

Are incentives to community participation in Joint Forest Planning and Management in Karnataka sufficient for their involvement in forest protection?

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1. Introduction

People have always participated in forest management. The tradition of regarding forests near human habitation as a common resource, and nurturing them has been noted since historical times. Lands close to the settlements were enough to satisfy the needs of the people, therefore forests remote from habitation generally were never over-exploited and every village and hamlet, where subsistence agriculture was practiced, ensured optimum utilization of forest resources that did not exceed the carrying capacity of the forest. The sanctity attached to forests is representative of the importance the people earlier placed in the forests. One such example is the Sacred grove where, harvest and disturbances of any kind were or in some places are still prohibited. These forest patches represent primary forests and are of high conservation value (Malhotra et.al, 2001).

The capitalist British empire stabilized and spread its influence on colonies by exploitation of virgin forests for teak, spices and rubber based on the justification that the natives were quite unable to manage their own forests without British help. The process of colonization attached not only a commercial value to timber but also unscrupulously exploited the forest resources. The alienation of people from their forests had begun.

The forest people now felled forests where their gods resided, to guarantee continuous supply of timber to Her Majesty's spreading empire. The large tracts of village lands, forests and common lands that were left untouched around habitations, degraded due to the lack of institutional arrangements for regulation and management in the absence of the time tested practices. To further aggravate the degradation people progressively lost touch with ancient practices that ensured the sustainable usage of forests. The loss of native knowledge on forest management had been found wanting!

The Forest department under the newly formed Government of Independent India severely restricted the people's rights to collect timber and NTFPs from the 'state owned forests'. The numerous (forgotten) people's resistances to regain their forest rights gained voice in the Chipko movement. A few cases of success in peoples management of forests together with the Forest department and the realization of the fact that they (Forest Department) could not manage forests in seclusion and arrest encroachments culminated in the decision that sought to experiment the Joint Forest Management.

1.1 Evolution of Joint Forest Planning and Management in Karnataka

The First forest Act of 1865, based on a Resolution of Forest Policy by German agriculturist Dr.Voelcker maintained that it would be necessary to restrict the access of rural communities to Protected and (especially) Reserved Forests, to better guard against soil erosion and a possible threat to agricultural production (Jewitt.2001).

The Forest Policy, 1952, was Independent India's first Forest policy which stated among other things, that a third of the land area should be brought under Forest cover. The policy aimed at massive afforestation activities primarily to meet the national needs in the defense and industrial sector and to generate revenue.

The National Commission on Agriculture, 1976 emphasized the production of industrial wood from forests. The NCA recommended that Forest Corporations be created to attract institutional finance. Forestry activities on poor sites was decried and recommended the promotion of social forestry plantations on non-forest lands to reduce the pressure on natural forests and to meet the local needs for forest produce. A World Bank-aided project was taken up to promote Social Forestry activities in Karnataka. Though the project successfully created plantation assets with

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high technical input, concrete strategies to promote people's institutions for planning, implementation and management of social forests were lacking. The assets created under social forestry could not be sustained due to the inadequacy of mechanisms for sharing not only the responsibilities but also the benefits.

The Forest Conservation Act of 1980 was passed in order to reduce the indiscriminate diversion of Forestland for non-forestry purposes and helped regulate and control land use changes. Mandatory rules for compensatory plantations in case of forest diversion and requirement of Central government approval for such activities were the highlights of this act.

The Ministry of Environment and Forests, Government of India based on Forest Policy of 1988 issued a circular in 1990 outlining the concept of Joint Forest Management and the need for its speedy implementation throughout the country. A significant departure from the previous policies by envisaging people's participation in management of forests was observed. The Policy also sought to create a massive people's movement with involvement of women for achieving the objectives of maintaining environmental stability and increasing tree cover and to minimize the pressure on existing forests.

On the basis of this circular and the 1988 National Forest Policy, the Government of Karnataka launched a programme called Joint Forest Planning and Management (JFPM) by issuing a Government Order on April 12, 1993 to enable the formation of Village Forest Committees (VFCs) in partnership with the Karnataka Forest Department. The provisions of the Government Order were vigorously pursued while implementing the Department of International Development of United Kingdom (DFID) assisted Western Ghats Forestry Project (WGFP). Currently about 3799 VFCs are managing 3.44 lakhs ha of JFM area largely initiated under two major external funded projects - Western Ghats Forestry and Environment Project (WGFEF) funded by Department for International Development (DFID) for the period of 1992-93 to 1999-2000 and a Japan Bank for International Cooperation (JBIC) assisted Forestry and Environment Project being implemented for Eastern Plains of Karnataka (FEPEP) from 1996- 2005 (Sudha and Ravindrath, 2004). The first JFPM order was issued in 1993, which was amended in 1996. A new order was issued in 2002, which strengthened the programme in the state. Thus the JFPM policies of the state are continuously being evolved to provide better incentives to the community to participate in the programme.

Table 1: Extent of JFPM area in the Eastern Plains region

No	Forest Division	No of VFCs	No of VFC members	Extent of forest area coming under VFCs jurisdiction	Extent of older plantations before formation of VFC	Extent of plantations raised under JBIC
1	Bangalore	816	79270	56612	13869	18142
2	Belgaum	419	21775	90172	6110	7823
3	Bellary	502	56427	53113	11766	20583
4	Chamarajanagar	75	9869	6955	449	2140
5	Chickmagalur	34	1651	1594	894	338
6	Dharwad	268	40357	42157	5277	8141
7	Gulbarga	282	27111	13871	5915	8058
8	Mysore	265	27898	9093	6421	2629
9	Hassan	438	33578	38523	36241	15045
10	Shimoga	62	5604	11899	2287	1334
	Total	3161	303540	323989	89229	84233

1.2 Incentives for community participation

Policies in JFPM are being strengthened to promote community participation in development and management of forestlands. The key question that can be raised is if these policies are providing enough incentives that promote community participation?

In this paper an attempt is being made to understand the JFPM programme and policies that provide incentives by a) social b) economic and c) environmental incentives to the village communities to participate and sustain the

programme.

The social incentive to the village community is to provide the platform for them to communicate and interact (among themselves and with the Forest department) for the betterment of the village and their individual well-being. Financial incentives at regular intervals along with hope of long-term benefits, sustain the interest of the communities in JFPM. Intangible impacts of JFPM on water table, soil conditions, air quality, forest cover, etc produce visible results of community efforts thus promoting further, the cause of environmental protection. Does the JFPM provide for these incentives? If so does the JFPM policy give provision for such broad based incentives? The following sections describe the policies that have provided the incentives to the community and the community response to the impact of JFPM to sustain their interest.

2. Methodology

A study was conducted to understand the impact of JFPM on the village community as perceived by them. Group discussions with all the stakeholders were conducted in 226 and 269 villages of the Western Ghats and Eastern Plains region respectively. The study was based on field studies conducted in four forest divisions in the Western Ghats and six forest divisions of the Eastern Plains.

3. Results

3.1. Policies promoting community participation

To promote community participation, JFPM seeks to create a semi-autonomous democratic committee known as the Village Forest Committee (VFC). According to the 2002 JFPM guidelines, the VFCs can be constituted for a part of a village, a village or group of villages. In areas that are predominantly inhabited by tribals, JFPM can be practiced in all the forests irrespective of crown density, compared to non-tribal areas where it is restricted to areas below 25% crown cover. All the adults in the village interested in conservation, development and management of forests are eligible to become members of the VFC and every member is entitled to get equal share of produce/proceeds. The VFC members elect a Management committee constituting 10 elected members of whom 2 each are SC/ST members, landless labourers and artisans and 4 are general body members. Of these 10 members, half of them are women in each of the category.

The village forest committee thus promotes community participation in 3 ways:

1. By its democratic basis, every individual member of a village has a right towards forest management and the rules that govern the functioning of VFC help provide common platform to address individual issues. Thus, equality in membership irrespective of caste, creed and sex is established. The management committee (elected body) constituting 14 members has to meet once every 3 months to manage the affairs of the VFC and the general body (of all members) of the VFC meets annually to discuss and decide issues of JFPM
2. The VFCs thus formed requires that it is legally recognized and does not remain a non-statutory body. To provide legal backup, the VFC's can be registered as Associations under the Karnataka Forest Act.
3. Women members are to be represented equally as the men in the management committee. This provides for enough teeth to address gender and equity issues.

The VFC is also involved in preparation of micro plan and assist the Forest Department in implementation of the plan and take the responsibility for protecting and managing the plantation assets after three years of formation. The main role of the Forest Department is to enhance the skill and capacity of VFC members to enable them to take up planting works at the formation stage itself.

3.2 Rural development through entry point activity

One of the main activities of the JFPM programme especially in the Eastern Plains is the Entry Point Activities (EPA) conducted by the Karnataka Forest Department. Involvement of local communities in forestry programmes is a desirable objective, though difficult to achieve because forest activities have long gestation periods and are, therefore,

accorded low priority by the local community. Forestry programmes are usually considered to be ‘government’ programmes; where implementation and protection is seen as the responsibility of the forest department. Most of the plantation programmes entail closure of the area, which increases hardship to the local people. Therefore co-operation of all stakeholders is necessary for successful protection, management and benefit sharing of plantations.

The EPA helps overcome the community barrier and breaks the ice between the Forest department and the community. The main objective of entry point activities is to elicit the willing participation of the communities in JFPM and win the trust and confidence of the people. The main objectives of EPA are to mobilise all stakeholders of the community and compensate the community for the loss due to closure of forest areas, especially those areas where traditional rights to forest produce is in vogue. The community collectively identify EPA that may include creation of community assets to be maintained by them. The EPA are carried out through the Village Development Fund that provides a formal financial basis for initiating and maintaining developmental activities as may be decided by the community as a whole.

Keeping in view the crucial motivational role of entry point activities in the afforestation projects, Rs. 35,000 per VFC was allocated under the Eastern Plains project. Under the project, EPA has been implemented in 2029 VFCs (Table 2) accounting for 65% of the VFCs formed in the project area. Maximum VFCs with EPA was in Bangalore, Gulburga and Chickmagalore forest circle. Belgaum and Shimoga has least number of VFCs with EPA activities. The EPA has promoted income generation activities such as pisciculture, training for tailoring to women self-help groups, NTFP processing, etc. The JFPM programme has provided the impetus for the community to interact and discuss the issues of priority and concerns to the village.

Table 2: Entry point Activities taken up under the Eastern Plains afforestation project

Forest Circle	Number of VFCs	No. of VFCs with Entry Point Activities	Percentage of VFCs with Entry Point Activities
Bangalore	735	654	89
Belgaum	441	107	24
Bellary	505	383	76
Chickmagalore	37	31	84
Dharwad	265	162	61
Gulburga	283	240	85
Mysore	265	169	64
Shimoga	58	16	28
Total	3100	2029	65

3.3 Community organization

The impact of JFPM is also evident in the enhancement of community organization including women empowerment and leadership development. The communities perceive an improvement especially in leadership development, better community organization and communication due to JFPM. Empowerment of women was perceived especially in the Eastern Plains due to the Self Help Groups formed under the Stree Shakthi programme. These have also had a positive impact on their involvement in VFC activities.

Protection practices adopted in the JFPM areas have had a direct impact on productivity of grass in the Eastern Plains, which is an important forest product. Most of the VFCs reported an increase in grass productivity in the JFPM area, though there was a decline in the Western Ghats area due to closure of tree canopy and the dominance of Acacia plantations. Illegal extraction of timber and fuelwood has considerably reduced due to protection measures adopted by the community in many of the VFCs in the Western Ghats region (Ravindranath and Sudha, 2004). It has also been successful in evicting encroachers on forestland to a large extent, especially in the Western Ghats region.

3.4 Relationship with the Forest Department

Over the years the village communities have always viewed the Forest Department as policing the forests to deny them collection of subsistence needs. The Forest Department had also viewed all sections of the village

communities as destroyers of the forests. This new faith in each other and protection of the forests hand in hand is the beginning of a social dimension in forest management. Implementation of further forest management programmes will be easier due to the well-established relationship.

Involvement of community in forestry activities and awareness about forest protection has increased due to JFPM. Especially in the Western Ghats region, the most perceived impact of JFPM as quoted by them is increased involvement by them in forestry activities. There has been a decrease in illegal cutting of trees and encroachment of forestland due to protection effects of the community. Thus social impact has been the major incentive in the Western Ghats region for the community.

JFPM has fostered a better relationship between the community and the Forest Department compared to pre-JFPM times. In the Western Ghats region, 91% of the VFCs and in the Eastern Plains, 94% of the VFCs sampled, reported an improved relationship (Fig.1)

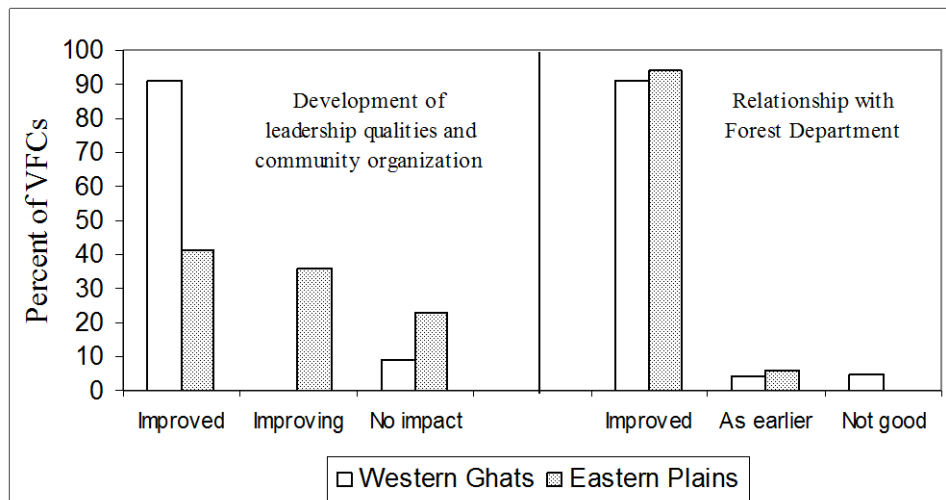


Fig 1: Major social impact of JFPM as perceived by the community in Karnataka

Overall, the social impact of JPFM has been noteworthy in the Western Ghats region, probably due to the longer duration of the project. The major impact has been with regard to better involvement of the community in forestry activities thus reducing the incidence of illicit cutting, smuggling and encroachment. Thus, overall, 44% of the VFCs in Western Ghats region perceived social impact due to JFPM (Table 3). In the Eastern Plains, the social impact has not been pronounced where only 15% of the VFC's perceive a social impact due to JFPM.

3.5 Financial incentives

The major financial incentives from JFPM are through benefit sharing process between the Forest Department and the VFC from the sale of timber and through forest produces such as fodder, fuelwood and NTFPs such as fruits, seeds, flowers, etc. from the JFPM area.

3.5.1 Benefit sharing from JFPM area

To enhance the income of VFCs, the 2002 Government of Karnataka order specifies a share of the benefits from the JFPM area to the VFC. In the plantations raised after the formation of VFC, 90% of the share from NTFPs will be provided to the VFC. From timber plantations, 75% share from the harvest will be provided to the VFC. To provide further financial benefits to the community, the Forest Department has included plantations that were established before formation of the VFC as JFPM area and the VFC members are eligible to a share of the benefits accrued from this area. The proceeds from natural trees in degraded forests, and older plantations raised before formation of VFC will be shared equally between the VFC and the Government. To enhance community

participation and support, it is proposed to even bring valuable species like sandal, rose, which grow naturally in JFM areas, for benefit sharing and proceeds are to be shared between Government and the VFC equally.

Table 3: Community response to impact of JFPM

Impact of JFPM	Percent of VFCs	
	Western Ghats	Eastern Plains
Social Impact	44	15
Involvement of village communities in forestry	11	-
Illegal cutting and smuggling decreased	11	-
Decrease of encroachment	7	-
Increase in unity and cooperation among community	6	11
Rural development	6	4
Better relationship with the Forest Department	3	-
Economic impact	13	50
Increased availability of fuelwood and leaves	12	-
Increase in grass production	-	24
Economic benefits ¹	1	26
Environmental impact	6	16
Greening of area	4	9
Improvement for posterity	1	4
Water table increase, improvement in soil conditions	1	3
No impact*	37	19
Total	100	100

1 – includes income and employment generation

* No discernable impact or the community could not perceive any impact

3.5.2 Flow of products

The flow of products from the JFPM area includes fuelwood, fodder and NTFPs. The VFC members are entitled to lops and tops, prunings, grasses, leaves, twigs and NTFPs for *bona fide* use, free of cost from the JFPM areas on fair and equitable basis essentially to meet the needs of the local population. Prior to disposal of fruits, firewood, poles, timber and final harvest, the requirements of the local villagers is treated as a priority and the surplus, is disposed off by the VFC through open public auction.

According to the study, increase in availability of fuelwood was observed in large number of VFCs especially in the Western Ghats region and in the Eastern Plains with older plantations. Increase in grass productivity in the JFPM area has been a major incentive in the Eastern Plains, while in the Western Ghats there has been a decrease in grass productivity due to closure of canopy. The increase in the Eastern Plains has been due to closure of the plantation area from grazing and protection from fire incidence. In fact in the Eastern Plains, the major impact of JFPM has been an increase in grass productivity (24% VFCs). (Fig 2)

In 72% of the VFCs, the Forest Department utilized local labour for plantation activities and in 16% of the VFCs (Fig.2), other employment generation activities were implemented. Under the FEPEP, EPA has promoted income generation activities such as pisciculture, tailoring, NTFP processing, that have provided economic benefits to the community. The major impact of JFPM in both project areas has been the economic benefit (Fig 3) through the wage labour component whereas Eastern plains the benefits by EPA was also perceived.

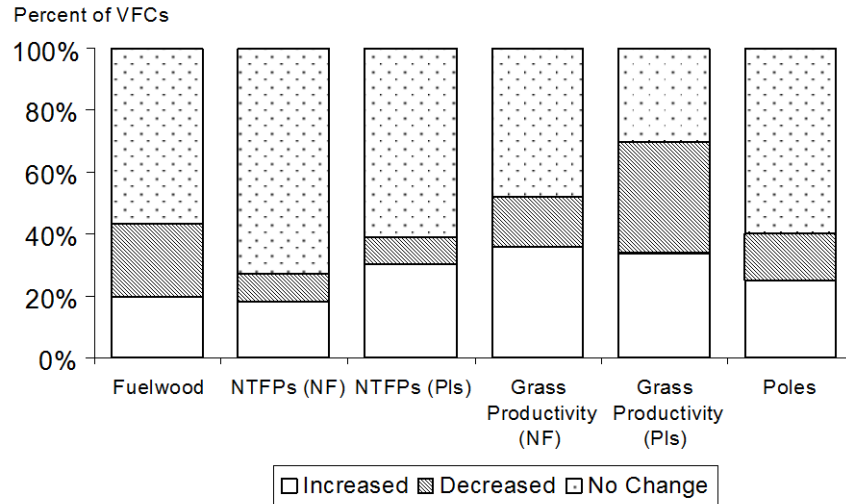


Fig 2: Impact on flow of forest products from plantations (PIs) and natural forests (NF) under JFPM, as perceived by the local community in Karnataka

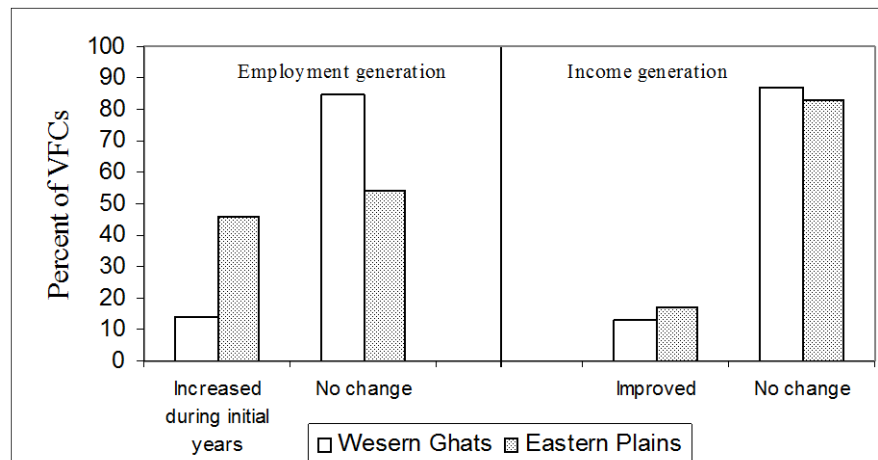


Fig 3: Major economic impact of JFPM as perceived by the community in Karnataka

3.5.3 Financial sustainability

To ensure sustained flow of financial benefits to the community, the 2002 JFPM order specifies that out of the benefits accruing to the VFC, at least 50% will go to the Village Forest Development Fund (VFDF). The money has to be used for expenditure on all forestry related activities defined in the microplan and the MoU. Expenditure is mainly towards promotion of tree growth in the JFPM areas, nursery raising, afforestation, forest protection works, expenditure incidental to harvest forest produce and expenditure towards promotion of JFPM in particular and forestry in general.

The balance 50% may either be equitably shared by the members of the VFC as dividends or be deposited in a Village Development Fund (VDF) for financing developmental works in the village as approved by the VFC. The VDF can be used by the VFC for developmental activities other than forestry. While spending the VDF, the VFC

shall decide the development needs of the village and execute the works under the supervision of the concerned Gram Panchayats as these institutions have the experience and functionaries for undertaking village development works.

Financial incentives to the community: In the Western Ghats and the Eastern Plains, Karnataka, plantations raised various programmes like social forestry and also in degraded forests have been included as JFPM area from which the VFC receives 50% of the income from timber sale proceeds. In 122 VFC's in Karnataka, benefit sharing has taken place.

In the Western Ghats region 27 VFCs have shared benefits and the total revenue generated from JFPM area is Rs.23,64,880. The total revenue received by the VFCs is Rs. 11,88,843 (50% from timber sale and 90% of NTFPs) of which from timber it is 98.8% and from NTFPs it is 1.2%. The average revenue per VFC is about Rs. 44,031. (Table 4)

In the Eastern Plains, harvest of timber and revenue from NTFPs occurred in 95 VFCs amounting to revenue of Rs. 88,35,331. The average financial benefit that has accrued to the VFCs is Rs. 48,41,881 (50% from timber sale and 90% of NTFPs) of which timber sale accounted for 89% and NTFPs, 11%. The average income to the VFCs account to Rs.48,862/VFC.

Table 4. Income generation from JFPM area in the Western Ghats and Eastern Plains region

No	Forest Division	Income generated from plantations after formation of VFCs		Extent of older plantations in the jurisdiction of VFCs ready for harvesting (ha)
		Small Timber	Minor Forest Produce	
Eastern Plains region				
1	Bangalore	636700	146168	642
2	Belgaum	-	-	151
3	Bellary		184473	552
4	Chamarajanagar	-	-	-
5	Chickmagalur	-	-	155
6	Dharwad	-	-	35
7	Gulburga	-	135868	661
8	Mysore	85000	7050	75
9	Hassan	7553092	86980	3445
10	Shimoga	-	-	315
	Total	8274792	560539	6031
Western Ghats region				
1	Karwar	895910		
2	Honavar	825696		
3	Sirsi	627266		
4	Haliyal		28814	
	Total	2348872	28814	

Note: Income generation is the total revenue generated from JFPM area, of which 50% of the share will be VFC's if generated from plantations established before VFC formation and 75% if from plantations formed after formation of VFC

Thus JFPM has provided village communities with greater legitimate access to benefits accruing from the forest and has, importantly, augmented their livelihood, besides enabling them to create village funds for undertaking developmental activities. In the Western Ghats project area, most of the plantations established under the WGFP during 1993-97 are due for harvest, which accounts to 22000ha with projected benefits of 2,80,000 per VFC

excluding the lops and tops. In addition a potential 15000ha under social forestry can be included under JFPM (Sudha et.al.2005) In the Eastern Plains, about 6,031 ha of older plantation under JFPM are ready for harvest. Thus the VFC's can expect substantial returns in the coming years.

3.6 Environmental incentives

3.6.1 Vegetation improvement

A study conducted (Sudha *et al.*, 2004) in Karnataka to understand the ecological impact of JFPM based on community perspective showed nearly 75-80% of the VFCs reported an increase in canopy cover and tree density, 50% VFCs reported increase in species richness and about 57% VFCs perceived no change in the availability of fuelwood.

With regard to fodder availability, in the Western Ghats 60% of the VFCs perceived decrease in fodder availability due to closure of tree canopy inhibiting grass growth. In the Eastern plains the converse is true where 42% of the VFCs reported increase largely due to closure of area to grazing. (Fig 4). Six percent of the VFCs in Western Ghats and 16% in the Eastern Plains reported environmental benefits from the JFPM programme such as increase in water table (Table 3) after establishment of plantations under the JFPM programme.

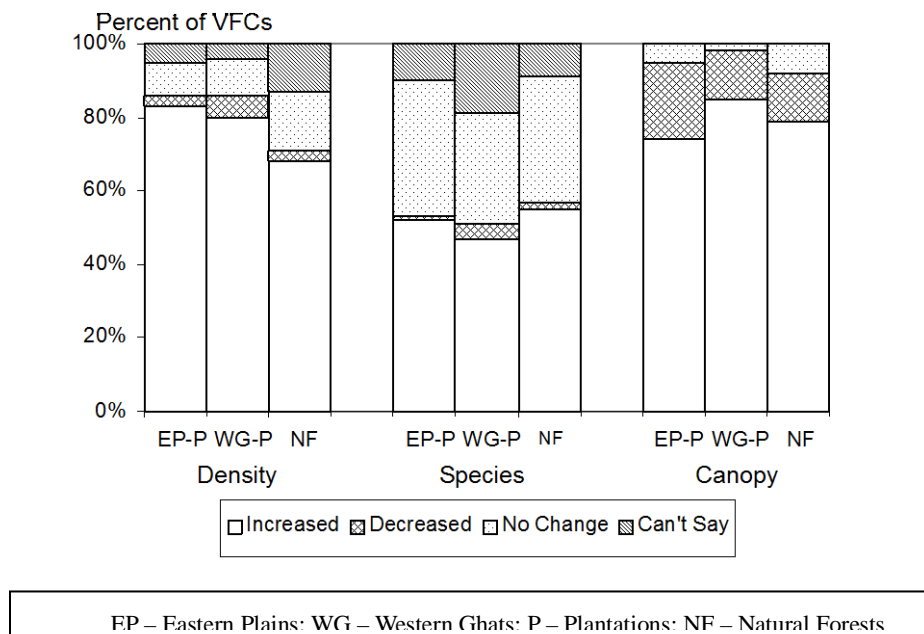


Fig 4: Change in density, species richness and canopy cover in the JFPM area, as perceived by the community

4. Discussion

4.1 Institutional Sustainability

The 2002 JFPM order of Karnataka to a large extent, addresses most issues that usually ensure sustainability of a participatory programme. The order addresses important aspects such as absolute participation of the village community, gender and equity concerns, and financial sustainability. It is important to understand the extent to which the policies have influenced the performance of the programme. Preliminary studies in Karnataka showed mixed performance of JFPM at the VFC level based on functioning, performance and impact of JFPM in the Western Ghats and Eastern Plains (Sudha, et.al.2004). Based on the analysis of responses of the VFC president and the management committee members, at the state level, in 29% of VFCs the impact of JFPM was visualized as good, moderate in 38% of VFCs and no discernable impacts were felt in 33% of VFCs (Fig 3). In the Western Ghats,

32% of VFCs reported the impact as *good*, a majority (46%) as *moderate* and 11% could not conclusively perceive any impact.

In the Eastern Plains, 26% of VFCs reported the impact as *good*, 30% as *moderate* and in majority (44%) of VFCs, the impact was *not discernable*, as the programme is still new. Compared to any other or development programmes linked to forestry activities, JFPM has made a significant impact. Though JFPM policy provides the incentive, the programme is still on the horizon. It is essential to understand the various issues governing JFPM, to implement the programme sustainably and expand it further by involving forest fringe communities in an effective way.

Enhanced participation of communities In spite of policy backup, there has been poor participation of marginalized group and women in the VFCs -a serious drawback in JFPM evolution and development needs policy interventions. According to studies, on an average only 12% of men and 6% women population are members of VFCs (Sudha et.al.2004). One way of ensuring their participation is to link resource use to membership of the VFC. For ex. if they need to collect fuelwood from the JFPM area, they are to compulsorily become members of the VFC. Also, on the lines of Panchayat Raj institutions, the management committee posts may be made available to women and marginalized group on roster system.

Another major impediment for the viability of the VFC is the VFC members' perception of strong presence of the department in the management committee, which needs rethinking to modify the existing arrangements. The treasurer post may be given to the Forest Department staff and a joint-secretary may be appointed from the management committee. In the absence of the Secretary, the joint secretary can convene the meetings.

Legal status for VFCs: Communities have to invest their time and effort and also sacrifice several short-term gains (opportunity cost), to protect and manage forests. The VFCs should get legal recognition so that the community can be sure that their investment in protection and regeneration will provide them returns in the long run.

Linkage to Panchayat Raj: The relationship between VFCs and the local Panchayats from some of the states has been mixed. Some argue that associating with Panchayats will render JFM vulnerable to political influences and, hence, JFM should remain a separate, non-political entity. Others opine that promoting synergy between Panchayat Raj and JFM will lead to pooling of resources, which can be efficiently used to promote overall village development, including forest resources. Though there are no ready solutions, grassroot support, including that of Panchayat Raj institutions at the village level, is required to sustain JFPM, and linkages with other rural development programme such as animal husbandry, small-scale enterprise development, etc. need to be established. Also, in Karnataka, the membership structure of the Grama Sabha and the VFC are the same and hence is easier to them link up. An added advantage is in case of Gram Panchayat, formally the Gram Panchayat Chairman has to convene the meeting, who could be from a neighbouring village, while for a VFC, the President is from within the village and it is easier to call for meetings.

Capacity building: According to a study, in Karnataka, the awareness of village community and more so the management committee about JFPM is lacking (Rao et al., 2004). They need to be educated about the programme and made aware about of their roles and responsibilities and the need to actively participate in VFC activities. NGOs must motivate the communities to cooperate wholeheartedly for the success and sustenance of their local JFPM venture.

The capacity building activities like training, skill development, marketing support, value addition activities and such other process activities are to be continuously provided. With closure of externally aided projects along with non-availability of financial support from the Forest Department, capacity building programmes are not conducted periodically. This needs to be addressed by linking them to the Forest Development Agencies. Also the government share of the profit may be used for this purpose. The funding from the state and district sector plans also should be made available.

Participatory approach: It is gratifying to note that there has been a perceptible attitudinal change among the community and the front line staff in accepting the participatory forest management as the most effective way of protecting the forests. The front line staff is to be further trained and prepared for the change in the management

pattern, procedures and systems. Reward and recognition is necessary to encourage the front line staff of Forest Department to further the movement. The political and bureaucratic support to the JFPM process needs to be secured for enhancing participatory role in forest management.

Role of NGOs: NGOs help build the rapport between the community and the Forest Department and enable implementation of JFPM. They have played a significant role in creating awareness, building institutions and in promoting community participation. VFCs have performed better where NGOs have played an active role (Ravindranath, et al, 2000). They need to be encouraged, as they play an important role in developing community organization such as SHGs and help to negotiate between conflicting groups in the village. It is also seen that wherever local NGOs are involved in the JFPM programme, there is formation of a large number of SHGs, mainly for women and the poor, which leads to their better articulation (Ramalingegowda and Shivanagowda, 2001). Local NGOs working on forestry issues should be preferably involved effectively, from the beginning of the JFPM project. School teachers, youth leaders and knowledgeable elderly village members should also be given the task of working with the Forest Department and the community, to reduce the dependence on NGOs and make JFPM more participatory.

Promotion of VFC federations: The Forest Department and NGOs should facilitate formation of federations of VFCs at block, forest range, division or circle level. These federations should have institutional recognition, legal standing, and decision-making powers. Federations could strengthen the VFCs and resolve to promote JFPM, resolve conflicts, enhance the community's negotiating powers with the Forest Department and other developmental agencies, help NTFP processing and marketing, enable equitable sharing of resources among and within VFCs, promote capacity building, etc. The Government should also link up the primary producers through these federations to the end-users through the wholesale merchants.

4.2 Financial Sustainability

Periodical flow of benefits: Forest protection and regeneration often leads to flow of income in the long run, such as from timber sales, but to sustain community participation, it is very important to ensure periodic flow of benefits particularly in the short-term as well. Most of the financial benefit is from timber sales which has occurred only once in most of the VFCs. A sustained annual flow of benefits from the forest area is what the communities would seek. This may require promotion of grass production and annual and perennial NTFP species.

NTFP based enterprise: Timber requires a long gestation period and does not provide income in the short-term. NTFP based forestry, on the contrary, would provide regular income. The focus of JFPM should, therefore, be on sustainable production and management of NTFPs, which will be the main source of earnings from the forests for the beneficiaries. The important factors that state Forest Departments need to consider are: inclusion of NTFP species during afforestation, design of harvest and processing methods for the NTFPs, and develop marketing linkages for the NTFPs with consumer industries.

Adding value to the NTFPs by developing simple technologies to process them can ensure sustained economic flows to the beneficiaries. Product development and quality control mechanisms need to be put in place to ensure competitive marketing of produce. Creating federations of VFCs at a taluk, forest division or district level would be ideal for pooling resources and creating linkage with the consumer industries. Value addition to NTFPs and sale of the products by establishing linkages with consumer markets will enable sustained flow of products and monetary benefits. The government should not have monopoly over marketing the NTFPs, nor must it allow traders and mills to monopolize. Trade in NTFPs should be decentralized gradually so as to encourage healthy competition (Saxena, 2000).

Link to rural development: The success of the JFPM programme is predominantly dependent on ensuring sustained economic returns to the beneficiaries. Initial financial support through EPA should be a pre-requisite for starting JFPM in a village and are to be linked with rural development activities in the village through Panchayats, the FDA and other line departments. One such concept is water costing especially in drought prone areas. Check dams and gully checks can be created by the VFC and water stored. The farmers can utilize the water for their crops at a nominal price per acre, thereby generating income to the VFCs. Another entry point activity that could be

initiated is *revolving fund concept* to the VFC that can be utilized as micro fund for SHGs at a nominal rate of interest to create income generation activities. This will also lead to linkage of SHGs to the VFCs and enhance participation of women in VFC activities. The interest earned of the revolving fund could be used as salary to a watchman for watch and ward of the JFPM area. Strategies also have to be developed by the Government to promote poverty alleviation programs for the landless and artisans. For example mulberry cultivation can be promoted especially for the landless, which could promote income to the VFC and the landless can also take up sericulture.

Once the forest has stabilized, enough monetary resources have to be generated to sustain the JFPM programme. The state guidelines support the policy of ploughing back into the programme a part of the benefits accruing from the forests. Provisions must be incorporated to enable funds to be generated from the community to match the seed money provided by the government so as to strengthen the concept of joint ownership and increase the sense of responsibility among the community members and sustain their interest in JFPM. Development of forest resources under JFPM should also be linked to development of agroforestry, water conservation, agriculture and livestock development, to enhance the synergies between the various facets of rural community living.

4.3 Environmental sustainability

Vegetation management: The JFPM programme has led to increase in vegetation cover in all the VFCs mainly due to afforestation of exotic species such as Eucalyptus and Acacia in Western Ghats. Emphasis on management and rejuvenation of natural forests should be promoted, which is to an extent has been promoted in the Eastern Plains. Mere protection may lead to regeneration of local species in some regions. In case of protection and enrichment planting in areas with root stocks, the species that will regenerate will be those that have endured fire and browsing, for example in teak dominated areas, the species regenerate along with a few associated species. Rehabilitation of these areas with associated native species has to be done through enrichment planting. Many of the silvicultural practices could adversely affect biodiversity conservation for example selective propagation of commercial species. Promotion of natural regeneration is a cost-effective, participatory and biodiversity-friendly approach. Thus, in areas with potential for regeneration, plantation forestry should not be practiced. Thus capacity-building programmes should also include training the community in management of rootstocks in areas where regeneration could be promoted.

The afforestation model should be adopted where natural regeneration potential is low, with no rootstock and poor soil status. In areas under afforestation, the main thrust should be to meet the requirements of the community. Planting multipurpose species as practiced in the Eastern Plains region where 13 different afforestation models have been developed and implemented, promote not only biodiversity but also meet local needs.

Water and soil conservation: JFPM programme will not be sustainable without intangible benefits to the community. Soil and water conservation practices if adopted can enhance these benefits through increased available water, tree biomass productivity and crop productivity. These are labour intensive (gully checks), but enhance regeneration and growth rates of grass and tree species. Community participation and voluntary labour could reduce these cost to a large extent.

Silvicultural practices: Silviculture and management systems, which have hitherto concentrated on timber production, need to change focus to production of fuelwood, fodder and NTFPs to meet the demands of the community under the JFPM system. Forest regeneration under JFPM requires species choice to meet the diverse local needs, silvicultural practices to enable grass production, harvest of fuelwood, grass and NTFPs at periodic intervals. The species choice and silvicultural practices should also be compatible to local soil, rainfall and topography along with specific community needs.

The community has to be involved at every stage of decision-making, implementation and management of the JFPM area. However, it is important to consider who in the community is involved in decisions on species choice. If economically sound section of the community is consulted, their choice of species may be different from that of women, the landless and the artisans. The community also requires orientation of site conditions to match the suitability of species for afforestation.

Interventions such as improving the quality of planting stock and developing plantations using hybrids, cloning and biotechnological methods has to be implemented that can improve production of fuelwood, pole and timber species such as *Eucalyptus*, *Acacia auriculiformis*, *Acacia nilotica* and Teak. These can be planted on community lands and farmlands. High productivity will reduce the rotation period of the plantation, and provide short-term benefits to the VFC, at periodic intervals. This will sustain the interest of the community in the programme.

4.4 Sustaining JFPM

The JFPM policies have been very progressive. But it is important to ensure that the Forest Department officials have the will and commitment to implement JFPM so that the implementation is in par with the progressive policies.

Sustainable management of forests is only possible by providing the forest dependent communities with means of securing their livelihood. Clearly defined, secure tenurial rights are a fundamental requirement for encouraging sustainable use of forests. In the absence of tenurial security, people choose short-term gains, leading to the degradation of natural resources. It has also been recognized that to ensure continued participation, VFCs need legal standing, assured usufruct rights, attractive share in income and control on decision-making. To achieve this, there is need for not only policies but also awareness and capacity building among communities as well as the Forest Department staff, to translate the policies into action. In the long-term, there is a need to integrate forest management with overall sustained rural development. Thus an integrated village landscape approach is the need of the hour.

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