

# INTEGRATED OPTIONS FOR FOREST MANAGEMENT IN INDIA

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## Abstract

Forest management in India has traditionally focused on the extraction of high value timber species to fuel national development. Only recently has it been recognized that these practices often neglected the importance of biological diversity, jeopardized watershed functions and undermined the livelihood and culture of forest dependant populations. In response to these problems, the 1988 Forest Policy of India introduced the concept of Joint Forest Management (JFM). This policy was formulated to promote partnerships between the Forest Department and local people to ensure the sustainable management of India's forests. This paper examines some issues that have arisen in selected JFM areas, and discusses how the JFM program has assisted in arresting forest degradation. The paper also focuses on the role and attitude of the Forest Department in relation to JFM. Foresters and local communities often have different perceptions of what is valuable within a forest, and this can result in conflicts of interest when establishing management objectives.

## Introduction

Traditionally, forest management in India focused on the production of timber for income generation. This narrow focus led to the marginalization of forest dwellers, an undermining of the tribal culture, and the institutionalization of a narrow forest management policy (Chakravarti and Prasad 1989). Only recently was it realized that these forest management practices often neglected the importance of biological diversity, jeopardized watershed functions, and undermined the livelihood and culture of forest dependant populations.

In response to these problems, the 1988 Forest Policy of India introduced the concept of Joint Forest Management (JFM). This policy was formulated to promote partnerships between the Forest Department (FD) and local people to ensure the sustainable management of India's forests. JFM has been adopted for rehabilitation of degraded forests, but has not yet been extended to non-degraded forests. In order for JFM to succeed however, the following enabling policies need to be in place:

- u Appropriate government policy support;
- u Reorientation of the forest service to support implementation;
- u Evolution of appropriate mechanisms and infrastructure to support participatory forest management; and
- u Adequate research support on relevant issues.

The people of rural India derive a variety of products from community managed forests. Under the JFM program, villagers are organized into forest protection committees (FPCs) or village forest committees (VFCs) which enter into co-management agreements with the FD. In return for protecting the forest area, local people are allowed to collect a variety of non-timber forest products (NTFPs) from the area and benefit from the final sale of timber harvested from the forest area. As a result of this partnership over 2.5 million ha of forest area in India is currently regenerating (Anon. 1998). In many cases, silvicultural options have been designed by the local people with the technical guidance of foresters which has led to increased yields and better processing of forest products for income generation (Malhotra 1995).

This paper examines how collaboration between the FD and local communities has reduced pressure on forest area from grazing, NTFP cultivation and fuelwood harvesting. In addition, as past points of conflict and resource degradation have now become opportunities for collaborative management, this exposition looks at the changing role and attitude of the FD in relation to JFM. Foresters and local communities often have different perceptions of what is valuable within a forest, and this can result in conflicts of interest when establishing management objectives. Through case studies, this paper examines some of these different perspectives and options for attaining an ecological, social and economic balance in forest resource management

## **Interaction of Technical and Institutional Aspects of JFM**

### ***Participatory forest fire management in Tamil Nadu: a case study from the Western Ghats***

Forest fires (natural and man-made) and indiscriminate grazing are common causes of forest degradation in India. Inventories conducted by the Forest Survey show that on average 55 percent of forest area in India is affected by fire and 78 percent by grazing. Subsequently, little regeneration occurs in 72 percent of forested areas (FSI Report 1997).

The Western Ghat mountain range in southern India encompasses much of the rich biological diversity of the subcontinent. Apart from biological values, the mountains act as an important water catchment on which large parts of Tamil Nadu, its agriculture, hydropower and industrial are dependent. Despite the importance of the Western Ghat mountains, grazing, fire, illegal logging, heavy extraction of NTFPs and other forms of unsustainable use have resulted in large scale deforestation, and in turn created severe soil erosion and loss of fertility in this once diverse area.

Past attempts by the FD to manage fires and other destructive activities (through policing and strict regulations) were unsuccessful. The FD was unable to control these abuses until an enthusiastic Divisional Forest Officer from Coimbatore took the initiative to work jointly with the communities. By collaborating with villagers, an innovative forest fire protection movement was initiated.

In this area, 23 village fire protection committees were formed to safeguard 69,347 ha of tropical forest (Bhattacharya et al. 1998). Foresters taught village volunteers how to effectively control fires by creating fire lines, lighting backfires and initiating other forms of prevention. Through these interventions, the incidence of forest fire was reduced by 60 percent within four years. As these fires became less frequent and forests

regenerated, villagers began to understand more clearly the impact the fires had on their local economy. This paved the way for other collaborative management activities. These activities were of two main types: resource management activities and village development work. The former included construction of water harvesting structures (such as check dams, stop dams and gully plugging) in the forest made from locally available materials. The village development activities included construction of village roads, a temple and community center, through voluntarily donated labor (*shramdaan*).

### ***Community oriented silvicultural options: a case study from Madhya Pradesh***

This case study is based on an initiative taken by another local Divisional Forest Officer in the Dewas Forest Division of Madhya Pradesh. In response to people's demands for fuelwood, an innovative participatory silvicultural system known as Multiple Shoot Cutting (MSC) evolved (Singh et al. 1998).

Pardhi Kheda village has 111 households composed of six castes, with Sendho Patel being the predominant caste. The village is located in eastern part of Dewas division nine kilometers from block headquarters. The Sendho Patel (38 households) own 80 percent of the land, while the members of the Bhopa caste (19 households) are landless. The villagers derived their fuelwood and small timber requirements from nearby forests. Uncontrolled grazing and illicit felling by the villagers from a neighboring district was also common.

Some 20 years ago the nearby forest had an abundant teak stand. Preference for the species by the FD, combined with unsustainable harvesting of non-teak species by the local communities, turned what once was mixed forests into a teak monoculture.

In 1993, a VFC was formed to protect local forests and ensure their sustainable use. The VFC was responsible for protecting about 600 ha of degraded forests. By instituting forest use guidelines, the VFC regulated harmful practices like cattle grazing and illicit felling. Consequently, the area was protected from stray cattle without the construction of cattle proof trenches, and the money saved was used for community development activities.

In 1995, thinning was carried out by the FD in a patch of forest being protected by the Pardhi Kheda VFC. Previously, the FD solely benefitted from the sale the thinned products. However under the JFM policy, the VFC was also supposed to benefit. Unfortunately, the thinning coupe was situated deep inside the forest, and the VFC members were unaware of these operations and without any means of transport were unable to collect wood. Also, extraction was only permitted for three days after which people from an adjoining village, that had just formed their own VFC, were allowed to collect the leftover wood. Obviously, this created a feeling of frustration and tension among Pardhi Kheda villagers who had been involved in protecting the forest area.

Consequently, the VFC requested the Divisional Forest Officer (DFO) to allow more time for extraction and also to permit thinning of the entire forest patch under their protection. On inspection of the area, the DFO felt that villagers were not thinning properly, which threatened regeneration and reduced yields.

After consultation with the VFC members, the DFO initiated a Multiple Shoot Cutting (MSC) silvicultural system, which allowed the committee members to trim side branches

of less than 15 cm girth for fuelwood. MSC served to meet fuelwood requirements of the village in a systematic way and minimized the damage caused by negligent cutting. It also ensured healthy stump dressing and cleaning. MSC was implemented by the villagers in the entire forest patch. To guarantee compliance with the new system, it was decided that all MSC take place in the presence of forest guards or members of the VFC Executive Committee.

Initially, the community suggested designating areas to be cleaned in a three-year rotational cycle of 200 ha/year. Though this was adequate to meet 70 percent of the fuelwood requirements of the village, the community felt that maintaining year-round supervision by the VFC or the forest guard was not feasible. It was decided, therefore, that the villagers could cut and collect fuelwood only on three days that were chosen by them. After several years the degraded patch, once having had a predominantly teak coppice, showed a healthy mixture of both teak and non-teak species.

Interestingly, the initiation of this new system gave rise to a gender-related issue. Traditionally, women of the Bhopa caste collected dry and fallen twigs, and if required harvested green wood. The need for cutting with an axe in the MSC operation meant that while men would trim the shoots, the women would gather and take them home as headloads. However, the women began cutting whatever they could, rather than following the system. This insightful incident sensitized the FD and the community to gender issues relating to community-based forestry activities. Subsequently, the VFC and the FD resolved to learn from this experience and overcome such challenges by constantly creating ways to consider and accommodate all interests in their future activities.

### ***Concern for availability of NTFPs: a case from West Bengal***

The Nari Bikas Sangh (Women's Development Committee) from Bankura District in West Bengal, expressed concern at a forestry workshop that regenerating sal stands (*Shorea robusta*) had reduced the yield of tendu (*Diospyrus melanoxylon*) leaves. The production of tendu leaf plates provides a substantial income to local women and are preferred because sal leaves from tall trees (10 - 15 meters after 6 - 10 years of protection) are difficult to pluck. The women wanted the FD to reduce Sal yields in favor of increased productivity of NTFPs.

Although JFM has given communities the opportunity to participate more in the management of local forests, prescriptions for silvicultural treatments continue to be determined by the FD and often are tailored for timber production. Most micro-planning rarely involves local people in more than the scheduling of predetermined silvicultural operations or their employment in the actual work (whether for regeneration, thinning or harvesting). To accommodate the needs of the women, a more detailed discussion of the ecological characteristics and successional stages of the forests was required. Based on the priorities for different goods and objectives, a set of silvicultural prescriptions were developed to ensure certain forest patches were managed for optimal productivity. It was agreed that a mosaic of forest stands, with silvicultural treatments for different purposes, would be created. These included:

- u A scarce grove/core area where no management or use would be allowed in order to preserve biodiversity.

- u A high forest zone where some selective felling of mature sal trees for household use would be allowed, and a limited amount of sal seed and mushroom collection was permitted.
- u A felling series of coupes with different rotations and special management for certain species, such as fruit trees or tendu bushes (Rathore and Campbell 1995).

### ***Assisted Natural Regeneration (ANR): cases from Madhya Pradesh***

Under a World Bank assisted forestry development program in Madhya Pradesh, an innovative agenda is emerging which provides the FPCs with more autonomy. Instead of the Forest Department controlling the FPC budget, it is directly handled by the FPC. The budget is allocated for Assisted Natural Regeneration (ANR) activities such as weed eradication, singling of multiple coppice shoots, thinning, and soil and water conservation. As a result of these activities, forest regeneration occurred within two to three years of program implementation.

#### Khatpura FPC

The Khatpura FPC in the Budhni range of Sehore division was constituted in 1994. Being a sensitive area, the committee decided to protect it from illicit felling. The rate of natural regeneration, due to uncontrolled grazing and recurrent fires, was slow. Excessive run-off and soil erosion had resulted in the drying-up of perennial streams following the monsoon rains.

Today, small groups of villagers conduct daily patrols in the area. These efforts have resulted in an effective control of grazing and fire, and the demarcation of an alternate grazing area. New protection measures for streams have allowed increased storage, providing water to wild animals for longer periods. Conservation efforts have preserved plant species and subsequently increased density of regional flora from 2,054 plants/ha, to more than 3,300 plants/ha in just two years.

The introduction of community members into local forestry initiatives has saved the FD a considerable amount of money, much of which has been used to promote social welfare activities such as increasing supplies of drinking water and constructing a community hall.

#### Weeds made into a resource

Harsingar (*Nyctanthes arboristis*) is a shrub commonly found in the mixed deciduous forests of India. It is considered a weed by foresters, and villagers are often employed to cut it down to facilitate regeneration of timber species. However, in Umrai Village in Sheopur Division, local people hired to weed Harsingar demonstrated inventive entrepreneurial skills by using the green twigs to make baskets. The finished products came in three sizes: the smallest sold for Rs. 2 to 3, the medium-sized for Rs. 4, and the largest for Rs.10 (US\$ 1 = 40 Rs). On average, a seller could earn more than Rs. 60/day, and a village of 200 potentially could gain Rs. 12,000/day by selling to a local trader. Several NTFP items are now being collected, processed and sold by villagers which provides them with substantial income. The employment opportunities generated clearly contribute to conservation goals.

## **Sustainability of Participatory Forest Management**

For successful implementation of JFM, the objectives of both local people and the Forest Department must be clearly understood and agreed upon. This requires a process of “participatory objective setting”. Too often it is assumed that micro-planning will cover these objectives, but, as mentioned in the cases above, the FD often makes unilateral management prescriptions.

To facilitate more participatory efforts, a number of techniques have been developed to list, rank and score the importance and utility of different species and products (Puri et al. 1989). Important questions need to be answered in order to tailor silvicultural approaches for multiple uses, such as:

- u How does one establish sustainable harvesting systems for so many products?
- u How is the ecological character of the forest impacted if extraction rates are intensified for different products (Lal 1994; MCNeely 1997)?

Silvicultural practices and management objectives to optimize NTFP production have to be appropriately designed. Often, species which are unimportant to foresters may be extremely useful to villagers or perform crucial ecological functions (Anon 1992).

## **Sal Forest Ecology, People’s Need and Biodiversity**

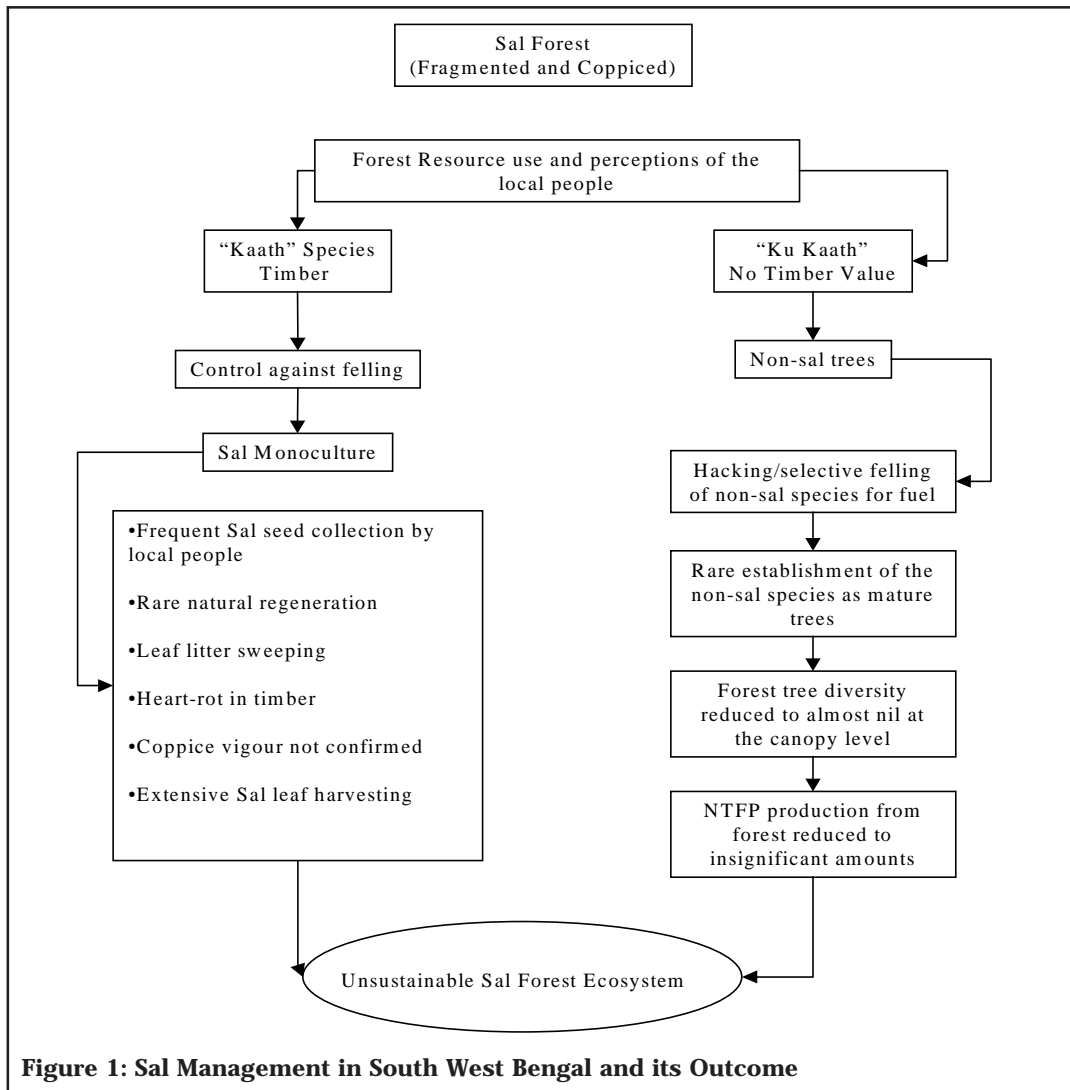
JFM traces its roots to West Bengal, a state where per capita forestland is .02 ha (one of the lowest in the country). In the early 1970s, a few innovative foresters realized that the only way truly to protect and regenerate forests was to include local people in conservation initiatives and forest management efforts. Subsequently, they worked with a variety of communities to protect degraded areas.

### ***Forest regeneration in South West Bengal***

Management preferences for Sal, a high value commercial timber species, have resulted in the suppression of other trees species. The present management of Sal forests and its results are shown in Figure 1. Villagers often refer to Sal as *Kaath* (trees used for timber), while low valuable timber is considered *ku kaath* and includes species such as: *Mahua* (*Madhuca indica*), *Bija Sal* (*Pterocarpus marsupium*), *Saja* (*Terminalia tomentosa*), *Amola* (*Emblica officinalis*), *Kendu* (*Diospyros melanoxylon*), and *Char* (*Buchnaniania lanzan*). These types of tree species should not be discounted on account of the traditional focus on the cultivation and propagation of Sal. In fact, monoculture Sal plantations often suffer from wood rot, and many of the less popular timber species could be used as an alternative. In addition many of these species provide fuel, fodder and other essential items to local people and, are therefore intensively extracted.

This practice has reduced many trees to bushy forms, actually achieving the objectives of both the villagers and the Forest Department: local people were allowed to extract various species and Sal was allowed to flourish. However, the implications of this type of management on the ecosystem and communities still need to be addressed.

It is obvious that managing the forest solely for Sal cannot fulfil all the needs of the community. However, the extent of extraction of non-Sal species has to be managed so that the ecological functions are not jeopardized. Researchers monitoring the success



of JFM in West Bengal often have reported the absence of non-Sal species in protected areas (Bhattacharya 1994). Although the protection of Sal coppices has reversed the condition of forests, the absence of other species has caused ecological concern. The preference for Sal in conjunction with the cutting of other species is adversely affecting biodiversity in the area.

To address the needs of local people and to maintain biodiversity, Sal monocultures require the integration of *Ku kaath* species. Also, other species, which are known sources of forest foods, medicine and other important products, should be protected from fuelwood harvesting. Trees and shrubs that are not particularly valued could be used selectively to fulfil immediate fuelwood requirements. These include species such as: *Bhurru* (*Gardenia gummifera*), *Parasi* (*Carissa* sp.), *Atari* (*Clestantus collinus*), *Baichi* (*Flacourtia indica*), *Kurchi* (*Holarrhoena antidysentrica*), *Putush* (*Lantana camara*) and *Pitali* (*Grewia nudifolia*). Unsustainable harvesting methods need to be avoided and a viable population ensured. One option might be to use MSC to provide the lops and tops of trees once or twice a year in order to ease fuelwood pressure.

## Conclusion

From the forgoing illustrations, it is clear that traditional forest management often ignored people's legitimate role in forest management. On one hand, this led to commercialization of forest management, and on the other alienated local people. The commercial bias of foresters in favor of certain valuable timber species has, and still does, lead to conflict with local people. In order for JFM to live up to its goals of supporting forest management which meets the needs of local people as well as national objectives, management plans and silvicultural operations need to address these objectives in order to ensure sustainable forest management.

## Literature Cited

- Anon. 1992. Guidelines for conserving biological diversity in forests management for timber. In Blockhus, J.M. et. al. eds. *Conserving Biological Diversity in Managed Tropical Forests*. IUCN. Switzerland. pp 6-12.
- Anon. 1998. In Joint Forest Management Update. SPWD. New Delhi. pp. 277.
- Bhattacharya, Prodyut, Kumar K.N.K., and Debashis Debnath. 1998. Collaborative Effort for Forest Fire Management. *Wasteland News*. Nov'97-Jan'98. pp.51-54.
- Bhattacharya, P. 1994. Sal forest ecosystem: people need vis a vis forest management practices in West Bengal, India. International Conference on Participatory Forest Management and an Enabling Environment. IBRAD/IIT, Kharagpur, West Bengal 5 -7 Dec. 1994.
- Bhattacharya, P. 1995. Sal Forest Ecology: People's Need vis-a-vis Biodiversity Management in West Bengal. Proceedings of the National Workshop on "Ecological Impact of JFM". IBRAD, Calcutta.
- Carter Jane. 1996. *Recent Approaches to Participatory Forest Resource Assessment*. Rural Development Forestry Study Guide 3, ODI, London, pp. 332.
- Chakravarti R. and Ram Prasad 1989. Forestry Based Tribal Development an Approach. *Journal of Tropical Forestry*. 5(1) : 1-12.
- Chaturvedi, A.N. 1994. *Management of India's Forest Resource*. Khanna Bandhu Publication. Dehradun. pp. 185
- Guhathakurta, P. 1992. Is Management of Coppice Sal Forests on Short Rotations Sustainable? *Wasteland News* 7 (1) New Delhi.
- Hobley Mary. 1996. *Participatory Forestry: The Process of Change in India and Nepal*. Rural Development Forestry Study Guide 3, ODI, London, pp. 337.
- Lal, J.B. 1994. Silvicultural and Institutional Provision for SFM. International Seminar on Management of NTFFPs. CMFP. Nov. 12-15, Dehradun.
- Malhotra, K.C., Deb, D., Dutta, M., Vasulu, T.S., Yadav, G. and M. Adhikari. 1992. *Role of NTFP in village economy*. IBRAD. Calcutta. 124 pp.
- Malhotra, K.C. 1995. Linkages between Biodiversity, Conservation and Development : Lessons Emerging from India. In P. Kumari (ed.) *Empowering Society*. The Gurukul Lutheran Theological College and Research Institute. Madras.

- McNeely Jeffrey A. 1997. How Indigenous People Use Biological Resources. *International Journal of Social Development*. 2(1):23-26.
- Narayan, R., Melkania, N.P., Bhattacharya, P., and S.B. Roy. 1993. Effect of leaf litter Sweeping on Forest Floor. IBRAD Working Paper.
- Rathore, B.M.S. and J.Y. Campbell. 1995. Evolving Forest Management Systems: Innovating with Planning & Silviculture. *Wasteland News*. August-October 1995. New Delhi. pp. 4-19.
- Singh, M.K., Vasavada, S. and Nabarun Sengupta. Making the Community Oriented Silvicultural Options - Dewas Case. In Bhattacharya et al. *Local Initiatives in Natural Resource Management: Indian Experience*. (under publication).