CHAPTER 7

JOINT FOREST MANAGEMENT IN TRIPURA: ITS SPREAD, PERFORMANCE AND IMPACT

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1. INTRODUCTION

The unabated depletion of India's forest resources, despite the implementation of social forestry and several other central- and state-sponsored afforestation schemes, has brought into focus the inadequacy of state-owned systems of forest management. The growing human and livestock population and the overall economic development have put tremendous pressure on the forest resources and it is no longer possible to manage them without the help of people living in and around forests. Over the years, forest dwellers, tribals, and other forest-user groups have emerged as major stakeholders in the protection and management of forests. Forest managers and planners are increasingly convinced that the objective of forest conservation cannot be achieved by isolating the local people and this must be supported by policies promoting the sustainable and equitable development of the natural resource base as a whole. During the period when the country was experiencing rapid depletion of forests, a few success stories of participatory forest management, such as successful regeneration of degraded forests in West Bengal and elsewhere were emerging, which provided an impetus for rendering a change in the management of forests of India by involving village communities and voluntary agencies in the regeneration of degraded forest lands. This was officially enabled and recognized by the 1st June 1990 notification of the MoEF, Government of India. This marked the formal launch of Joint Forest Management (JFM) in India.

The mass immigration of people from erstwhile East Pakistan during the early 1970s and their settlement in the forest areas caused large-scale denudation and clearing of forests in Tripura. The felling of trees for railway sleepers, the construction of bridges and dwellings, fuel wood collection and grazing transformed the land use and land cover of the state. During this period, many high forests were converted into degraded landscapes dotted with tree stumps. The effort of the state Forest Department to regenerate the

forest areas through plantation programmes and social forestry also did not achieve the desired success in the absence of people's participation, and illegal tree felling continued. Thus, there was an urgent need for regenerating the forestlands with the active participation of the people. This provided the impetus to participatory forest management, which was initiated by the research wing of the state Forest Department and some local NGOs in Melaghar. The forest type, the soil and the climatic conditions of the state were very favourable for the regeneration of forests.

More than a decade has passed since the implementation of JFM in Tripura, which was the first state in the northeast to implement JFM, but there are no in-depth studies assessing the spread, performance and impact of the same. The studies conducted by Tiwari *et al.* (1997, 2000); Tripathi *et al.* (1997); Roy (1996) and Saha (1999) mainly focused on the case study of one village, viz., Melaghar. A critical appraisal of the programme was therefore needed to provide feedback to the policy makers, donor agencies, grassroot-level workers and communities involved in the implementation of JFM.

The present study was taken up with the aim of assessing the overall spread, performance and impact of JFM in the state. It evaluates the working of institutions and the overall functioning of JFM in Tripura by assessing the degree of their participation in the JFM programme and the extent of benefits accruing to the people. The study also identifies the bottlenecks and suggests corrective measures wherever the desired level of success has not been achieved. This study can also provide lessons to other states and agencies, which can learn from the experiences of the people and the Government of Tripura.

2. METHODOLOGY

2.1 Study Area

Tripura is a small state located in northeastern India. The state has four districts and ten forest divisions. Most of the divisions show homogeneity in terms of climate, vegetation type, soil type, community composition, cultural practices, etc. Out of the ten forest divisions, six forest divisions from two districts, viz., west Tripura and south Tripura, were selected for the study. The forest divisions selected were: Sadar and Teliamura of the west Tripura district; and Bagafa, Gumti, Trishna WL and Udaipur of the south Tripura district. At present, a total of 40,784 ha forest area of the state is being managed and protected through JFM, out of which 28,876 ha is in the six divisions included in the study and 15,650 ha are being managed by the sampled Joint Forest Management Committees (JFMCs). Some of the key

features of the state and the sample forest divisions included in the study are given in Table 1.

Table 1: Key features of the divisions selected for the study in Tripura

Division	Total geographic area (km^2)	Area under forest (km^2)		Population as per 1991 census (lakhs)	No of villages		Livestock population (lakhs)
		Total	%*		Total	%*	
Bagafa (including Trishna WL)	1332.75	775.60	12.7	3.349	144	16.8	2.416
Gumti	913.29	699.99	11.5	1.741	55	6.4	1.257
Udaipur	919.36	554.47	9.2	2.097	64	7.4	1.513
Sadar	1566.06	259.74	4.3	8.935	173	20.2	4.878
Teliamura	1365.99	908.91	15.0	4.003	108	12.6	2.185
Total of the study area	6097.45	3198.71	52.7	20.125	544	63.4	12.249
Total of the state	10,490.00	6060.00	100.0	27.600	855	100.0	15.900

*percent to the total of the state

*1991 Census

2.2 The Selection of the Sample

The forest divisions and JFMCs were selected using the stratified sampling technique. The following criteria were used for stratification:

a) Proportionate representation of JFMCs from different divisions
b) Proportionate representation of old and new JFMCs
c) Inclusion of diverse vegetation types
d) Inclusion of JFMCs inhabited by SCs, STs, backward and minority groups
e) Inclusion of JFMCs from protected areas
f) Social stability of and physical accessibility to the JFMCs

At the outset, the information on the extent and spread of JFM in the state was collected from the office of the Principal Chief Conservator of Forests, Tripura. Out of a total 194 JFMCs constituted in the state till date, 80 JFMCs were selected for the study, which is a little over 50% of the total JFMCs of these divisions. The division-wise distribution of these JFMCs is: Bagafa–20, Gumti–4, Trishna WL–8, Udaipur–28, Sadar–10 and Teliamura–10. Out of the 80 JFMCs selected for the study, 21 were less than 2 years old.

A standard questionnaire developed by the CES, IISc, Bangalore, was used for field data collection. The executive committee members and officials of the JFMCs and officials of the Forest Department were interviewed. The JFM areas of each of the JFMCs were visited for spot survey of the vegetation. The records of the JFMCs were consulted for collecting data on the functioning of the JFMCs.

3. FINDINGS

3.1 State JFM Government Order and its Amendments

Tripura implemented JFM through its resolution dated 20th December, 1991. During the early nineties it was implemented in 9 forest divisions—Kailashahar, Kanchanpur, Manu, Ambassa, Teliamura, Sadar, Udaipur Bagafa and Jatanbari. In the Gumti and Trishna Wildlife Sanctuaries, it was implemented in 1998. In March 2002, i.e., at the start of this study, Tripura had 194 JFMCs. JFM was supported during its early phase by the state Forest Department. However, at present it is mostly funded by centrally-sponsored schemes of the Government of India.

The dedication of the Government of Tripura to the cause of JFM is amply reflected in its latest forest management policy that states:

> "Management of forests would be undertaken with the close positive involvement of the people, particularly the tribals. JFM will be given priority and made into an effective pro-people programme".

A new resolution was issued in 2001, with some modifications and additions to the 1991 resolution, keeping in mind the insights and experiences gathered during the past 10 years of the programme. The salient features of the resolution are as follows:

- As far as possible, there should be one JFMC per Gram Panchayat. However, depending upon the socio-economic situation and location and the extent of available forest land, there can be either a joint JFMC for two or more Gram Panchayats or two or more JFMCs for one Gram Panchayat.
- Normally, JFM should be implemented in degraded forest areas. In addition, the programme may also be extended to good forest areas (crown density above 40%), initially on a pilot basis. In degraded forests, as far as possible, JFM should be concentrated on areas up to 3 km from the village boundary. The pilot areas may be monitored closely for a few years and based on the feedback and success achieved, the programme can be extended further in consultation with the central government. Before addressing the good forest areas on a pilot basis, all the degraded forest in the locality should be covered simultaneously. The extent of the good forest areas to be protected will depend upon the number of village households and should be restricted to a maximum limit of 100 ha and generally limited to 2 km from the village boundary. For degraded forests also, as far as possible JFM should be first concentrated on areas up to 3 km from the village boundary. In good forest areas, the JFM

activities would concentrate on the management of NTFPs, and no alteration should be permitted in the basic silvicultural practices prescribed in the Working Plan.

- Two memberships per family are allowed; i.e., if the husband becomes a member, then the wife automatically gets included as a member and vice versa.
- At least 33% of the members of the executive committee must be women. The adequate proportional representation of different communities, such as SCs, STs, OBCs and the general category has also been made mandatory in the composition of the executive committee. The tenure of the executive committee will be for one year, after which a new committee will be constituted at the annual GBM, where the concerned range officer shall be the observer and the local beat officer will function as the election officer.
- There are several directives included on the working of the JFMCs. The JFMC must hold at least one GBM a year and a minimum of one ECM every two months, to be convened by the beat officer who will also function as member secretary. The quorum for holding the ECM should be 50% of the total members; and a minimum of one-third of the women executive members. The JFMCs shall be registered under the Societies Registration Act, 1860 to provide them with legal support.
- The treasurer and the member secretary shall together operate the funds of the JFMC.
- The micro-plan figures prominently in the revised resolution. The role of the NGOs in the JFM programme has also been given due importance.
- The usufructory rights the beneficiaries are entitled to have been specifically mentioned as a maximum of one cubic metre of timber from silvicultural thinning and a maximum of two cubic metres of timber from main fellings per family for their bona fide domestic needs. It has, however, been clearly stated that NGOs are not entitled to any share of the usufructs.

3.2 The Spread of JFM in the State

Several village-level FPCs were constituted after adopting the JFM resolution in the year 1991, but most of them remained dormant till 1998 after which they were energized by funds through forest-development agencies and centrally-sponsored schemes. The area covered under various afforestation schemes implemented through JFM was 3,600 ha in the year 1998, which grew to more than 11,000 ha in the year 2001. The number of JFMCs in the state was 104 in the year 1998, which went up to 163 in 2001 (Table 2) and

194 in 2003. Fifty per cent of the JFMCs of the state are in the south Tripura district. The high percentage of JFMCs in this district seems to be due to less socio-political conflicts, a larger forested area and a relatively lower population density.

At the time of the study, 20% of the JFMCs across the study area had prepared micro-plans, and 56% had signed MoUs with the Forest Department. Most of the JFMCs had completed more than two years.

Table 2: The number of JFMCs formed (year-wise) in each division and state

Division	1998	1999	2000	2001
Bagafa (including Trishna W.L.)	31	39	40	41
Gumti	14	18	18	24
Udaipur	21	26	48	49
Sadar	8	10	16	16
Teliamura	30	34	33	33
Total	104	127	155	163

3.3 Constitution of the JFMCs

The village-wise percentage of households who were members of the JFMCs varied between 5 to 100%. On an average, 37% of the households of the study area have become members of the JFMCs (Table 3). It was highest in Gumti and least in the Trishna WL Sanctuary.

Table 3: Membership of the JFMCs: number of households, category-wise

Category	Total number of households	Number of JFMC households	Percentage
General	4,703	2,671	57
SC/ST	11,634	3,895	34
Artisans	896	568	63
Landless	6,562	1,764	27
Total	23,795	8,898	37

The membership of the JFMCs varied from 1 to 17.5% of the population in the divisions surveyed. It was the highest in Teliamura and the least in the Trishna WL. The overall percentage of men and women members in the JFMCs was 91% and 9%, respectively. The percentage of the men to total JFMC members varied from 77% to 96% in the various divisions, and accordingly women membership constituted between 23% and 4%, with a maximum in Bagafa and a minimum in Teliamura.

3.4 The Performance of the JFMCs

The performance of JFMCs was assessed, based on the attendance and participation of the JFMC members in the GBS and ECMs. According to the Tripura Government Order, there should be at least one GBM every year. In about 23% of the JFMCs GBMs were held according to the guidelines, while in 64% of JFMCs, no meetings were held (Fig 1). According to the guidelines of the Tripura government, there should be at least 6 ECMs every year. In the study area, 16% of the JFMCs conducted ECMs according to the guidelines, while 41% did not conduct any meetings during the year (Fig 1).

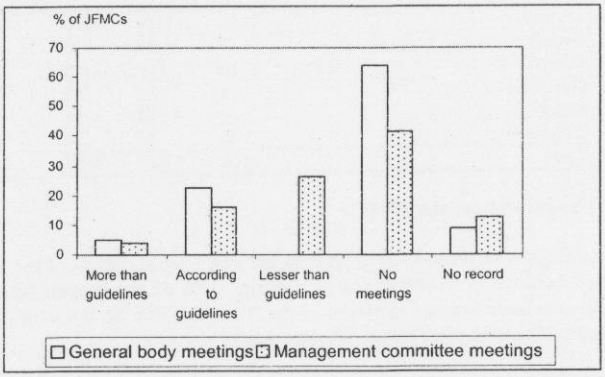

Fig 1: Conduct of general body and management committee meetings during 2001

The participation of the different stakeholders[1], i.e., women, SCs, STs, landless people and artisans in the GBMs was usually 'regular' in 60% of the JFMCs, 'occasional' in 30% and 'poor' in around 10% of the JFMCs. Across the study area, they were found to participate regularly or occasionally in the ECMS in about 35% of the JFMCs, and poorly in 30% of the JFMCs. However, the active participation of the marginalized groups and women was recorded in 52–84% of the JFMCs and a majority of the SC/ST category participated in the decision-making process.

During the preparation of the micro-plan, the community members were involved in making decisions regarding various issues like the choice of species, the area to be covered under JFM, etc. In 30% of all the JFMCs, the women members fully participated in the micro-plan preparation; in 48% it

[1] Regular : greater than 75% attendance; occasional: 25–50%; poor: less than 25% attendance

was partial; and in the remaining 22% of women did not participate in the process at all. The marginalized groups like SCs and STs fully participated in preparing the micro-plans in approximately 40% of the JFMCs. In the rest of the JFMCs the participation of these communities was partial.

3.5 Forest Protection and Management

Protection of the JFM area: Social fencing was the major protection mechanism for JFM areas, both in natural forests and plantations, in 70% of JFMCs. In 28% of the JFMCs there were no physical protection measures, such as BWFs and CPTs, and these were provided in 2% of the JFMCs.

The protection of the natural forests in both initial and later years was done mainly either by the Forest Department or the community. In the Teliamura and Udaipur divisions, 100% and 72% JFMCs, respectively, have reported protection of their natural forests jointly by the Forest Department and the community. In Sadar, however, the Forest Department was solely responsible for protection in all the JFMCs. A similar trend was also observed in the JFM plantations (Fig 2).

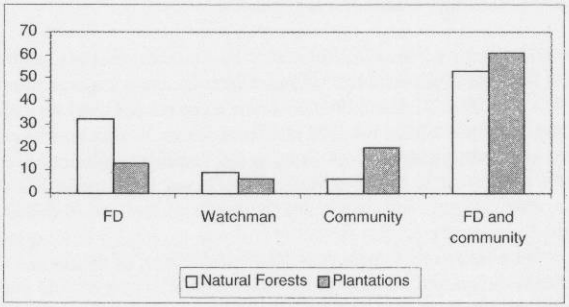

Fig 2: The involvement of stakeholders in the protection of JFM area after the initial years

Cases of offences: The offences recorded in the JFM areas were mainly unauthorized felling (67% of the JFMCs) and illegal fuel wood collection (75% of the JFMCs), and to a lesser extent encroachment (22% of the JFMCs) and hunting (3% of the JFMCs). The offenders were usually warned and cases were registered against them in 68% of the instances. In 20% and 12% of the cases, the offenders were fined and imprisoned, respectively.

Fire management: Fire-management measures were undertaken means of fire lines in 54% of the JFMCs: Around 41% of the JFMCs reported fire incidents in the JFM area, and in 13% of the JFMCs, the community doused the fire.

Grazing in the JFM area: The grazing of domesticated animals in the plantations as well as in the natural forests has been banned, particularly during the initial years of a plantation. Thirty-nine to 100 % of the JFMCs in the various divisions have imposed this type of ban. Being a protected area, in the Trishna wildlife sanctuary, the ban on grazing is total. There are large variations in the ban on grazing across the divisions during the later years. In those JFMCs where grazing was not banned, all the animals were allowed to graze except in Teliamura, where only cattle were allowed to graze. Open-access grazing is the most common mode of grazing (68%). However, stall-feeding is also practiced in some JFMCs. Seasonal grazing, rotational grazing and lopping of trees is practiced in very few JFMCs. Fodder plots are not very common in Tripura, although a few are maintained by the JFMCs in the Teliamura, Udaipur and Gumti divisions. The size of these fodder plots ranged mostly from 5–10 ha. The practice of lopping is prevalent in 53% of the JFMCs in the state, and is usually regulated, except in the Gumti and Trishna WL divisions, where it is unregulated.

Fuel wood collection from the JFM areas: Non-forest resources, such as crop residues, homestead gardens and village commons, are a major source of fuel wood. In a few JFMCs, where the non-forest areas are not used for collection, fuel wood is gathered from the JFM and forest areas. Within non-forest areas, the most common source of fuel wood is the homestead garden, whereas in the Sadar division it is the crop residues collected from agricultural fields. JFM has had a significant impact on the mode of fuel wood collection. In naturally-regenerating forests the collection was mainly by cutting branches, while in the plantations it was through the collection of deadwood in most cases. From the natural forests under JFM, the collection of fuel wood was predominantly done on a daily basis. The frequency of fuel wood collection in the plantations raised under JFM showed daily, weekly and monthly collections. However, the number of JFMCs reporting such collections was significantly less as compared to that of the natural forests. The collection from natural forests is usually not supervised, though it was done under the supervision of executive committee members in some JFMCs. In the case of plantations, the number of JFMCs in which executive committee members supervise collection was relatively high both during the initial as well as later years. However, in the case of plantations too, there were JFMCs in which no one supervised fuel wood collection.

Collection of NTFPs from the JFM area: NTFPs were harvested in both natural forests and plantations in all the divisions, but there was more collection from the natural forests than from the plantations. The availability of NTFPs increased in the natural forests under protection in 82.5% of the JFMCs of the Bagafa, Gumti, Udaipur, Sadar and Teliamura divisions. Some JFMCs also experienced no apparent change or a slight decrease in NTFP availability. Forty per cent of the plantations under JFM showed an increase in the availability of NTFPs, while in the rest it remained unchanged.

3.6 The Impact of JFM

3.6.1 The impact of JFM on vegetation: The number of trees has increased under the plantations and natural forests with assisted natural regeneration during the JFM period. However, without assisted natural regeneration, a decrease in the number of trees was noticed. A significant percentage of the JFMCs reported no visible change in the number of species in the natural forests. However, in the plantations, all the divisions showed an increased in species diversity. About 20 to 25% of the JFMCs with plantations and natural forests perceived a decrease in the number of species in the post-JFM period. The major species that have disappeared during the post-JFM period are: *Dipterocarpus turbinatus, Schima wallichii* and Bamboo in the natural forests, and *Albizia procera* and *Ficus spp.* in the plantations.

The natural forests showed decrease in canopy cover in 15% of the JFMCs, no visible change in 65% of the JFMCs and an increase in 20% of the JFMCs. In forests with assisted natural regeneration, the canopy cover has increased in 25%, decreased in another 25% and no visible change was observed in the remaining 50% of the JFMCs. In the plantations, the canopy cover increased in 42.5%, decreased in 10% and there was no change in the remaining 47.5% of the JFMCs.

3.6.2 The impact of JFM on the flow of forest products: In the JFM areas, it was predominantly the general body members who had access to fuel wood. Only in very few JFMCs were the non-members also allowed to collect fuel wood. In the Teliamura division, the residents of neighboring villages also had access to fuel wood in some of the JFMCs. Fuel wood was collected invariably as head-loads. The members of most JFMCs collect fuel wood both for household use and for sale. Fuel wood extraction showed no change after JFM in some of the JFMCs, particularly in the Bagafa, Trishna WL, Udaipur, Sadar and Teliamura divisions. A relatively small number of JFMCs registered an increase in fuel wood extraction (e.g., Teliamura, Udaipur and Gumti). The community, as a whole, experienced a decrease in the availability of poles from the JFM area.

Dipterocarpus turbinatus, Ficus hispida, Kydia calycina were the major NTFP species, collected during the pre-JFM period. During the JFM period, however, the shift has been towards timber-oriented species such as *Tectona grandis, Shorea robusta* and Bamboo. The major NTFP species collected from the plantations, pre-JFM, were *Cassia nodusa, Albizia procera* and Bamboo. Post-JFM, *Artocarpus chaplasa, Kydia calycina* and *Holarrhena antidysenterica* are the major NTFPs collected. Except for a few JFMCs that reported an increase, there was no apparent change in the extraction as well as the processing of NTFP species compared to the pre-JFM period. Some JFMCs in the Bagafa, Gumti, Trishna WL, Udaipur and Sadar divisions experienced a decrease in the amount of NTFP extracted and processed. The economically-important species regenerated in JFM areas were: in natural forests, *Tectona grandis* and Bamboo; in natural forest with assisted natural regeneration, *Shorea robusta, Tectona grandis* and *Gmelina arborea*; in plantations, *Gmelina arborea, Shorea robusta, Azadirachta indica* and *Tectona grandis.*

In 20% of the JFMCs, the natural forests showed an increase in grass productivity after the implementation of JFM, while the same was true of 30% of the JFMC plantations. In 50% of the JFMCs, both the plantations as well as natural forests did not show any change in grass productivity. In the remaining JFMCs, grass productivity decreased in the plantations as well as in the natural forests.

3.6.3 The economic impact of JFM: Quite a few JFMCs have accumulated VDFs of more than Rs 10,000/-. The sources of funds in various JFMCs included seed money, funds for fire control, NTFP auctions, fines, fees and benefit sharing, besides the usual grant from the Forest Department, government loans, and earnings from fishery activities, banana plantations, etc. The Gumti and Trishna WL divisions had no VDFs. The funds have been mostly used for raising plantations, rural development and the installation of energy-saving devices. Many JFMCs have also used the fund for purposes like providing medical benefits to beneficiaries, social activities like marriages, etc.

3.6.4 The social impact of JFM: JFM has generally had a positive impact on both employment generation and the outward-migration pattern, resulting in an increase of the former and a reduction of the latter. The installation of improved stoves and other devices has taken place in a few JFMCs in the Bagafa and Udaipur divisions. JFM has also had a positive impact on the empowerment of women, on improving relations with neighbouring villages, and all-round development of the village. But the parameters on which the

JFM had very significant impact were: the relation of the JFMCs with the Forest Department (Fig 3), and employment and income generation.

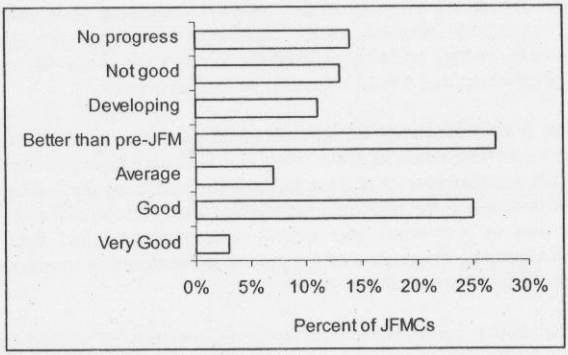

Fig 3: Relationship of the village community with the Forest Department

4. DISCUSSION

The rate of expansion of the JFM area has been phenomenal, with the maximum rate of spread registered after 1998, when a number of centrally-sponsored schemes were granted to the state, on the condition that they are implemented through JFM. Thus, JFM became mandatory for centrally-sponsored schemes and the schemes provided funds for the sustenance of JFM. In the case of geographic spread, out of the total JFMCs, about 50% were in south Tripura district alone. The higher percentage of JFMCs in this district seemed to be due to fewer socio-political conflicts, the larger area under forest and the relatively lower population density.

In the state's JFMCs, 91% of the members were men and only 9% were women. The low participation of women was mainly because most JFMCs were still in their infancy. It requires more time for womenfolk to be motivated to participate. The prevalent illiteracy, the lack of awareness, and lack of support from male members of the family were also factors that contributed to the lower participation of women. However, the recent modification of the Government Order addresses this problem by granting dual membership to couples.

In the older JFMCs, the GBMs and ECMs were held according to the guidelines. However, in recently-formed JFMCs the guidelines have not been met in more than 50% of the JFMCs as there was hardly any matter to

discuss. The participation of the various stakeholders in these meetings was, by and large, regular though a small percentage of the JFMCs, where benefits had not yet started accruing to the members, registered poor participation. The community showed active involvement during the micro-plan preparation, as they probably realized that it was a very important part of the JFM programme, and would ultimately be to their benefit.

In most JFMCs the Forest Department and the community did the protection of forests jointly, while in some either one took care of protection. Most of the JFMCs adopted social fencing methods for protecting the forests, because people understood the benefits of protecting their own forests and preferred to do this by consensus and overall understanding rather than through physical barriers. The impact of this type of protection was manifested in the increasing forest area and canopy cover.

JFM has had a significant impact on the regeneration of vegetation and an increase in the density as well as species of trees was noted in almost all the JFMCs. The canopy cover also increased in most of the JFMCs. This was mainly because of an increase in the total forest cover as a result of plantations and the protection of already existing forests after the initiation of JFM, and also because new economically as well as socially useful species were introduced.

Both male and female members were seen to participate in the JFM activities, despite the percentage of women members being considerably lower. The Forest Department and various NGOs have been working to increase awareness about JFM among the populace, particularly the womenfolk; besides, people themselves have realised that this programme is ultimately for their own benefit and that of their future generations. As a consequence, they have started participating actively in all aspects of JFM and their participation is increasing slowly but steadily.

Though JFM has just begun to spread its wings, it has made a significant and noticeable impact on the overall livelihood of the local population. JFM has had a positive impact on parameters like employment generation, outward-migration pattern, the empowerment of women, all-round development of the villages covered by the JFMCs and the neighbouring villages, to a small extent. JFM has also brought about a remarkable improvement in the relationship between the JFMCs and the Forest Department.

5. CONCLUSIONS AND IMPLICATIONS

Enrolling all the households in the area covered by the JFMC as members in the general body is very crucial for the success of JFM. In some JFMCs, the membership is very low. There is also potential for securing the improved participation of women, which can be ensured through sensitization, motivation and training. The guidelines concerning the holding of GBMs and ECMs need to be adhered to in more JFMCs. In many JFMCs the natural forests, and even plantations to some extent, need to be better protected with the help of the village communities. Unauthorized felling, illegal fuel wood collection and encroachment can be further reduced by increasing the membership and holding GBMs regularly. The mechanisms for taking action against offenders are in place, but there is a need to create an environment where the use of punitive action can be minimized. This can be achieved by improving interpersonal relations and fellow feeling. Forest fires haves been reported from a number of JFMCs, and there is a need to enhance the involvement of communities in preventing and combating fire. Grazing needs to be regulated in some JFMCs, and more fodder plots need to be established. The process of the micro-plan preparation also needs to be expedited in a number of JFMCs. Biogas, improved stoves, and other devices like LPG, solar photovoltaic cells, etc, need to be installed in more JFMCs. It is found that capacity-building programmes have been limited to a few JFMCs; such programmes need to be conducted in more JFMCs.

The JFM programme in the state is still in its initial stages. Most JFMCs have been formed recently, and they need to be given more time before their performance and functioning are comprehensively evaluated. The persistent insurgency problem poses a formidable hurdle, but so far the JFM programme seems to have progressed quite well and appears to be heading in the right direction.

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CHAPTER 10

JOINT FOREST MANAGEMENT: SYNTHESIS OF ITS SPREAD, PERFORMANCE AND IMPACT IN ANDHRA PRADESH, GUJARAT, KARNATAKA, RAJASTHAN, TRIPURA AND WEST BENGAL

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Ecological and Economics Research Network

1. INTRODUCTION

The steady depletion of forest resources and increasing deforestation in India has led to the realization that the active and willing participation of the communities living in and around the forest is necessary for long-term forest conservation and regeneration. However, these village communities would have little incentive to participate in forest management unless they benefited directly from the process and were also given sufficient authority in the process. The concept of Joint Forest Management (JFM) was initiated to address these specific concerns and ensure the protection and regeneration of degraded forests through community participation. The Government of India issued guidelines to the state governments on the procedure for involving local communities and voluntary agencies in the planning, implementation and management of the JFM programmes. These guidelines addressed issues relating to the preservation and development of degraded forests, as well as issues such as extraction and sharing of fuel wood, fodder, NTFPs and timber, which are related to the subsistence of the forest-dependent communities. In response to the Central Government's guidelines, 27 states issued orders and implemented JFM, enabling community participation in the management of forests.

As of September 2003, 84,642 Joint Forest Management Committees[1] (JFMCs) have been formed that are protecting 17.33 million ha of forest area (MoEF, 2003). Though the JFM programme is over a decade old and extensive, involving a large number of committees in protecting and

[1] The village level committees formed are referred to as VFCs, FPCs, VLOs, VSS, and JFMCs, etc. Here the committees are referred to as JFMCs in accordance with the 2000 MoEF circular

managing 26.54% of India's forest area, there are a few comprehensive national-level assessments of the performance of the JFMCs' and their impact, especially from the community's perspective. This chapter assesses the performance and impact of JFMCs from the community's perspective, based on the studies conducted by the EERN in six states. A synthesis of these studies is attempted, to generate information on the performance and impacts of JFM, to enhance and sustain community participation in forest regeneration and to ensure greater flow of benefits to the local communities.

1.1 Ecological and Economics Research Network

The EERN was initiated in 1996 with the broad purpose of undertaking short- and long-term research and monitoring through multi-location coordinated research programmes to generate information on the ecological, economic and other relevant institutional aspects of participatory forestry. The broad goals of the EERN include development of the methodology for monitoring and evaluation of JFM, assessment of the performance and impact of JFM, and economic analysis of different forest management strategies. The EERN comprises of NGOs, research organizations and academic institutions in the states of Andhra Pradesh, Gujarat, Karnataka, Rajasthan, Tripura and West Bengal. The study is being coordinated by the Centre for Ecological Sciences (CES), Indian Institute of Science, Bangalore.

1.2 The Specific Objectives of the Study

Based on studies undertaken during 2001–2002 in 6 states, this chapter presents a synthesis of the state-level assessment on the rate of spread of JFM, the functioning of the JFMCs, and the ecological, economic and institutional impacts. The specific objectives are:

- To assess the spread of JFM in the states based on the geographic area brought under the programme, and the extent of coverage of the JFMCs formed
- To assess the functioning and performance of the JFMCs with a focus on the composition of the committees and the conduct of JFMC meetings and other activities, such as micro-plan preparation
- To assess the impact of the JFMCs on vegetation regeneration and socio-economic benefits as perceived by the communities
- To suggest options for enhancing the functioning of the JFMCs.

The findings synthesized in this paper are from Kameswara Rao *et al,* (Chapter 3) for Andhra Pradesh, Srinivas *et al.* (Chapter 4) for Gujarat, Sudha *et al.* (Chapter 5) for Karnataka, Neeraj *et al.* (Chapter 6) for Rajasthan, Tiwari (Chapter 7) for Tripura, and Mishra *et al.* (Chapter 8) for

West Bengal. The respective state chapters can be referred to for details of the findings.

Table 1: Sample size and sampling procedure adopted by EERN groups to select forest divisions for the state-level institutional study

State	Number of JFMCs	Number of JFMCs selected for study*	Stratification for the selection of forest divisions and JFMCs
Andhra Pradesh	6989	167 (2.4%)	• Geo-political regions • 20% of JFMC formed in each division • JFMCs with availability of records
Gujarat	1336	206 (15.4%)	• Physio-geographical characteristics • Ethnic composition • Implementation by Forest Department and NGO
Karnataka	3799	595** (15.7%)	• No project area • Project area • JFMCs that have signed MoUs
Rajasthan	3446	173 (5%)	• Divisions identified by the Forest Department • Equal representation in A, B & C category (based on performance of the JFMCs)
Tripura	194	80 (41%)	• Division with maximum number of JFMCs • Representation of old and new JFMCs • Diverse vegetation types and community groups • Inclusion of JFMCs from Protected Areas • Accessibility and social stability
West Bengal	3614	200 (5.5%)	• Length of protection and year of registration • Forest type and per capita forest availability • Accessibility, anthropogenic composition and topography
Total	19,378	1421 (7.4%)	

*numbers in parenthesis are the per cent of JFMCs sampled to the total JFMCs formed in the state

**of 595 sampled JFMCs, results have been presented for 495 JFMCs in Chapter 5, excluding those from the non-project area

2. METHODOLOGY

The approach adopted by the EERN involved the development of a common methodology that has been adopted across all the EERN groups in different states, so that the results are comparable and can contribute towards a national-level assessment. With the above objectives, a village-level institutional study was conducted in 6 states of India. A village-level questionnaire was prepared to gather information on the JFMCs with regard to their structure, functioning and impact. This questionnaire was pre-tested in all the states by the EERN groups. A workshop was conducted, in which the questionnaire was modified based on the experience of the pre-test and the inputs provided by the network members and forest officers. The EERN groups made minor variations to the questionnaire, to suit the local situations.

Group discussions were held with the president and managing committee members of the JFMC to seek information on JFMCs through the questionnaire developed. Trained local educated youth, NGOs and the research staff were involved in gathering information. The JFMC record books were also consulted to gather information on its membership, conduct of meetings, etc. The data thus generated was analyzed on a common framework through a Microsoft Excel-based package developed by CES and the results were synthesized.

2.1 Sampling Procedure

The basic criterion adopted for sampling was to select the JFMCs that are at least 2 years old at the time of the study in the selected forest divisions, so that the functioning of the JFMCs and their impact can be assessed to a certain degree. At the state level, the stratification to select the forest divisions and the JFMCs by EERN groups is characterized by features governing the state, the details of which are given in Table 1.

3. FINDINGS

The findings of studies conducted in 1321 JFMCs from 6 states are synthesized and presented in this chapter.

3.1 The Spread of JFM

3.1.1 The JFMCs formed and the area under JFM: At the national level, 84,642 JFMCs have been formed that protect 17.33 million ha of forest land (26.54 % of the total forest area) at an average of 229 ha/JFMC (MoEF, 2003). In the study area, which encompasses 6 states (Table 2), there are

3.12 million ha being protected by 19,378 JFMCs at the rate of 161 ha/JFMC. West Bengal has the highest percent of forest area (49.6 %) under protection (at an average of 147 ha/JFMC), followed by Andhra Pradesh (Table 2). The comparative figures for Gujarat and Rajasthan are 12–20% of the forests. In Tripura and Andhra Pradesh, a JFMC on an average is protecting about 210–250 ha of forest area, compared to 67 ha/JFMC in Karnataka and 94 ha/JFMC in Rajasthan. A little more than 7–9% of forest area is under JFM in Tripura and Karnataka.

Taking into account the open forests in the state that can possibly be covered under JFM, due to its low canopy cover, the maximum potential in terms of area lies in Karnataka, Rajasthan and Gujarat. Considering the total forest area of the states, the maximum potential lies in Tripura, Rajasthan, Gujarat and Karnataka. About 7000–8000 JFMCs can be formed in Karnataka and Rajasthan and 4700 in Gujarat at a rate of 100 ha/JFMC. In West Bengal, the area covered under JFM far exceeds the area under open forests.

Some of the unique features of the geographic spread of JFMCs in different states are as follows:

- JFM has been implemented in 22 of the 23 districts in Andhra Pradesh, but as a strategy, most habitations situated all round the major hill ranges are included in the programme to ensure their effective participation. The formation of JFMCs is high in forest divisions that have extensive forest areas and higher density of village/hamlets.
- In Gujarat, the JFM program is being primarily promoted in degraded open forests, which is predominant in the northern and eastern parts of the state. The ST communities dominate this belt of open deciduous forest.
- In Karnataka, the JFMCs are concentrated equally in the forested and non-forest districts. Of course, the potential is larger in the drier zones, which have a tree canopy cover of less than 25%.
- In Rajasthan, JFM is concentrated in the eastern and southern parts of the state in Aravalli range, as most of the forested area is in this region.
- In Tripura, 50% of the JFMCs are in the southern region, due to lower socio-political conflicts, the larger area under forests and relatively lower population density.
- The maximum number of JFMCs (90%) has been formed in southwest Bengal, which is dominated by coppice Sal forests.

Thus, the focal areas for the formation of JFMCs vary from state to state, and districts with forests and/or degraded forests dominate the JFM area.

Table 2: Coverage of Joint Forest Management in Selected States of India

States*	Area under JFM (ha)	No. of JFMCs formed	Average area under JFMC (ha)	% of total forest area under JFM	Potential area that can be covered under JFM	
					Total area** (ha)	% of total forest area
Andhra Pradesh (1992)	1,795,329	6,989	257	25.39	85,671	1.9
Gujarat (1991)	181,543	1,336	136	11.98	472,816	31.2
Karnataka (1993)	253,569	3,799	67	6.85	829,931	22.4
Rajasthan (1991)	324,000	3,446	94	19.8	680,500	41.6
Tripura (1991)	40,784	194	210	9.0	319,415	45.2
West Bengal (1989)	529,945	3,614	147	49.56	0	0.0
National level	17,330,000	72,620	197	24.66	22,754,188	33.7

*years in brackets indicate when JFM was formally initiated in the states

**the potential area is considered based on the open forest area that is present in the state (i.e., having a canopy cover between 20 to 40%). This is arrived at by considering the area under open forest minus the area under JFM

(Source: Status of JFM from the respective state Forest Departments)

3.1.2 The number of JFMCs with MoUs signed and micro-plans prepared: To ensure a smooth working relationship between the Forest Department and the JFMCs and also to bring about a sense of empowerment and accountability, MoUs are signed between the Forest Department and the JFMCs, outlining the short- and long-term roles and responsibilities, the implementation of the work programme, the pattern of sharing of usufructs and conflict resolution. In Karnataka and West Bengal, only the JFMCs that have signed the MoU were included in the study. In Andhra Pradesh, Gujarat, Rajasthan and Tripura, where the signing of MoUs was not a criterion, the JFMCs with signed MoUs ranged from 0% in Gujarat to 100% in Andhra Pradesh (Table 3). No conclusion can be drawn for Andhra Pradesh and West Bengal, although in Karnataka, 72% of the JFMCs in the state have signed MoUs with the Forest Department.

The joint preparation of the micro-plans by the community and the Forest Department is essential so that the community can participate in the planning, planting, and protection in the JFM area. It is only in Karnataka that all the JFMCs have prepared micro-plans. In Andhra Pradesh, 98% of the VFCs have prepared micro-plans while in the other four states, less than 50% have

done so with the least in Gujarat (16%) followed by Tripura (26%) and West Bengal (30%).

Table 3: Progress of JFMC formation, MoU signing and micro-plan preparation

State	Sampled JFMCs	MoUs signed*	Micro-plans prepared*
Karnataka	495	495 (100%)	495 (100%)
West Bengal	200	200 (100%)	60 (30%)
Andhra Pradesh	167	167 (100%)	164 (98%)
Gujarat	206	0 (0%)	32 (16%)
Rajasthan	173	71 (41%)	84 (48%)
Tripura	80	45(56%)	16 (20%)
Total	1321	283 (45%)**	851 (64%)

*the number in parenthesis is the per cent of JFMCs that have signed MoUs/prepared micro-plans to the total sampled.

**in Karnataka and West Bengal, one of the criteria for sampling has been the signing of MoUs. Thus, only the other states are considered for the total.

3.2 Composition of the JFMCs

Gender representation: It is necessary for the village community, particularly the women and marginalized groups, to participate fully in JFM activities as they depend largely on the forests for their livelihood and subsistence. In the JFMCs surveyed, the proportion of women members ranged from 2–50% of the total JFMC members (Table 4). The women are represented in full strength in Andhra Pradesh, but this is not so in the other states. Their representation in Rajasthan was comparatively high due to the fact that the state Government Order emphasizes that 33% of the general body members have to be women (Table 4). Further, in 51% of the JFMCs in Rajasthan, women occupied at least one of the key management posts, mainly because it was mandated by the state Government Order. In Karnataka, women account for 25% of the membership of the JFMCs. In this state, once a man is a member, the wife automatically becomes a member; but the membership register does not register the wives' names, especially in the older JFMCs formed before the amendment to the Karnataka Government Order[2]. However, many of the JFMCs formed after the amendment also do not give equal representation to men and women, despite the Government Order in this regard. Women themselves are unaware of the provisions made to facilitate their participation, and thus are not primary members. Since there is

[2]This is according to the Karnataka Government Order amended in 1996, against which the study has been analysed. The latest Government Order states that all adult members can be members of JFMCs

no stipulation regarding representation of women in the state government orders of Gujarat and Tripura, their presence was very poor in these states. Although the West Bengal Government Order has the same resolution as Karnataka's with regard to membership norms, the head of the family, who happens to be male in most cases (98% men, 2% women) gets registered and the women are not registered as primary members (Table 4).

Table 4: The proportion of men and women as members to the total JFMC members and population

State	% to the total JFMC members		% to the total population	
	Men	Women	Men	Women
Andhra Pradesh	50	50	NA	NA
Gujarat	86	14	26%	4%
Karnataka	75	25	12%	6%
Rajasthan	61	39	7–38%	2–24%
Tripura	91	9	11%	2%
West Bengal**	98	2*	45–60%	40–55%

*where women are registered as the 'head of the family'

**registered as the head of the family and joint membership of men and women

(Note: ranges imply different forest divisions surveyed)

Population representation: In Andhra Pradesh, though the extent of the population represented is not known, in most villages, almost all the households are members. The unrepresented households either belong to a higher socio-economic stratum or consist of gainfully employed persons. In comparison to the population of the village, the percentage of men who were members of the JFMC was high in West Bengal, followed by Gujarat and Rajasthan (Table 4). In West Bengal, it is due to the sheer interest of the community that a very high proportion has enrolled as members. Only those who had migrated to the concerned villages after the MoU had been signed have not been included as members, though they too enjoy usufruct rights. In Gujarat, the membership is driven by the state resolution, wherein at least 60% of the village population has to be members for the formation and functioning of the JFMCs.

Overall, men are better represented than women in the JFMC structure. In Rajasthan, it was higher compared to other states due to the mandate of the state Government Order that specifies that at least 33% of the JFMC members have to be women. Thus, their representation is ensured at the time of the JFMC formation. In West Bengal, a higher percentage of women are members, because their husbands are members; but the membership register records only that only 2% of the JFMC members are women. In the states of

Tripura, Gujarat and Karnataka the women population represented as members of the JFMCs is less than 6% of the total population (Table 4). Besides the low female membership, the percentage of adults who are members of the JFMCs is low in most states, making JFM only a partially representative, male-dominated institution.

3.3 Protection of and Extraction from the JFM Forest Areas

Protection: In all the states, except Andhra Pradesh and Gujarat, the Forest Department plays an important role in all aspects of the protection of the JFM areas during initial years, be it plantations or regenerating natural forests. In Gujarat, the village community follows a roster system, whereby groups of villagers take turns to patrol the JFM areas. In Rajasthan, in addition to forest guards, group patrolling by the community is also practiced. Social fencing is prevalent mainly in south Rajasthan, which has a strong tradition of community forest management in the form of *kesar chanta*[3]. Physical barriers, such as cattle proof trenches, barbed wire fences and stone fences have been laid around plantations in most of the villages.

After the initial 3–5 years, in most states, social fencing has been the norm, with the community voluntarily subjecting itself to a management regime, and imposing restrictions on itself, in the interest of forest protection. But in Karnataka and Tripura, the Forest Department guards play a major role even after the initial years of protection. In Gujarat, watchmen paid by the community have replaced the earlier roster system as it was felt that intensive patrolling by the community was no longer required. In Rajasthan, group patrolling and rotational patrolling was practiced after the initial 3–5 years.

Naturally, regenerating forests are less protected by physical barriers, except in Karnataka and Rajasthan. Live fences such as *Euphorbia, Jatropa curcus* and *Prosopis juliflora* were also raised in Rajasthan. In West Bengal, physical barriers were not used at all and social fencing was practiced in the regenerating Sal forests during the initial as well as later years.

Grazing: In all the states during the initial 3–5 years, there is a strict ban on grazing in plantations, which also continued during later years in Andhra Pradesh. After the initial few years, grass from plantations was 'cut and carried' from plantations in Rajasthan; while in Gujarat, there is a complete ban on grazing in most JFMCs, and a seasonal ban in a few of them. In West Bengal access is given to all livestock, i.e., cattle, sheep and goat. In Karnataka, after the initial three years, access was given only to cattle in the

[3]In this method, the village community sprinkles saffron consecrated in a temple over the forest and take vows to protect and follow the management rules.

Western Ghats region, while in the drier zones access was open to all livestock.

In naturally-regenerating forests under JFM, the ban on grazing was not strictly enforced. It was 'open access' to all livestock in Rajasthan and in the Eastern Plains of Karnataka. In Karnataka, the restriction was confined only to the gap-planted area, while the rest of the JFM area was open access. In West Bengal, the ban was only for one year after the felling of trees. In Tripura, most of the JFMCs had no regulation on grazing and unregulated lopping was also practiced in 53% of the JFMCs. Thus, diverse grazing practices are adopted in different states, though most states regulated grazing in the initial years, and a few in the later years as well.

Fuel wood extraction: In all the states there is some regulation on the collection of fuel wood from plantations. Only the collection of dead wood and fallen twigs and branches is allowed in Andhra Pradesh, Karnataka, Rajasthan and West Bengal. In Gujarat, fuel wood is obtained during cut-back operations, thinning, pollarding and other silvicultural operations. Otherwise, only dead wood collection from plantation area is permitted and that too under the supervision of the management committee members. In Rajasthan, about 50% of the JFMCs with plantation areas collected dead wood, while in Tripura, 50% of the JFMCs collected fuel wood by cutting standing trees both in natural forests and plantations. In West Bengal, dry-leaf collection for fuel is practiced without restriction. There was no restriction on the collection of fuel wood from naturally-regenerating forests either.

The protection of forests and the regulation on grazing and extraction of fuel wood are critical for forest regeneration. The Forest Department played a key role in protection, at least in the initial years. Grazing is partially regulated, though the extraction of fuel wood is highly regulated in most states, indicating its importance. The community has successfully enforced the regulation on fuel wood collection, though their role in protection as such is still limited in most states.

3.4 Performance of the JFMCs

Conduct of the JFMC meetings: Conducting GBMs and MCMs (in most states, they are referred to as Executive Committee Meetings or ECMs; in Karnataka, they are called Management Committee Meetings or MCMs) periodically with the active participation of different stakeholders, particularly women, is an indicator of the performance of the JFMCs. In Andhra Pradesh and Rajasthan, two GBMs have to be conducted every year,

whereas it is only one in the other four states. According to the information compiled for 2001, in all the six states, about 66% of the JFMCs in the study area conduced GBMs of which 9% exceeded the stipulation, and 6% (in Rajasthan) conducted less than the stipulated two meetings, annually (Fig 1). Thirty-four per cent of the JFMCs did not conduct a single meeting during 2001 and only in West Bengal did all the JFMCs conduct the stipulated number of meetings, with about 38% exceeding the stipulation. In Andhra Pradesh, regular meetings were conducted till September 2000, after which there has been a decline. In Rajasthan and Gujarat, 75% of the JFMCs conducted regular meetings. In Karnataka, 61% and in Tripura, 33% of the JFMCs did not conduct meetings.

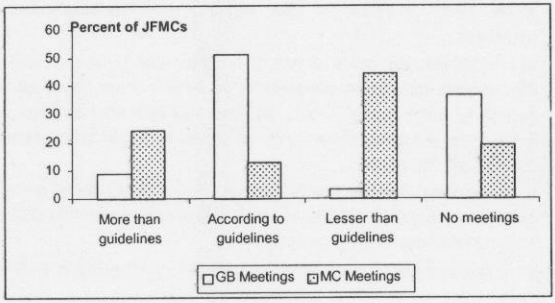

Fig 1: Conduct of GBMs and MCMs in the JFMCs during 2001

Compared to GBMs, MCMS have been conducted in more JFMCs, though at a lower frequency than that stipulated by the state Government Order in 44%, and as stipulated in 13% (Fig 1). About 19% of the JFMCs did not conduct MCMs, particularly in Tripura and Karnataka, accounting for almost 32–41% of the sampled JFMCs in both the states. About a quarter of the JFMCs exceeded the stipulation, largely in West Bengal (68% of JFMCs in the state) and to some extent in the Western Ghats region of Karnataka. The number of MCMs ranges from 12 per year in Andhra Pradesh, West Bengal and Gujarat, to 6 in Tripura and 4 in Karnataka.

The reasons for not conducting the meetings as mandated in the various states varied and some of them are as follows:

- In Karnataka, as the community and the Forest Department did not take the initiative to convene meetings in the Western Ghats region and in the Eastern Plains, the community was not aware of the need to conduct periodic meetings.

- In Tripura, meetings were not convened as the community opined that there were no issues to discuss; besides, hesitation among the community led to the lack of a quorum for conducting some of the meetings that were called.
- In Gujarat, due to large-scale migration of labour and involvement in alternative activities, there was a lack of quorum to conduct the meetings.

Gender and equity issues: The effective participation of women and marginalized groups in the JFMC activities is essential if their concerns are to be addressed. This is promoted through policy advocacy in some of the states.

- In Andhra Pradesh, at least one adult man and woman should join the JFMC and SC/STs of the village will automatically become members.
- In Karnataka, the issue of equity is addressed by the constitution of a 10-member executive committee, of which 6 are from marginalized groups (2 each from SC/ST, landless and artisans) and the remaining 4 are from the general category. Women's should be representation is 50% of all the classes.
- In Rajasthan, the minimum quorum for general body is 40% of the JFMC members and 33% of the women members should be present to promote community participation.
- In Tripura, 33% of the executive committee should be women.

All these policies can promote attendance, but the effective and voluntary participation of the community in the JFMC's activities is essential to realize the true spirit of joint management of forests. The EERN focused on the issues of gender and equity, to understand their attendance in meetings and their effective participation in the decision-making process.

- In Andhra Pradesh, the attendance of women and other marginalized groups was good in most of the JFMCs, except in a few where the landless and women were not very regular. However, the community depended on Forest Department/NGOs for decision-making, and women and the landless, in particular, played no role at all.
- In Gujarat, the attendance of marginalized groups, especially the tribals, was high in most of the JFMC meetings (90–95%), but the effective women's participation was recorded only in 2% of the JFMCs in the tribal region.
- In Karnataka, the participation of marginalized groups was recorded in about 30% of JFMCs, and their active participation in 20%. Women's attendance was recorded in 20% of the JFMCs, but their effective participation only in 7%.

- In Rajasthan, it is stipulated that for a GBM to take place, there should be a quorum of at least 40% of the members, but the average attendance in meetings was about 17.2%. Only 9.2% of the JFMCs conducted meetings with the requisite quorum. About 13.8% of the GBMs had the stipulated 33% of the women in attendance, while not a single woman attended in 24% of the JFMCs.
- In Tripura, women and marginalized groups were regular in attending GBMs in 60% of the JFMCs and MCMs 34%. On an average, effective participation was recorded in 30% of the JFMCs.
- In West Bengal, the marginalized groups constitute 50% of the executive committee on an average, while their effective participation is reported in 38% of the JFMCs. On the whole, the participation of the general category members was higher than the marginalized groups. In 7% of the JFMCs, women participated in GBMs, while in 16% they were executive committee members, but their effective participation was recorded only in 3% of the JFMCs.

The main reason for women's non-participation in meetings is their hesitation due to male domination in meetings and a lack of awareness about the programme. In West Bengal, as meetings were mostly held in beat offices, they were hesitant to attend. In Karnataka and West Bengal, women opined that their attendance and participation was not meaningful, as their suggestions were not valued and not even considered. In Gujarat, the frequent droughts, water scarcity and the resulting involvement in alternate income-generation activities have hindered women's participation.

Micro-plan preparation: In Andhra Pradesh and West Bengal, the community participation in the process of micro-plan preparation was minimal. In West Bengal, the micro-plans were mostly prepared in beat offices by the president and a few members, in a partially participatory manner. In Karnataka and Tripura, the involvement of women and marginalized groups was reported in 30% of the JFMCs, on an average. In Gujarat, the participation of marginalized groups was recorded in all divisions of the state, although the involvement of women was partial in a few forest divisions. In Rajasthan, only a few sections of the JFMC members were consulted while preparing the micro-plan.

The involvement of the communities, especially the marginalized sector and women, is essential to make JFM a truly participatory programme. Also, conducting meetings is essential for the communities to get together to discuss forest management issues. In the study area, in a third of the JFMCs, the GBMs and MCMs are not held at all or held much less frequently than stipulated. There are also JFMCs where regular meetings were held.

However, the participation of women and marginalized groups was low and their effective participation in GBMs and MCMs, even lower. Their participation in preparing the micro-plans was also low. The JFM authorities have to ensure that meetings are held according to the stipulated frequency and, more importantly, the active participation of all the stakeholders, particularly women.

4. THE IMPACT OF JFM

The impact of JFM on the vegetation status, the flow of forest products and the economic benefits are based on the community's perspective.

Vegetation change in the plantations: In all the states, there was a marked increase in the vegetation density and canopy cover due to the plantations. In Andhra Pradesh, in about 29% of the JFMCs, there was an increase in tree diversity. In Rajasthan, 40% of the JFMCs that were earlier degraded or barren, now have dense vegetation. In West Bengal, the density of *Acacia, Eucalyptus* and *Tectona sp.* has increased, but regeneration of native species, such as *Terminalia chebula, Buchnania lanzan, Terminalia bellerica, Gardenia latifolia, Semecarpus anacardium, Diospyros montana* and *Pterocarpus marsupium* have decreased in the plantation areas.

Vegetation in the naturally-regenerating forests: The impact of JFM on the regeneration of natural forests was not as pronounced in most of the states. In Karnataka, in about 50% of the JFMCs, there was discernible increase in canopy cover, density and species diversity. In Tripura, a decrease in density of some important species, such as *Dipterocarpus turbinatus, Schima wallichii* and Bamboo, was recorded in 25% of the JFMCs. In West Bengal, there has been an increase in tree population and species diversity in naturally-regenerating forest mainly due to the better management and the regeneration of Sal dominant forests. The other species that have increased in JFM areas are *Madhuca indica, Terminalia tomentosa, Lagerstroemia parviflora, Soymida febrifuga* and *Butea monosperma.* The main reasons attributed to the improvement of the vegetation status are the planting activities, intense protection, grazing regulations, decrease in illegal felling and encroachments.

The flow of forest products: The flow of products from the JFM area includes fuel wood, fodder and NTFPs. A slight increase in the availability of fuel-wood was observed in Rajasthan, in selected JFMCs of Tripura and in 20% of the JFMCs in Karnataka. West Bengal and Gujarat have reported an increase in the availability of forest products in all the JFMCs surveyed.

Due to closure of the JFM areas to avoid the excessive extraction of forest products, one of the major impacts would be on the time spent in collecting fuel wood. The communities reported to a decrease in time spent for gathering fuel wood in 50% of sampled JFMCs in Rajasthan; 59% in Karnataka and 100% in West Bengal implying a decline in drudgery for women in a significant number of villages. The decrease was due to the increased availability of fuel wood and the shift to alternative sources like biogas, crop residues and LPG. Further, improved cooking stoves and biogas plants are promoted as part of JFM programme in some states.

There was little or no regulation on the extraction of NTFPs in most JFMCs. Given below are the some of the impacts of JFM on the access to NTFPs and their availability:

- In Andhra Pradesh, 10 NTFPs are being collected from the JFM areas and in 44% of the JFMCs, NTFPs that were not collected during the pre-JFM period, are now being collected. Two species *Bixa orelina* (Jafra) and *Sterculia urens* (for gum collection) have been introduced in the JFM areas. Most of the NTFP species planted during the JFM programme have not yet reached the harvesting stage and thus, have not yet had any impact.
- In Gujarat, the community reported an increase in NTFP availability, although with no significant increase in NTFP processing.
- In Karnataka, of the sampled 495 JFMCs, 12% extracted NTFPs (8% from plantations and 4% from natural forests). However, only 4% of the JFMCs recorded an increase in NTFP flows post-JFM.
- In Tripura, there has been a shift from NTFP to timber. In the natural forests, the collection of species such as *Dipterocarpus turbinatus, Ficus hispida and Kydia calycina* has given way to timber-oriented species such as *Tectona grandis, Shorea robusta* and Bamboo. While in the plantations, the shift has been from *Cassia nodusa, Albizia procera* and Bamboo to *Artocarpus chaplasa, Kydia calycina* and *Holarrhena antidysenterica.*
- In West Bengal, in 66% of the JFMCs there was an increase in NTFP collection, while in the rest, due to the restrictions imposed on collection, the community reported a decrease or no significant change in the availability. There were fluctuating trends in collection of Sal seeds due to good and bad years, but there is a drastic decline in *kendu* leaf production.

Grass production: The protection practices adopted in the JFM areas have had a direct impact on the productivity of grass, which is an important forest product.

- In Andhra Pradesh, an increase in grass productivity in the post-JFM period was reported in 35% of the sampled JFMCs; while in the rest, the community did not perceive any change.
- In Gujarat, in 97% of the JFMCs, an increase in grass productivity was reported and the lopping of the lower branches of trees was also carried out to meet the fodder requirement.
- In Karnataka, in naturally-regenerating forests, an increase in productivity was observed in 35% of the JFMCs; while in the plantation areas, 60% of the JFMCs in the Western Ghats region observed a decrease in grass productivity and 42% of the JFMCs in the Eastern Plains observed an increase. About 50% of the JFMCs did not report any change in grass productivity in natural forests or plantations.
- In Rajasthan, an increase in grass productivity was reported in 60% of the JFMCs in the plantation areas, compared to 10% in naturally-regenerating forests, due to the intensive protection.
- In West Bengal, the sampled area is not suitable for grass and so it is not a major product.
- A mixed trend was reported in Tripura, where some of the JFMCs reported an increase in grass productivity, while others reported a decrease.

Benefit sharing: In Andhra Pradesh, the income derived at the household level from benefit sharing was substantial in 65% and low in 23% of the JFMCs. Thus, economic benefits have been a motivating factor in Andhra Pradesh. In Gujarat, in the absence of any MoUs, none of the JFMCs have received any benefit share in the sampled JFMCs and in the absence of an externally-aided project, direct monetary benefits to the JFMCs was also limited. In Karnataka, the benefits accruing from forest protection were shared in 32 (6.4%) of the 495 JFMCs sampled. The maximum amounts received by the JFMCs ranged between 10,000 to 20,000 rupees, which was distributed among the households in three JFMCs and reinvested in rural development programmes by the rest. In West Bengal, nearly a third of the JFMCs have earned income from tree harvesting, providing a great incentive for the communities to sustain JFM. In 92 JFMCs felling has been done, but due to the delay in marketing the timber, the JFMCs have not received their share. The average annual income per JFMC in 61 JFMCs was Rs. 171,506, which worked out to Rs 100 to 8,300 per household. In Tripura, benefit sharing was not recorded in most of the divisions because JFM has been revived recently and is yet to yield monetary benefits.

Employment generation: In Gujarat, the entry-point activities and gap-planting activities have generated marginal employment, but the communities were not involved in forestry operations and silvicultural interventions. Employment-generation activities were implemented in a few villages, basically through NGOs and government agencies. In Karnataka, in 72% of the JFMCs, the Forest Department utilized local labour for plantation activities and in 16% of the JFMCs, other employment-generation activities were implemented. All the JFMCs in West Bengal reported an increase in income-generation activities.

Social impact: JFM has fostered a better relationship between the community and the Forest Department compared to pre-JFM times in almost all the states. About 95% of the JFMCs in the study area reported an improved relationship with the Forest Department after the formation of the JFMCs. The other significant impact is enhancement of leadership qualities in the community in the states of West Bengal, Gujarat, Karnataka and Rajasthan, and to a lower extent in Tripura. Women's empowerment was also perceived largely in the tribal-dominated areas, although not to the desirable extent at the state level. In Rajasthan, the relationship with the local Panchayat has also improved post-JFM in most JFMCs, except in a few where it has led to conflict with regard to benefit sharing and management. In Tripura, the overall impact of JFM has been less pronounced compared to other states. In Karnataka, JFM has also been successful in evicting encroachers on forest land to a large extent, especially in the Western Ghats region.

In West Bengal and Gujarat, the community reported an increase in the water table in the wells adjacent to the natural forests. In Gujarat (27%), they also perceived an increase in the moisture-retention capacity of the forest soil, which was attributed to developed root systems, canopy cover and reduced run-off.

5. THE OVERALL PERFORMANCE OF JFMCS FROM THE COMMUNITY PERSPECTIVE

It is difficult to categorize JFM as a success or a failure overall, due to various factors such as:

- varying perspectives of different stakeholders,
- diverse indicators such as vegetation regeneration, economic, institutional and social criteria, and the need to rank them,
- varying lengths of time under JFM—there is some impact in the older JFMCs, while the new JFMCs are yet to perceive any change.

The assessment presented here is based on the perception of the JFMC presidents, management committee members and in some cases, general body members. In the six states surveyed, 29% of the JFMCs responded that the

overall performance was good, 49% rated it as moderate, while the remaining 22% could not definitely say or did not perceive any change compared to the pre-JFM times (Fig 2).

In Andhra Pradesh and West Bengal, in about 45% of the JFMCs, the president and management committee members responded that the JFMCs were performing very well. In Gujarat and Rajasthan, the impact was moderate in most JFMCs. In Karnataka, nearly one-third of the JFMCs were grouped as good and moderately performing and another one-third could not perceive any change. In Tripura, only 6% of the JFMCs reported a positive impact; the majority could not say with certainty whether JFM had any impact on their village or not.

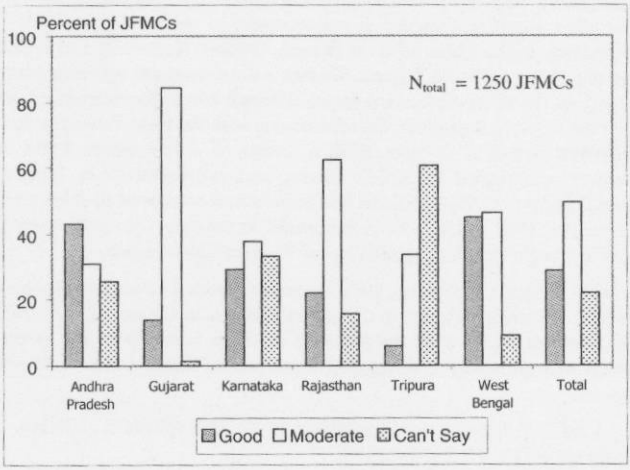

Fig 2: Performance of JFM in the states and at the national level as perceived by the community

Based on a set of selected criteria and indicators for JFM, the performance of the JFMCs in Karnataka was analyzed in a sub-sample of 256 JFMCs using the Principal Component Analysis (PCA) (Chapter 13). Based on this analysis, it was observed that 34% of the JFMCs are performing well, 37% are average and 29% are poor. In percentage terms, the response of the community or the president of the JFMCs with regard to the performance of the JFMCs matched the values obtained through PCA in about 76% of the

JFMCs (Chapter 13). Such criteria and indicator tools have to be further developed to analyze the performance of the JFMCs at the national level.

6. DISCUSSION

There are 5,87,000 villages in India, of which 1,70,000 are located in or around the forests. The Tenth Five-Year Plan proposes to cover all these forest-fringe villages under JFM through Forest Development Agencies (FDAs). At the end of the Tenth Five-Year Plan in 2007, JFM is expected to cover 32 million ha of forest area, which will be managed by 2,00,000 JFMCs. Thus, large tracts of degraded forest area will be regenerated and protected through the participation of the village communities. As the massive programme is now underway, it is essential to draw lessons from the implementation of the programme since 1990. Some of the lessons learned and their implications for effective, sustainable and participatory forestry, based on the EERN studies in six states, are presented here.

The first step in JFM implementation is the formation of the JFMC, which is the most critical institution for JFM's success, enlisting the membership of all the eligible sections (men and women), electing the executive committee, signing the MoUs, preparing the micro-plans and implementing the activities contained in the micro-plan.

Signing of MoUs: To successfully implement the JFM programme, a MoU must be drawn up between the JFMC and the Forest Department. This will empower the concerned communities and enable them to effectively protect and regenerate forest resources. As seen from the studies of the sampled JFMCs, 40–55% of the JFMCs have not signed MoUs and prepared micro-plans in Rajasthan and Tripura. In Gujarat, none of the JFMCs have signed MoUs. It is essential to formally recognise the efforts of the community in the protection and management of the JFM area, so that they can derive benefits for their efforts. The signing of a MoU should be made mandatory for all JFMCs in the initial weeks of its formation as it assures an institutional and, to some extent, a legal guarantee to the local community.

Micro-plan preparation: Preparing micro-plans is the core of the JFM exercise, as this document reflects the resources available and the demands, besides prescribing appropriate silvicultural practices to meet the multiple demands, while protecting the forest. The effective participation of all sections of the community, i.e., the tribals, women, landless and artisans, is necessary so that their concerns are heard and needs are addressed during the micro-planning exercise. According to the studies, 65% of the JFMCs have

prepared micro-plans, but the extent of the community's participation, especially women and marginalized groups was not satisfactory.

It is also essential to incorporate traditional practices and the knowledge of the community in micro-plans, rather than focusing only on conventional silvicultural practices. The Forest Department should ensure that it is a realistic plan, balancing the needs of the community and resources available. Care should be taken to address all the issues incorporated in the micro-plans to sustain the confidence and interest of the community in the JFM programme. Further, once the stakeholders approve the micro-plan, all the activities mentioned must be implemented.

Equity in participation: In the JFM context, this refers to the participation of all stakeholders/users, with an emphasis on landless families, marginal and small farmers, scheduled castes, tribal groups and women. Their effective participation, not mere attendance in numbers is essential, as they are dependant on common property resources for their livelihoods, particularly for fuel supplies and fodder. Further, they have a higher personal stake in the regeneration of degraded forests under the JFM programme. The forest products from common lands are an important source of employment and income for the rural poor, especially where other opportunities are limited, and the closure of the JFM forest areas, especially during the initial years, is likely to have a direct adverse impact on them.

Although the state resolutions make women's involvement mandatory, especially in Gujarat, Rajasthan and Karnataka, women's participation was limited to 2–7% of the population across all states, with or without supportive resolutions. Even though the JFM guidelines specify a few institutional mechanisms for ensuring the enrollment and active participation of women, field-level, result-oriented strategies are essential at the national, state and even project level. For example, in Karnataka and West Bengal, a woman automatically becomes a member of the JFMC by virtue of her husband being member, but even then the husband is considered the primary member. By virtue of their being the dominant population in the forest fringe areas, the marginalized groups have become members of the JFMCs, but their active participation is limited and they depend on the Forest Department for many of the decisions to be taken.

Thus, the reservations stipulated in the state Government Order act as a compulsion, which could only be the initiation of the process to enable women to participate. But what is equally important is to create conditions at the village level to facilitate the participation of women. In most cultures, especially in the rural communities, women have multiple responsibilities and

tasks. Thus, they have limitations especially when it comes to dedicating time for community activities. Men dominate the decision-making process, and women are usually excluded, especially on matters relating to common property resources. But, men and women are placed in relatively different situations in the village scenario, and they have different perceptions, priorities and goals, besides which development interventions affect them differently (Sarin *et al.*, 1996). Mechanisms need to be developed to gender-sensitize the village men and to induce them to facilitate the participation of women in the decision-making process where they have an equal or higher stake.

However, as is evident, the impact of JFM in this context has not been wholly negative, and in certain states and localities examples can be found where women's participation has improved and is effective. There are women-managed JFMCs, especially in Rajasthan, West Bengal and Karnataka where they are active and not merely there by proxy. These positive beginnings towards a more equitable conservation and development process need to be built upon so that JFM could become a vehicle through which the ills of gender inequity in society can be addressed.

Regeneration practices: Afforestation has been the major approach for improving vegetation cover under JFM. This has contributed to a significant increase in tree density and canopy cover. JFM should lay emphasis on the regeneration and management of natural forests rather than the plantation approach, especially in areas where rootstock still exists. Plantations can be taken up on totally degraded areas to conserve soil and moisture, and in the long-term, to promote the regeneration of native species.

Protection: Due to the high cost of establishing plantations, the community and Forest Department take extra care to protect and manage them, compared to naturally-regenerating forests, which could lead to a shift in pressure to other non-JFM areas. In most of the JFMCs, social fencing is being practiced to protect naturally-regenerating forests and plantations that are more than 3–5 years old, though in Karnataka and Tripura the Forest Department still played a major role. In Andhra Pradesh and Gujarat, the community has been involved in protection from the time of initiation. Effective mechanisms are needed to ensure community participation in protection at all stages with Forest Department playing a supportive role. The cost of fencing can be diverted for village developmental activities.

The flow of benefits: The benefits derived from the JFM areas are fuel wood, fodder, NTFPs and financial returns through benefit sharing from timber harvesting. The impact of JFM on grass productivity has been varied. For

example, in Karnataka, in the Western Ghats region, there has been a decrease in grass productivity due to the canopy closure in plantations. Grass from forests is an important product of JFM in states such as Gujarat and Rajasthan that have a large cattle population, and any reduction would affect the livelihoods of the poor. Thus, in plantations as well as naturally-regenerating forests, the silvicultural practices adopted should promote the productivity of grass.

Fuel wood collection has increased to a certain extent in the JFM area, mainly due to cut-back and thinning operations, and the collection of fallen twigs, branches and dead wood in the plantation area. The time spent on fuel wood collection has decreased considerably due to its increased availability and the shift to alternative fuel sources, thus reducing some of the drudgery for women.

Benefit sharing: Except in Andhra Pradesh and West Bengal, benefit sharing has not taken place on a significant scale mainly because of the lack of MoUs in Gujarat, and young plantations or regenerating stands under the JFM areas in Tripura and Karnataka.

Forest management practices: Sustaining JFM and participatory forest management will be facilitated by the periodical flow of economic benefits. This cannot be achieved in mere timber-oriented forestry, where financial benefits accrue only on maturity of the trees. To promote the periodic flow of economic benefits, particularly to the forest-dependent communities, a biodiversity-rich, NTFP-based forestry is necessary, wherever the edaphic factors and soil conditions are conducive. Further, alternate density, thinning, harvesting and other practices may be necessary to ensure the sustained periodic flow of benefits.

The overall impact of JFM: From the community's perspective, the overall impact of JFM has been good in 29% of the JFMCs and moderate in 49%. In 22% of the JFMCs, no change was discernible. The overall impact of JFM is significant in Andhra Pradesh and West Bengal, followed by Karnataka, especially in the Western Ghats region. There is a need to enhance the performance of JFM in all the states. Timber and NTFP flow or monetary gains can also be an incentive for the community to participate in JFM.

7. JFM ISSUES TO BE ADDRESSED

National policies and implementation gap: The national-level policies have been progressive and pro-active to empower and facilitate the village community to participate in the protection and management of JFM as well as

to promote equity. But these policies have not been incorporated in some of the states' Government Orders. And even when incorporated, they have remained as policies without being translated into the ground realities. Thus, it is essential to ensure that field-level JFM activities keep pace with progressive national policies.

Economic viability: Economic viability, which is based on financial principles, is not adequately addressed by JFM. Research on the economics of JFM in different forest types and socio-economic situations needs to be undertaken so that guidelines could be drawn up for cost-effective forest management practices and pointers could be provided regarding the economic incentives needed to sustain community participation. Large investments have been made in JFM in India often by obtaining loans from external agencies. The states' JFM programmes are directly linked to the dedicated funding available. Thus, it is necessary to adopt a demonstrably cost-effective approach to JFM.

Panchayat Raj institutions and JFM: The influence of the Panchayat Raj system on the management and functioning of the JFMCs needs to be understood. The linkage with the Panchayat Raj has had a positive impact in some of the JFMCs in Rajasthan, and in a few, it has led to problems. Currently there are no studies on the impact of the Panchayat involvement on JFM. There is a need to commission studies on this aspect, as many village communities want to foster links with the Panchayat.

Monitoring and evaluation: It is important to design a national-level Monitoring and Evaluation (M&E) strategy with common methodologies, criteria and indicators to obtain comparable results about the functioning of the JFMCs, the participation of different stakeholders, its impact on biodiversity and regeneration, the economic viability of JFM and other issues of national relevance. There is a need to formulate a national JFM monitoring strategy, to generate scientifically valid information to assist policy formulation, development of institutions, and cost-effective forest management and silvicultural practices. There is also a need to involve the local communities and devise and implement a 'Participatory Monitoring' strategy.

A review of monitoring and evaluation studies conducted (Chapter 2) showed that most of the monitoring and evaluation studies in different states have been at different periods, at different scales (based on small samples), by different agencies with varying focus and not based on scientific methods. The findings are not comparable, and no scientifically-valid, national level lessons or conclusions or recommendations can be drawn from them.

Project versus programmatic approach: Currently, JFM is being implemented as a target-oriented, often externally-funded, project. At the end of the project period, the JFM activities decline. The Planning Commission has given a broad direction to move towards a programmatic approach. However, the state governments have yet to adopt JFM as the main approach to forest conservation and development and provide the necessary funding and policy support. A strategy for the adoption of such an approach at the state level is necessary.

Sustaining JFM: JFM has been implemented on a large scale in India and the Planning Commission has provided broad policy guidelines in support of JFM. However, to sustain JFM and to make it an effective mechanism for participatory approach to forest conservation and development, the current policy, institutional, technical input and financial support is inadequate. To sustain JFM, it is necessary to address the following issues based on the experience gained so far: the adequate empowerment of the community, financial transparency, legal backing to the JFMCs, silvicultural and forest management practices compatible to participatory forestry, capacity building among women and the landless and financial incentives to the communities. The options to sustain JFM are discussed in Chapter 14.

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