial forest produce as advance income tax from the buyers. Although the HRMSs can obtain a refund of this tax, this is a time consuming process and also involves additional expenses. The Government of Haryana has also imposed a Sales Tax on all grasses, both fodder and *bhabbar*. This further increases the effective lease price for the HRMSs.

Demand for other forest products

The analysis in the previous sections has brought out that JFM areas in the state are unlikely to produce large amounts of any commercial produce other than *bhabbar*. However, if the JFM areas do yield other produce, the following should help assess whether there would be a demand for them and hence whether they can be commercially sold.

The forest-based industries at Yamuna Nagar include paper mills, saw mills, plywood factories, hard board factories, packing case factories and furniture making units. According to unofficial estimates, there are about 250 veneer mills in Yamuna Nagar. BILT is the largest forest-based industry in the area. Yamuna Nagar wood market is one of the largest wood markets in India. The supply of wood to the Yamuna Nagar market is estimated at 0.4 million metric tonnes annually, of which BILT uses about 0.12 to 0.15 million metric tonnes (BILT, personal communication, 2000).

The raw materials required by the forest-based industry include several hard wood and soft wood species that are mainly procured from outside the state. Eucalyptus and poplar are used in large quantities, from both within and outside Haryana, mainly from the agricultural areas. Some of the Eucalyptus is supplied to BILT from forest areas also. Currently, the Haryana FD has an agreement with BILT to supply 50,000 cu.m of eucalyptus per annum, though the actual supply varies between 10,000 to 12,000 cu.m per annum. This is due to several reasons including the ban on felling imposed by the Supreme Court in 1996. Agricultural residues (like wheat straw and bagasse), jute waste, waste paper, etc., are some other raw materials used by the industry.

While the above points to there existing a wide market for both hard and soft woods in the area, it is also clear that any unplanned production resulting in a glut in the market, quite naturally, will result in a crash in the market price of the produce. For example, in the 1980s there was a surplus of eucalyptus and the prices crashed, resulting in great losses for the farmers. This led to the farmers planting less of eucalyptus and more of poplar, whose popularity increased with promotion of Entire Transplant of Poplar (ETP). Now with the supply of poplar increasing in the market, the rates for this have gone down. The rate for poplar was Rs. 5,000/metric tonne around 1998, Rs. 4,000/metric tonne a year later and had

fallen to Rs. 2,500/metric tonne in the year 2000. In response to this, the nurseries have reduced the supply of ETPs but have started growing eucalyptus instead. The industry feels that the rather dramatic price variations that the market has seen in recent years is more due to lack of proper raw material planning by the Haryana FD, and particularly due to a lack of any consultation with the industry. Trend estimates for requirements of various species need to be prepared jointly by the FD, village communities and the industry if wide fluctuations in prices witnessed in recent years are to be reduced.

4.1.7 Ability of HRMSs to handle commercial production

Handling *bhabbar* leases requires considerable management skills, especially as the area under each HRMS is often several hundred hectares. It involves organising protection, harvesting, transportation, storage, distribution for subsistence use and/or processing among members, and marketing the surplus. As the leases have to be paid for, they also require raising capital for paying the lease price as well as for the labour required for harvesting and transporting the produce before the investment can be recovered through sale in a competitive market. There are also many issues of marketing that the HRMSs are not familiar with, others that they are incapable of handling and yet others that are beyond their present managerial capacity. They also need to compete with the middlemen, contractors and other players in the trade (Sarin 1996; TERI 1999b).

Ensuring reasonable returns from the above operation requires constant supervision, taking quick decisions in response to fluctuating market conditions and making judicious choices from available options. Making demands on recently constituted and inexperienced village organisations to handle such an operation seems injudicious and unrealistic (Sarin 1996).

In many cases the HRMSs have themselves realised the disadvantages that they face as compared to a contractor and the difficulties that can arise in the commercial management of *bhabbar*. While it is easy to wish away a contractor as an unwanted exploiter of resources, the contractor (with his managerial skill and experience) can play an important role in making the whole process viable. This has been amply demonstrated in Haryana. The JFM regime offers an environment where the exploitative practices of the contractor can be curbed in a way so as to yield benefits to all three, the people, forests and the contractor (albeit slightly lesser profits will accrue to the contractor). While in some cases the HRMSs have stopped taking the lease for *bhabbar* from the FD, in other cases they have attempted to work out alternate arrangements (see Box 4.1).

Box 4.1: Some arrangement made by HRMSs to manage *bhabbar* leases

Sarin (1996) has documented many cases of alternate management arrangements by HRMSs. The HRMS of Lohgarh village adopted the practice of organising internal auctions (i.e. among HRMS members) for its grass leases. Being a resident of the village, the contractor remains accessible and answerable to other members of the community while also benefiting from everyone's co-operation due to the consensus based transaction.

In Mirpur HRMS different systems were tried out including (a) sub-contracting *bhabbar* harvesting to a group of people from the Banjara community on the basis of their getting 50% of the harvested *bhabbar* as their wages; and (b) sub-contracting the lease to an individual on the condition that HRMS members would be allowed to collect 2 to 3 headloads of *bhabbar* free of cost. The latter arrangement gave them a much higher income.

The Raina HRMS was getting the bulk of the *bhabbar* cut through paid labour, processing the good quality *bhabbar* into rope before sale and selling the poorer quality *bhabbar* to BILT. In addition, small patches of the forest area were sub-contracted to a number of individuals for a fee to harvest the grass. The HRMS members were allowed to cut leftover *bhabbar* free from scattered patches for which paid labour charges for harvesting would have been more expensive.

The HRMSs were adopting one or a combination of the following options while managing their *bhabbar* leases:³⁰

1. Harvesting and processing the *bhabbar* into rope which is sold in the market;
2. Subletting surplus *bhabbar* to contractors (who could be village members or outsiders) in open auction, who sell it to the paper mills or in the open market;
3. Harvesting the *bhabbar* through employed labourers (usually the *banjaras*) and selling the surplus after paying wages³¹, to the paper mill or in the open market.

Thus, while some of the HRMSs have shown initiative and tried to overcome the difficulties and drawbacks associated with managing the *bhabbar* lease on their own, it is equally clear that not all HRMSs will be able to take up management of the commercial produce in the short run. In such cases they should be allowed to choose a proxy management system (even if it is through the appointment of a contractor).

4.2 West Bengal

4.2.1 Site condition

All agro-ecological zones in the state, except for the central alluvial tract, have important forest resources with distinct floristic

³⁰ These systems have been studied in detail by TERI (refer Varalakshmi *et al.* 1993; Singh & Varalakshmi 1998 for details). Varalakshmi *et al.* (1993) conclude that the profits made by the HRMSs are maximum when they process *bhabbar* into rope and sell it in the open market. In absence of secondary processing, they earn more profits if they manage it on their own compared to sub-contracting it to the contractors. The paper mill gains irrespective of whether it takes the *bhabbar* directly from the Haryana Forest Department or buys it from the contractor. This is largely because of its capacity to control prices. The contractor pays a higher price if he takes the forest areas from the Haryana Forest Department rather than from the HRMS, which passes on some of its subsidy to him.

³¹ They are either paid wages for the harvesting or are allowed half the harvest *in lieu* of wages.

composition. North Bengal, with a total forest area of 305,000 hectares (approximately 26% of the recorded state forest), contains good productive forests. Forests in the laterite tract of south West Bengal mostly consist of relatively small and widely scattered blocks of degraded *sal* interspersed with farm land. The most compact area is the mangrove forests in the coastal saline zone which cover 426,000 hectares (36% of the recorded forest area). However, approximately 40% of the forests in the coastal saline zone is actually made up of numerous rivers and creeks (Sarkar 1995).

Majority of the area brought under JFM lies in the laterite tract of south West Bengal. As per the JFM orders of the state, mainly degraded areas are brought under JFM.

4.2.2 Productivity

The average annual increment of West Bengal forests compares favourably with that of the national figures (Sarkar 1995). Table 4.2 presents the average annual increment in different forest types

Table 4.2: Average annual increment of West Bengal forests

<i>Forest type/area</i>	<i>Average annual increment (cu.m/ha/year)</i>
High forests	
- Hills	0.80
- Plains	1.65
- South West Bengal coppice (10 year rotation)	3.00
Plantations	
- Conifers: hills	12.50
- Plains	5.00
- South West Bengal (Eucalyptus)	6.00

Source: Sarkar 1995.

of West Bengal and Table 4.3 presents the growing stock. It can be seen that forests in south West Bengal record the highest annual increments in coppice forests and the second highest in plantations. Thus despite the forests being degraded, the productive potential of south West Bengal forests is quite good. However, it needs to be borne in mind that though coppice forests may show high productivity in initial years, it rapidly declines if multiple rotations are taken. Hence appropriate silvicultural practices need to be adopted in order to maintain and enhance productivity.

Table 4.3: Growing stock of West Bengal forests

Zone	Growing stock in 1965 (lac cu.m)	Growing stock in 1975 (lac cu.m)	Growing stock in 1990 (lac cu.m)
Hills	44.38	87.99	NA
Plains	77.23	92.16	NA
South West Bengal	33.23	NA	32.00 (calculated)
Mangrove	2.03	NA	NA
Total	156.87		

Source: Sarkar 1995.

4.2.3 Future stock of commercial species

Over the years, local need rather than timber production has become the major factor determining the choice of species planted. In new plantations, the proportion of indigenous and locally useful species is increasing with corresponding reduction in exotics and timber species. For example, there is reduction in the planting of species such as eucalyptus and acacia in south West Bengal and *dhupi* (*Cryptomeria japonica*), teak and even *sal* in north Bengal

(Guhathakurta and Roy 2000). The emphasis has shifted towards growing species that yield multiple locally useful products rather than just timber. This is a major change from the past as the interest of people in sustaining JFM is built on initiatives such as this (TERI 1999a).

4.2.4 Potential for harvest

In general, the extraction of timber is guided by the provisions of the Working Plan for the forest areas under which they fall. The kind of working circle and the silvicultural system that is in operation decides the harvest levels and the returns.

The current treatment for the majority area brought under JFM (i.e. *sal* forests) is management under the Coppice with Reserves system. The coppice rotation is kept at 10 to 15 years.³² The silvicultural operations recommended to be taken up in *sal* forests are presented in Box 4.2.

The foresters are divided on the question of continuing with the coppice system, especially with short rotations due to exploitative past management practices that have affected the health of the crop. The present strategy emphasises the management of these forests on a coppice rotation of 10 to 15 years. This rotation age has been worked out on the assumption that *sal* poles attain a marketable girth of 4 inches in the 10th year. This rotation age thus attempts to balance the need for quick returns to the people and marketability of the produce.

³² In Bankura, one hundred trees are retained as 'Standards'. Standards are trees usually of the main species but retained for multiple rotation period usually to get large timber and also to serve as a seed source. All other miscellaneous trees like *hartaki*, *baheera*, *tendu*, *mohul*, *kusum*, *amla*, *peasal* etc. are also retained, in order to meet the local demands of predominantly tribal areas. Trees of age 10 years and above are harvested, keeping in view the local and market demands.

Box 4.2: Silvicultural operations for *sal* forests in south West Bengal

- (a) Regeneration of degraded forests (RDF) by coppicing: Degraded *sal* forests with more than 400 stumps/ha are regenerated by cutting all advance growth to the ground. Soil and water conservation works like V-ditches and planting of grasses like *Vetiver* on ridges follow the above operation. However, with the formation of FPCs from 1990 onwards, most of the degraded areas have regenerated by mere protection efforts—no RDF-coppice operations were carried out in many of these areas.
- (b) Multiple shoot cutting (MSC): MSC is carried out in the fourth year after coppicing whereby 2,500 to 3,000 shoots are selected and retained. As most of the *sal* areas are being regenerated through protection, MSC has not been carried out in all areas, though it is required.
- (c) Thinning: Thinning is carried out in the seventh year after coppicing, whereby 1,800 to 2,000 stems are retained after thinning.

Source: TERI 1999a

However, many have criticised this short rotation on technical grounds. Some of the major criticisms are:

- The soil is exposed at shorter intervals leading to drier soils and their erosion. Chaturvedi (Chaturvedi 1992, in TERI 1999a) has mentioned that this system would lead to total destruction of *sal* dominated ecosystems leaving behind only *Xanthium spinosum* in the end (TERI 1999a).
- Malhotra and co-workers (Malhotra *et al.* 1991, in Guhathakurta and Roy 2000) report that over 80% of the stumps exhibit active decay in the heartwood of these coppice forests. The coppice originating from infected stems are also likely to be infected. Raising *sal* forests through coppice system is therefore not advisable. It can only be achieved by slowly replacing the coppice crop with a seedling crop (Chaturvedi 1993, in TERI 1999a).

In addition, it is also feared that *sal* pole markets may get saturated soon leading to a slump in the price of poles—the main product of forests managed on short rotation. Such a fall in the prices of *sal* and eucalyptus poles has been witnessed in recent years.

The above arguments, however, have been refuted by those in favour of short rotation. They argue that early and regular flow of benefits to the local communities is needed to maintain their interest in JFM. The coppicing power of *sal* also declines with size (Joshi 1980, in ETS 2000) and consequently longer rotation will require total or near total regeneration from seeds. There is a lot of uncertainty involved in regenerating *sal* forests from seeds (due to the recalcitrant nature of seeds, dying back of seedlings, danger of browsing etc.) and this may result in total loss of the forest. As regards the problem of fungal attack, they point out that this problem can be tackled by encouraging lateral coppice shoots over those that arise from the top of the stool (Guhathakurta 1992, in ETS 2000). Most field level FD officials stated that they have not faced any problem on account of fungal heart rot. The bulk of the *sal* crop felled had developed some heart wood and was not found to be rotten at the time of felling (ETS 2000).

Another contentious issue in the state is that of production of timber and allied products versus NTFPs. According to a study on the role of NTFPs in the village economy in Jamboni Range, West Midnapur Division, the income derived from the harvested poles after 10 years of protection is only one-third of the income from NTFPs over a period of 10 years (Malhotra *et al.* 1991, in Guhathakurta and Roy 2000). Despite the possibility of achieving such benefits, the silvicultural system being practised in the state is heavily biased towards the propagation of timber trees. In south West Bengal the coppice system of management is inadequate to propagate the variety and number of wild species, many of which

are useful to the people. Based on the outputs, which are fairly uniform in all the *sal* coppice forests, there is a need for readjusting the silviculture system of coppice and defining new alternatives which will blend these NTFPs with timber, poles and fuelwood (Guhathakurta and Roy 2000).

One of the dominant concerns in the above management system is *sal* leaf harvesting versus coppicing of *sal* trees at final harvest. The present practice of *sal* leaf harvesting, according to some foresters, is harmful as it impacts on the health of the trees and production of wood, and deprives the forests of much needed leaf litter. A limited study by Debal Deb has not subscribed to this view, and there are some other grey areas of management of productive activities. For instance, *tendu* leaves may occur substantially in some areas that will require crown manipulation (Deb 1990, in Guhathakurta and Roy 2000). Impacts will definitely be felt on the productivity of the area due to such practices. As reported by Simlapal LAMPS, Bankura, collection of *sal* seeds takes more time because trees are now distantly located due to annual harvest. This is making *sal* seed collection less economically attractive than earlier (Simlapal LAMPS representative, personal communication, 2000).

The future harvest potential in the state will depend greatly on how these issues are resolved. Any change in silvicultural practices and *sal* rotation period will immediately change the product mix that will be available in the future. The new working plans that have been prepared for different divisions in the state post-1990 in fact raise a number of concerns in this direction. While approving the plans, the Chief Conservator of Forests (Central)³³ has rejected final harvests in coppice with reserves in south West Bengal and

³³ Chief Conservator of Forests (Central) is the representative of the Central Government based in each region of the country, who approves the Working Plans.

clear felling in mature plantations of north Bengal. Not only this, in several plans of south West Bengal, JFM has not found a place either in the general or in the special objectives of management. The plans of south West Bengal have basically three working circles:

- Coppice with reserves working circle for *sal* with a rotation of 15 years.
- Development working circle of multi-tier species plantations on non-rooted and poorly rooted wastes to yield both timber, fuelwood and other NTFPs, on regular harvesting regimes up to about 10 years.
- Conservation working circle for promising *sal* crops for timber yield on long rotation and eco-tourism.

Silvicultural prescriptions in the conservation working circle have basically stopped all harvests, with only dead and diseased trees being removed. This has meant denial of harvests to the FPCs and a stoppage of all commercial production from these areas.

4.2.5 Subsistence vs. commercial needs

Under the present benefit sharing arrangements (as presented in Table 4.4), the most important subsistence product that is in short supply for the FPC members is fuelwood. The bulk of the superior fuelwood in the form of roundwood (about 2.5 cm and above) and splitwood coming out of intermediate and final harvests in *sal* coppice and plantations of south West Bengal are stacked in the depot and sold by auction, and 25% of the income is given to the FPC members. Women are left with inferior fuelwood only, i.e. twigs and branches, fallen, dead, diseased and dying material and few green sticks (Guhathakurta and Roy 2000). Forest floor sweeping and other accounts of people not being able to meet their fuel requirements are frequently reported. Sarkar (Sarkar 1998, in Guhathakurta and Roy 2000) has calculated that 59,080 ha of forest

Table 4.4: FPC share in benefits from JFM

	<i>Share in NTFPs share</i>	<i>Share in intermediate yields</i>	<i>Share in final felling</i>
South West Bengal	All NTFPs except cashew nuts, <i>sal</i> seeds and <i>tendu</i> leaves free of royalty. Cashew: 25% of net sale proceeds. <i>Sal</i> seeds and <i>tendu</i> leaves: paid only collection charges.	25% of the products or 25% of the net sale proceeds from any intermediate activities (multiple shoot cutting, thinning).	25% of the net sale proceeds.
Sunderbans	All NTFPs except cashew nuts, honey and beeswax. Cashew: no benefit sharing.	Same as south West Bengal.	Same as south West Bengal.
North Bengal Plains	All NTFPs except cashew nuts, <i>sal</i> seeds and <i>tendu</i> leaves free of royalty.	25% of the net sale proceeds of fuelwood and poles harvested.	No share in timber harvest. 25% of the net sale proceeds of lops and tops.
Darjeeling	All NTFPs including inter-crops except <i>sal</i> seeds.	Same as north Bengal plains.	Same as north Bengal plains.

and 35,081 ha of plantation area in five districts of south West Bengal, namely, Midnapur, Burdwan, Purulia, Birbhum and Bankura are affected by floor sweeping. It has been estimated that from the plantations of south West Bengal alone, 0.8 million metric tonnes of leaf litter is collected annually.

As is clear from the JFM Orders, while in south West Bengal and Sunderbans the FPCs get at least 25% of the intermediate harvest

(which can be largely used as fuel), in the other areas all sharing is on a net revenue basis. This focus on the commercial sale of fuelwood in the state needs to be reconsidered in the light of the continuing need of the FPC members, especially when practices like forest floor sweeping to gather fuel have a detrimental effect on forest productivity.³⁴

4.2.6 Market (or demand) for saleable produce

Poles

As increasing number of *sal* forests and plantations under JFM are nearing their rotation age, the potential harvestable area in south West Bengal is increasing. The harvestable area of *sal* coppice forests and eucalyptus and *Acacia auriculiformis* plantations in south West Bengal has increased from about 4,600 ha in 1996–97 to around 25,000 ha at present. In the absence of adequate demand, if all the potentially harvestable areas are harvested, there is likely to be a glut in the market.

The market rates of pole crops have fallen in recent years. The major reasons for this are:

- The market has been flooded with pole crops after the introduction of JFM. Due to degradation of forests in the pre-JFM period, no harvesting of poles was carried out, especially in south West Bengal. The last harvesting was done in 1965. Because of this, the buyers have either found alternative sources of supply or have changed their business. Harvesting is now being done,

³⁴ An IBRAD study in parts of West Midnapur Division and Bankura (South) Division has shown that forest floor sweeping affected the soil conditions adversely. Further, if continued, it could lead to a decline in soil fertility and finally a decline in productivity of various plant species growing in such heavily intervened sites. The vegetational characteristics indicated that forest floor sweeping had resulted in a decline in species diversity and the density of herbs, shrubs and trees (Guhathakurta and Roy 2000).

resulting in increased supply of poles. This has caused a drop in the rates for *sal* poles from Rs 166 (for a pole of girth 51–60 cm) in 1992–93 to Rs. 140 in 1997–98 and in the rates for eucalyptus poles of similar girth from Rs. 110 to Rs. 85 over the same time period (TERI 1999a).

- Unlike in the past, wooden poles are no longer used on a large scale for electricity transmission (TERI 1999a).

The market is further restricted due to the following reasons:

- Eastern Coalfields Limited—a large coal mining company operating in the area—does not buy eucalyptus poles for safety reasons. Although the other mining companies do use eucalyptus poles, this restricts the market for eucalyptus poles.
- There is currently a ban on the sale of eucalyptus outside the state and this has limited the market available for it. This ban has been put to help the two main paper mills in the state, *viz.*, Bengal Paper Mill at Raniganj and Titagarh Paper Mill at Barrackpore. However, both these mills have reportedly stopped procuring the raw material.

Fuelwood

About 90% of the annual production of fuelwood in the state is exported to Kolkata and the neighbouring industrial belt mainly for domestic consumption. The remainder is consumed locally in the towns and villages of the district (TERI 1999a). Taken for the state as a whole, fuelwood is the most important item of end use amongst forest products. This trend is likely to continue in the future. It is estimated that of the total wood demand of 40.1 million cu.m in the year 2020 in the state, fuelwood alone will account for 30.3 million cu.m of this demand. Only about 15% of this demand can be met from the forests (Guhathakurta and Roy 2000). While fuelwood supply from private sources is considerable and increasing,

any increase in supply of fuelwood from forests managed under JFM will be readily absorbed.

NTFPs

Although NTFPs, other than fuelwood, provide income and subsistence to the FPC members, there is no comprehensive information available on their markets. Most of the NTFPs, except *sal* leaves, *tendu* leaves, *sal* seeds and *bhabbar* grass, are marketed raw, either in the local market or handed over to agents (Guhathakurta and Roy 2000).

- Nationalised NTFPs: *Sal* seeds and *tendu* leaves come under the category of nationalised NTFPs. In 1980, the government granted monopoly rights of collection and disposal of *tendu* leaves and *sal* seeds to the West Bengal Tribal Development Cooperative Corporation for subsequent allotment and operation through LAMPS on payment of a modest royalty (TERI 1999a). The LAMPS, however, have failed to deliver and these products are generally traded illegally through the informal market channel. Thus, the reduction in the number of legal buyers has increased the exploitation of the primary collectors and nationalisation has choked the free flow of goods and opened the gates for contractors who operate with higher margins (TERI 1999a).
- Other NTFPs: Other NTFPs include mainly *sal* leaves (made into plates), *bhabbar* grass, edible mushrooms and medicinal plants. Such produce flows from the collector through one or more intermediaries (which may include village merchants, traders and processors) to the consumers. In some cases, however, no intermediaries may be involved. For example, mushrooms sold without any processing in the local market (TERI 1999a).

There is no strategy or approach to tackle the problem of private traders exploiting the primary collectors in the FPCs, who do not

have much bargaining power. FPC members may have little idea about alternative markets (Guhathakurta and Roy 2000). Collectors currently get only a fraction of the price paid by the final consumer. For example, several medicinal plants such as *Kalmegh* and *Anantmul* are collected by traders and sent outside the region for processing. Collectors get a token amount while the bulk of the profit is cornered by the intermediaries. The income of the FPC and the collectors can be enhanced by adding value to the NTFPs at the FPC level itself (ETS 2000).

Medicinal NTFPs have an informal market since the supply is irregular and collection takes place as per the demand made by local traders and middlemen. Some of it reaches herbal product manufacturers like Dabur and Baidyanath. This is a very secretive market where middlemen earn huge profits just by blocking information (TERI 1999a). It is also feared that the tremendous demand for some medicinal plants may lead to over exploitation of these species threatening their very survival (Subrat, Iyer and Prasad 2002).

Overall, inadequate marketing facilities and inefficient marketing systems are affecting the returns to the FPC members in south West Bengal (Guhathakurta and Roy 2000). The monopoly purchase rights of certain NTFPs granted to the LAMPS are a major policy related constraint in the marketing of NTFPs (ETS 2000).

4.3 Learnings

On the basis of insights gained from the two states, it is clear that the potential commercial production will depend on many factors including the kinds of land brought under JFM, the productivity and growing stock on these sites, the kind of plantation activities taken up, the kind of working circle and the silvicultural system that is in operation in the JFM area, sharing arrangement in place, the availability of harvested produce for sale and the market (or

demand) for the saleable produce. These factors will, in general, play an influencing role in all the states in determining what the potential commercial production would be.

Because of the multiplicity of factors that influence commercial production as well as the great variation found across the country, it is not possible to generalise for the country as a whole regarding the potential that JFM areas have for commercial production. However, the two case studies do give some insights in this regard. The scope for commercial production from fragile ecosystems that are brought under JFM (as the Shivaliks region in Haryana) is limited as normally the emphasis in such areas is on restoration of ecological stability. This calls for maintaining a good canopy cover that severely restricts the scope of final harvests and hence the availability of any kind of wood product: timber, poles, pulpwood, firewood etc., all of which are normally commercially traded. The major potential in these areas is for production of NTFPs. However, this would depend greatly on the type of species that are suitable to the area and found normally growing in the region.

In forest areas which are currently degraded and not producing any major commercial produce, but with good regenerative potential and a species composition that yields a variety of major produce as well as NTFPs (as seen in West Bengal), potential for commercial production exists, but will continue to be sub-optimally realised unless (a) current commercial demand for various products is analysed; (b) the product mix harvested from the forests is changed in accordance with the new commercial needs; and/or (c) alternately, enterprises are set up to utilise the surplus production. These will, of course, need feasibility studies to ensure that the value-added product that emerges from these enterprises will have a ready market.

5. Conclusions and recommendations



5.1 Potential impacts of commercial production on the FPCs

During the past decade, the JFM programme has played a key role in regenerating degraded forest areas and increasing productivity. While it is possible to use part of the produce for commercial sale and to enhance the income of the local community, there are concerns about linking commercial interests and the JFM programme. The main ones are as follows:

- Since the main reason behind initiating JFM is protection and regeneration of degraded forests, the concept of commercial production is not very relevant.
- Commercial interests imply long gestation crops (perhaps even monocultures) and thus may involve sacrifice of the subsistence needs of the local people.
- Since biotic pressure is one of the main reasons why forests got degraded in the first place, the major objective of JFM should be meeting the subsistence needs of the community in a sustainable manner.

The increase in incomes associated with commercial production is an important incentive for continuing JFM. This is particularly so in areas where people have surplus produce after meeting their consumption needs. As is the case in Haryana, the large quantities

of *bhabbar* produced cannot be consumed locally. If commercial sale of the surplus *bhabbar* is not allowed, there would be no incentive to increase production. In fact, several HRMSs, where lease price policy of the FD has made commercial sale of *bhabbar* difficult, show relatively less interest in managing their forest patches. Whether the forests should yield commercial produce or not, once the village is able to meet its subsistence and artisan needs, should be for the FPC to decide.

Since a forest can yield much more than just timber, it is very much possible that bringing a commercial orientation does not necessarily mean a sacrifice of subsistence produce. NTFP harvests for commercial sale can easily be integrated with management of the forests for meeting subsistence needs.

While at an aggregate level it seems that linking commercial interests with the JFM programme has had beneficial impacts, it is important to ensure that the impacts are equitable and not biased against the poor, marginalised and other disadvantaged sections of the society. If the rich and the poor are to be equal beneficiaries as well as equal bearers of the cost of protection, it is necessary to ensure that the two most important subsistence needs of the people, *viz.*, fuelwood and fodder, be met on a priority basis. Meeting these needs must have primacy over commercial production. This is important also from the point of view of sustainability. If these needs are met, returns from commercial production can further improve prospects for sustainability of the JFM programme.

5.1.1 Impact on equity

The sale of forest produce for meeting commercial needs and generating income for the communities protecting/managing the forest land is a powerful incentive to the village community to protect these lands. However, it also has the potential to divert atten-

tion away from the diversity of existing forest usage and livelihood needs of the forest dependent communities. The management emphasis may shift towards production of timber (including poles, pulpwood etc.) and result in the imposition of strict control on the removal of fuelwood and small timber as well as an almost complete ban on grazing.³⁵ Forest closure for regenerating timber transfers disproportionate opportunity costs of forsaking current consumption on such villagers. Better off villagers with minimal or no forest dependence, on the other hand, become new stakeholders in enforcing forest closure. As a consequence, instead of improving the access to and control over forest resources of the primary forest users—namely the poorest men and women dependent on forests for survival—commercial interests often reduce these further (Khare *et al.* 2000).

Focused planning and silvicultural research for maximising the availability of fuelwood and fodder on a regular basis need to be made explicit objectives of JFM. This does not, however, mean that commercial production must be totally forsaken. Instead it is necessary to develop JFM to serve multiple uses and users. A few efforts are being made in this direction. In Madhya Pradesh, recognising the limitations of a totally timber-focused model, some committed forest officers have initiated experiments with managing teak coppice shoots for regular supply of fuelwood under JFM (Dubey 1997 in Khare *et al.* 2000). Initiatives for increasing grass production in response to local priorities have also been taken in Madhya Pradesh, Rajasthan and Haryana.

³⁵ The most common rule imposed by both FDs, as well as by male leaders of most local institutions, that only 'dead, dry and fallen twigs and branches' may be collected for fuelwood, overlooks the fact that degraded forests do not have much of these. The assumption that more fuelwood will become available once forests have regenerated is also not necessarily correct unless the forests are specifically managed for increasing fuelwood availability. Even where fuelwood is not so scarce and the collection rules more liberal, sale of fuelwood for income is almost always forbidden (Khare *et al.* 2000).

5.1.2 Impact on sustainability

Revenue/benefit sharing with the FPCs from the timber harvested is an important contributor to sustainability of the JFM programme, as the economic incentive is an extremely efficient motivator and also enables people to invest in various assets for the village, if they so desire. If the benefits are not shared with the people or if the promises made by the FD are not kept, then that is a major threat to the sustainability of the JFM programme. However, as has been elaborated above, it appears that for JFM to attain sustainability, livelihood and equity concerns of the poor (including mainly their fuel and fodder requirements) need to be made central to the JFM programme.³⁶ Without these, the incentive of revenue alone is not sufficient for sustainability. The returns that accrue from commercialisation are an added incentive for the poor and most forest-dependent communities but are not sufficient, unlike for the rich and less forest-dependent communities, for whom the revenue generation from commercial sale of forest produce is a sufficient incentive. This is amply brought out in the experience generated over nearly a decade of implementation of JFM (Khare *et al.* 2000):

- According to the Planning Commission (1998), it appears that in almost all cases of successful JFM experiments, an alternative source of fuel was made available to the people prior to forest closure for regeneration. In south West Bengal, for example, the task of peoples' protection of degraded forest lands became easier because the farm forestry programme in that area had been highly successful, increasing fuelwood supplies

³⁶ There are other concerns as well that are important for the sustainability of JFM, like development of an appropriate institution at the local level, genuine devolution of power to the village level institutions, capacity building at the local level, etc. However, these are outside the scope of this study and only aspects that are relevant to the sustainability *vis-à-vis* commercialisation are touched upon.

and income even for the poor. However, where alternative fuel supplies were not available, it became difficult to prevent unauthorised removals from the forest. Hence the creation of a fuelwood reserve becomes necessary before expecting people to start protection.

- Also, in the pilot JFM experiment in Arabari in West Bengal, alternative wage employment was provided to compensate poorer villagers for income forsaken through loss of headloading as an economic activity.
- In Haryana, all households dependent on grazing were ensured equal shares of water from water harvesting ponds, irrespective of land ownership, to enable them to benefit from irrigated crop or fodder production. Even in other states, where implemented with sensitivity, adequate areas are left open for rotational grazing to enable the poorer households to continue raising small livestock.

Thus sustainability of the JFM programme is suspect if commercial production precludes the fulfilment of fuelwood, fodder and income needs of the poor and forest dependent communities. However, if these needs are met, returns from commercial production can further improve prospects for sustainability of the JFM programme, as they not only provide an added incentive for forest protection but also provide the necessary resources for undertaking forest development activities.

5.1.3 Impact on efficiency

While no specific studies have been carried out for assessing whether managing forests simultaneously for meeting subsistence and commercial needs is more efficient than managing separate forest areas for the two needs, traditional practice has always tried to segregate the one from the other. Thus the National Commission on Agriculture (NCA) propounded the idea of social forestry where

non-forest lands (such as village commons, government wastelands and farmlands) should be used to meet the local communities' needs. The NCA wanted all forest lands to be committed exclusively to production forestry. In its view, local communities' dependence on the forests was a major cause of forest destruction and a major obstacle for production forestry (Saigal 1998). The experience with community plantations undertaken under social forestry has been dismal. The National Wastelands Development Board (NWDB) stated in an internal review that the programme has been unsatisfactory, especially with regard to 'increasing the pace of afforestation, increasing the availability of fuelwood and fodder for the rural poor, and securing peoples' participation in the afforestation/tree planting activities' (MoEF 1989 in Saigal 1998). Dependence of the people on forest lands continued with possibly just a small decline.

On the other hand, experience with JFM has been encouraging. In several states, JFM forests have demonstrated the ability to meet both subsistence needs as well as commercial produce. Proper planning and implementation are, however, precursors for this to be achieved. Microplanning with the people can go a long way in achieving this aim. Dedicating a forest for meeting only subsistence needs can result in a situation where production levels are maintained at a sub-optimal level (that are still sufficient to meet their needs), where the community does not feel the need to make investments for improving productivity of the forests any further. Alternately, even if productivity is improved, but commercial harvests are not undertaken although they are technically and ecologically feasible, they are a loss both to the community and the nation.

Hence, it seems that meeting the needs of multiple users and managing the forest for multiple uses would be a more efficient option than managing for singular objectives like meeting subsistence needs.

5.2 Generating commercial output from JFM areas: an analysis

It is of critical importance that meeting the subsistence and livelihood needs of the village communities should remain the first charge on forest areas. It is only after the subsistence needs have been met that commercial gains should be pursued. It is quite possible, however, that generating income through the commercial sale of surplus forest produce could set in place processes and interests that are detrimental to the JFM programme and FPCs themselves.³⁷

The analysis presented in Table 5.1 summarises the strengths, weaknesses, opportunities and threats (SWOT) associated with commercial output from the JFM areas. Clearly, income generation (not only for the FPC but also for the FD) is the single most persuasive reason for encouraging commercial sale of surplus forest produce. However, the flip side of this is that where FPCs are unable to realise the benefits promised to them (which could be due to a range of institutional, technical, ecological, managerial or marketing factors), they might turn to plundering of the very forest that they previously protected. On the other hand, income generation might become the sole motive of the powerful and wealthy within the FPC, resulting in commercial needs overriding the subsistence needs of the poor. Equity issues might get sidelined in the quest for income. Awareness generation, empowerment, training and capacity building at the FPC level can help overcome some of these problems. The existence of a network of NGOs within the country, the availability of funds in most externally funded forestry programmes for training and capacity building, the pro-

³⁷ This is an argument forwarded by those against the inclusion of commercial interests in the JFM programme. They fear that the entire programme may be hijacked by vested interests.

Table 5.1: SWOT analysis for commercial output from the JFM areas

<i>Strengths</i>	<i>Weaknesses</i>
<ol style="list-style-type: none"> 1. It will increase income of the communities. Income incentive is likely to provide motivation to FPC members and this can result in better protection and utilisation of forests. 2. It will make the local communities less dependent on government funds for forest and village development. 3. It will increase revenue for the government. 4. It will provide additional industrial raw material. 	<ol style="list-style-type: none"> 1. Income generation might become the prime concern of the FPCs, making the fulfilment of subsistence needs a secondary issue. This could have a detrimental impact on the poor. 2. The sale of forest produce to meet commercial needs might bring in vested interests, further marginalising the poor and disadvantaged sections. 3. The focus on commercially valuable species may lead to neglect of other species adversely affecting the ecology of the area.
<i>Opportunities</i>	<i>Threats</i>
<ol style="list-style-type: none"> 1. Supportive JFM resolutions that enable harvest of forest produce for meeting both subsistence and commercial needs. 2. Availability of funds in the externally assisted JFM projects to take up market feasibility studies and to implement strategies to overcome the present marketing problems. 3. The existence of NGOs in a number of states that can be involved for awareness raising as well as protecting the rights and needs of the poor and other disadvantaged sections. 4. Interest in industries to source some of their raw material from JFM areas. 	<ol style="list-style-type: none"> 1. Change in FD policy or failure to keep the promises made to the communities may lead to regressive effects not only on the forest areas but also on the future relationship between the people and the FD. 2. The success of the endeavour is largely dependent on the interest and capability of the FPC to handle forest management issues. The present low level of management capacity at the FPC level is a serious threat to the system. 3. Poor skills and infrastructure in government to handle marketing issues. 4. Competition from private sources as well as imports.

vision for preparation of a microplan that incorporates the needs of the village community etc., are all opportunities that can be utilised to ensure that all sections of village society benefit equally from the JFM programme.

Although commercial production from JFM forests is seriously threatened by numerous factors, as elaborated above, the commercial viability of JFM projects is now being recognised by banks also. A study undertaken by NABARD in collaboration with FAO in Andhra Pradesh concluded that JFM in areas having predominantly teak, *sal* and bamboo is a commercially viable venture and the banks would be ready to provide credit for it. The study estimated that with an investment of Rs. 10,000 per ha, a return of Rs. 80,000 is possible by sale of poles and other NTFPs in 8–10 years. However, for bank credit for JFM to materialise, certain reforms, especially in the legal framework to provide security to the banks for lending to FPCs, are needed (Haque 2000).

NABARD sanctioned its first ever loan for JFM to Andhra Pradesh in December 1999 after obtaining a government guarantee. Subsequently two more loans were sanctioned in February and March 2000. All these loans were provided from the Rural Infrastructure Development Fund. With the help of these loans 141,207 ha of degraded forest lands are proposed to be treated through 918 FPCs (Haque 2000).

Recently, corporate sector involvement has also been sought to support JFM. While some companies are assisting in the JFM programme (e.g. Tata Electric Company, IPCL and Uttam Steel Limited in Maharashtra and TVS-Suzuki in Tamil Nadu), their involvement has so far been marginal and mainly in the nature of charity or public relations exercise (e.g. Tata Electric company has built some water closets in FPCs while Uttam Steel Limited has provided a steel pipe to Khalapur FPC in Raigarh district,

Maharashtra). The only state where the involvement of corporate sector has been sought on a meaningful scale in order to sustain the JFM programme is Andhra Pradesh. A government order (G.O. Ms No. 112) was issued on 22-09-2000, which permitted companies to enter into tripartite agreement with FPCs and the State Government.

These initiatives mark the beginning of the commercialisation of JFM programme. The experience generated from these initiatives will help in understanding the issues connected with commercialisation of JFM.

5.3 Recommendations

The previous sections have amply brought out that the potential for commercial production from JFM forests does exist. If this potential is to be meaningfully realised and sustained in the long run, it is essential that the local community, especially the poor and most forest-dependent groups be fully involved and supportive of this venture; silvicultural prescriptions followed for management of the forests are sustainable; the supply of forest produce is in line with demand; marketing infrastructure and institutions are improved; and policy bottlenecks are removed. The following recommendations are made to help in this direction.

Strengthening JFM

- The JFM programme needs to be strengthened by providing a legal basis for it. The existing administrative orders for JFM in different states (which can be withdrawn or changed by the FD at any time) should be replaced with rules issued under the State Forest Act or some other relevant Act. The possibility of declaring JFM forests as ‘village forests’ under Section 21 of the Indian Forest Act should be explored.

- The FPCs should have a proper legal identity. These should be registered as societies, cooperatives or trusts under the relevant legislation (as against FPCs being merely registered with the FD in several states). The agreement signed between the FD and the FPC should also be of formal nature.
- The share in the forest produce and income offered to the FPC members should be adequate to maintain their interest in the programme. The FD should not look upon JFM forests as a source of revenue and the maximum possible share should be given to the communities to sustain their interest in the JFM programme.

Focus on subsistence and ecological needs

- Meeting subsistence needs of forest-dependent communities should be unambiguously stated as the first charge on JFM areas. Only surplus production should be considered for commercial use.
- Ecologically fragile areas brought under JFM should not be considered as a source of woody commercial production.

Demand analysis

- The presumption that there is existing unsatisfied demand for all forest products does not seem valid. In several areas, the product mix coming out of JFM forests may have to be adjusted to suit the market demand. Alternately, the option of setting up/relocating processing units should also be explored.

Policy environment

- Like farm forestry, commercial production from JFM areas will also be promoted if subsidised supply of raw material to industries is further reduced and a higher tariff is imposed on imports.

- Policies constraining commercial production from JFM areas should be reviewed. For instance, the ban on export of eucalyptus poles from West Bengal to other states should be revoked.
- NTFPs are an important produce of JFM areas. The state monopoly on the trade of most commercially important NTFPs such as *tendu*, *sal* seeds and resin should be removed.

Annex 1: List of people met

Haryana

Haryana Forest Department

Mr S K Dhar, Chief Conservator of Forests & Project Director (Haryana Community Forestry Project)

Dr Amrindar Kaur, Conservator of Forests (Development Circle)

Mr R S Chauhan, Conservator of Forests (Haryana Community Forestry Project)

Mr D R Ramesh Singh, Chief Conservator of Forests (Production)

Mr Barak, Conservator of Forests (North)

Ms Aneesha Sharma, Village Field Worker, Sadhaura Range

Mr Randheer Singh, Range Officer, Sadhaura

Mr Somashekhar, Conservator of Forests (Aravalli Project)

Mr Ajaib Singh, Range Forest Officer (Production Division), Pinjore

Mr D. Hembram, Deputy Conservator of Forests (Yamuna Nagar)

Tata Energy Research Institute

Dr T P Singh, Senior Fellow and Area Convenor, Forestry and Biodiversity.

Mr Jayesh Bhatia, Research Associate, Forestry and Biodiversity.

Mr U. S. Vashist, Consultant.

Ms Sumana Datta, Research Associate, Forestry and Biodiversity.

Paper Mills

Mr K C Sharma, BILT

Mr D K Daukia, BILT

Mr Deepak, Ruchira Papers Ltd.

Mr Upendra Jha, PAMWI Tissues

West Bengal

West Bengal Forest Department

Mr A K Syangden, Principal Chief Conservator of Forests.

Mr R M Das, Chief Conservator of Forests (West), Calcutta

Mr M K Nandi, Managing Director, West Bengal Forest Development Corporation (WBFDC)

Mr A B Roy Choudhury, WBFDC

Mr A K Raha, Conservator of Forests (WP & GIS)

Mr Subimal Roy, Retired Chief Conservator of Forests

Mr B K Sarkar Divisional Forest Officer, Bankura (South)

Mr D Roy, Divisional Forest Officer, Bankura (North)

Mr K K Hazra, Divisional Forest Officer, Rupnarayan Soil Conservation

Mr S K Sen, Divisional Forest Officer, Silviculture (S)

Simlapal Range Officer

Simlapal Beat Officer

Lalgarh Range Officer

Lalgarh Beat Officer

Godarpiyarsal Range Officer

Mr R M Lohar, Regional Officer, WBTDC, Bankura

Mr S C Biswas, Secretary, Timber Merchant Association, Chandrakona Road, Midnapur

FPCs Visited

Bhangadoli, Lalgarh, East Midnapur

Tilaghagri, Lalgarh, East Midnapur

Metyal Sitarampur, Range—Godarpiyarsal, East Midnapur

Kasachara, Simlapal Range, Bankura

Kuldoba, Simlapal Range, Bankura

Nimbhanga, Simlapal Range, Bankura

Annex 2: Project on rehabilitation of degraded common lands in the Aravalli hills, Haryana

Duration: 1990–1999

Funding: 28.8 million ECU: 23.2 million ECU share of European Economic Community (EEC) and 5.6 million share of Haryana government.

Project area: 294 village units in Faridabad, Gurgaon, Rewari, Mahendergarh and Bhiwani districts.

Project objectives:

Short-term

- To rehabilitate 33,000 ha of common lands in the 294 Aravalli project villages with community participation, so as to meet the local needs of forest produce.

Long-term

- To build and develop effective village institutions for management of common land resources for their equitable, regulated and sustainable utilisation.

Project activities and outputs

1. Reforestation

For purposes of rehabilitation, the project area was divided into three categories or models, viz.,

- Model I where soil depth is > 60 cm
- Model II where soil depth is < 60 cm
- Model III where adequate rootstock of *Anogeissus pendula* (*Dhok*) is present, which could be rehabilitated by closure.

<i>Year</i>	<i>Afforestation (ha)</i>
91–92	5050
92–93	6400
93–94	6400
94–95	6400
95–96	6350
96–97	4400
97–98	2050
98–99	1000
Total	38050

2. Grassland development

Seeding of inter-row spaces with *Cenchrus ciliaris* in afforested areas was undertaken to fulfil fodder needs of the community. An area of about 22,700 ha has been sown with grasses and legumes (*Stylosanthus hamata*) which produced about 32,035 tonnes of fodder during 1993–99.

3. Village forest committees (VFCs)

The project established a VFC in each village with 9 to 13 members. It is mandatory to have at least 3 village women and representatives of scheduled castes as members of VFC. These VFCs provide a link between village communities and the project in implementing project activities and also resolving conflicts, if any.

294 VFCs have been established.

4. Microplanning

294 microplans have been prepared and implemented.

5. Incentive scheme

Those villages, which have achieved clearly defined rehabilitation quality standards prescribed by the project, qualify for an incentive. Since 1993,

Rs 97.67 lacs has been awarded to various VFCs for excellent rehabilitation and to give an incentive for protection of rehabilitated areas. The incentive money is deposited in a village fund. This fund can be utilised by the VFC for village development works.

6. Women in development (WID)

WID programme aims at empowerment of women and strengthening of their socio-economic position, thus enabling them to function as change agents in common land management. It comprises of the following components:

- a. Women extension workers
- b. Mahila nurseries
- c. Grass seed collection
- d. Village women centres
- e. Bank saving accounts
- f. Fuel saving devices

7. Training, extension and publicity

In 1996, the Aravalli project received the national level 'Indira Priyadarshini Vrikshmitra Award'. This was again awarded in 1997 to the VFC Khaleta, Rewari.

Source: Srivastava 1999

Annex 3: List of HRMSs in Haryana

I. Morni-Pinjore Forest Division (Panchkula District)

<i>S.No.</i>	<i>Name of HRMS</i>	<i>Name of forest under HRMS</i>	<i>Type of forest</i>	<i>Area of forest (ha)</i>
1	Suraj pur	R-71, C 2	RF	230.0
2	Rajji pur	R-71, C1	RF	239.3
3	Manak pur nanak chand	R-71, C2	RF	315.2
4	Manak pur thakur dass	R-71, C3	RF	117.2
5	Lohgarh	R-71, C3	RF	250.5
6	Dhamala	R-71, C4	RF	191.1
7	Jattan majri	R-71, C5	RF	133.7
8	Sukhomajri	R-71, C4	RF	181.6
9	Khera	R-71, C5	RF	167.5
10	Basola	R-71, C20	RF	150.5
11	Prempura	R-71, C5	RF	161.5
12	Kiratpur	R-71, C6	RF	244.0
13	Kahinwala	R-71, C8 &C9	RF	492.9
14	Nanak pur	R-71, C8	RF	149.9
15	Khokhra thappal	R-71, C11	RF	307.8
16	Banoi khuda baksh	R-59, C3	RF	198.2

S.No.	Name of HRMS	Name of forest under HRMS	Type of forest	Area of forest (ha)
17	Bar godam	DP-230	PF	122.5
18	Kalka	DP-234	PF	225.3
19	Kona	R-71, C9	RF	803.4
20	Damdama	R-62, Khadin	RF	242.2
21	Kholmola	R-71, C11	RF	446.9
22	Nada	R-70, C1	RF	681.0
23	Harijan nada	R-70, C1	RF	236.3
24	Chowki	R-70, C2	RF	444.2
25	Gumthala	R-70, C3	RF	361.5
26	Madhna	R-70, C110	RF	259.6
27	Mohliwala	C9,10,18-22	PF	972.2
28	Masumpur	C26	PF	321.1
29	Rehna	C26	PF	366.2
30	Thathar	C31	PF	528.4
31	Govindpur	C31	PF	323.4
32	Mirpur	C43,47,48,50-52	PF	657.6
33	Thadeo	C48,53,54	PF	788.8
34	Bharoli	C57,58,68,69,71	PF	852.3
35	Trilokpur	C65,66,70,72,73	PF	901.9
36	Dullopur	C76-80,84	PF	595.7
37	Rana	C26-29	PF	259.6
38	Rampur	C3	PF	219.6
	TOTAL			14,140.6

II. Yamuna Nagar Forest Division (Yamuna Nagar District)

<i>S.no.</i>	<i>Name of HRMS</i>	<i>Name of forest under HRMS</i>	<i>Type of forest</i>	<i>Area of forest (ha)</i>
1	Salehpur	Salehpur	PF	362.2
2	Thaska	Thaska	PF	342.4
3	Pammuwala	Pammuwala	PF	55.0
4	Uttamwala	Kathgarh	PF	30.0
5	Kathgarh	Kathgarh	PF	185.7
6	Rampur Gainda	Rampur Gainda	PF	84.9
7	Ibrahimpur	Ibrahimpur	PF	211.7
8	Darpur	Darpur	PF	819.9
9	Faizpur	R1J Kalesar C17 & 21/22	RF	299.0
10	Kansli	Kansli	PF	354.1
11	Baghpat	Baghpat	PF	529.3
12	Khizri	Khizri	PF	258.9
13	Khillanwala	Khillanwala	PF*	853.9
14	Nagli	Nagli	PF*	948.1
15	Nagalpatti	Nagalpatti C1 to C4	RF*	561.0
16	Paniwala	No govt. forests	–	0
17	Dhanaura	No govt. forests	–	0
18	Bhagwanpur	No govt. forests	–	0
	TOTAL			5,896.1

*: According to the Working Plan, these forests are Unclassified forests

Source: Dass and Barrak 1999.

Annex 4: Status of JFM in West Bengal

S.No.	Division	No. of FPCs	Area protected (ha.)
1	Baikunthpur	60	7,151
2	Coochbehar	26	8,390
3	Coochbehar S.F.	23	5,158
4	Jalpaiguri	47	13,182
5	Buxa tiger reserve	37	27,300
6	Wildlife-II	5	6,199
7	Kurseong	15	3,014
8	Kalimpong	37	14,860
9	Darjeeling	40	7,600
10	Bankura (North)	473	44,420
11	Bankura (South)	495	40,671
12	Panchet S.C.	211	27,210
13	Midnapur (East)	292	38,249
14	Midnapur (West)	511	56,617

<i>S.No.</i>	<i>Division</i>	<i>No. of FPCs</i>	<i>Area protected (ha.)</i>
15	Rupnarayan P. & S.	135	21,638
16	Kharagpur S.F.	78	10,541
17	Purulia	160	25,051
18	Kangsabati S.C. I	189	14,918
19	Kangsabati S.C. II	289	24,521
20	Birbhum	133	9,068
21	Burdwan	62	16,168
22	Durgapur S.F.	20	2,671
23	24-Parganas (S)	21	39,597
24	STR (Buffer)	10	17,565
	TOTAL	3369	481,759

Source: Planning & Statistical Cell n.d.; Guhathakurta and Roy 2000.

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