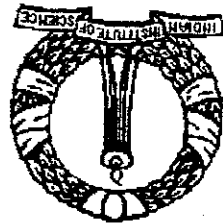


**Joint Forest Planning and Management (JFPM) in Karnataka:
Current Status and Future Potential**

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Introduction

The rationale behind Joint Forest Management (JFM) approach is that willing and active participation of Forest Department with local community is essential for ensuring regeneration, conservation, protection and sustainable use of forest resources. JFM is to be considered as cost-effective approach for regeneration and conservation of forest apart from meeting diverse needs of the local communities. JFM is a national level Forest Development Programme to promote participation of local communities along interested NGOs in the area. JFM was evolved through a Government of India Order on 1st June 1990. However prior to Government of India order, during 1988 and 1989 Government of Orissa and Government of West Bengal have passed respective state resolution of JFM by recognizing Self-initiated Forest Protection System in the state. In these states participation of local people in forest management has produced encouraging results with special reference to forest conservation and regeneration (Chatterjee, 1996).

So far in India 23 states have adopted JFM resolutions initiating about 36,130 Forest Protection Committees (FPCs) and protecting area around 10.25 M ha (Bahuguna, 2000). JFM programme is decade old programme, where as lot of variations are observed with respect to state resolutions on JFM programme. West Bengal is the first state to pass state resolution during 1988, however the last was Sikkim passed same during 1999. Further, number of FPCs formed and area brought under protection also varies in different states. Further, states differ with respect to forest management strategies, enrolment of members, role of community in General Body and Executive Committee, power extended by Forest Department and benefit sharing (Muralli *et al* 2000).

Apart from Social Forestry, JFM is also largely funded from overseas agencies in India. JFM received Rs.1, 724 crores from four major funding agencies such as World Bank (WB), Overseas Economic Cooperation Fund (OECF) of Japan, Department of International Development (DEID) and European Union (EU). Role of external funding is very much significant in spread and performance of JFM. Eight states in India have benefited from external funding, in which the spread of FPCs is higher (one FPC per 5.8 km²) than states, which have implemented JFM with out any external funding (one FPCs initiated for 32 km²). Further states with assistance brought 48% of its open forest under JFM whereas in states with no assistance it was 16% (Muralli *et al* 2000). Among these states Madhya Pradesh initiated highest

Formation of VFC is a key process, it is a basic and central unit for all JFPM activities at village level. These committees are empowered to function as self governing, independent and financially viable village bodies. VFCs are associated with planning, implementation, protection, harvesting and sharing of benefits along with Forest Department. They are responsible for *joint planning* and *joint management*. Further, the key elements of JFPM in Karnataka are given in Box II.

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| <ul style="list-style-type: none"> • Build sustainable VFCs • Preparation of demand oriented Micro Plan • Study of various resources management options • Site Specific Planning (SSP) • Decentralization and bottom up approach • Involvement of NGOs • Increased participation of women • Integration of Micro Plans in to Working Plans |
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Box I: JFPM order in Karnataka facilitates following activities

In Karnataka JFM is referred to as "Joint Forest Planning and Management (JFPM)". The Government of Karnataka passed order during 12th April 1993. The order facilitates the formation of a democratic village level organisation called "Village Forest Committee (VFC)" and development of village degraded forestland (Box I). Concept of peoples participation in forest management in Karnataka is not new as there are 23 Self-initiated Forest Protection Committees working and protecting area about 665 ha over 100 years (Murali *et al* 2000). JFPM is one of such approach to achieve community participation in forest management and regeneration. The basic objective of JFPM are (i) to promote a process of institutional change in forest management, (ii) involve local people in decisions on forest planning and management and (iii) minimize further loss of forest cover and forest resources and maintain the sustainable services that forest provides.

1. Joint Forest Planning and Management in Karnataka

number of FPCs, which accounts for 33% of the FPCs formed in the country and 79% of state's open forest is brought under protection. However in Kerala JFM was introduced during 1997, just 7 FPCs initiated and area brought is 1% of the state open forest (Murali *et al*, 2000).

Box II: Salient features of Joint Forest Planning and Management in Karnataka

Order	Definition
Definition	Community Participation by formation of Village Forest Committee for planning, implementation, protection, harvest and sharing of produce
Objective	Protection, maintenance, regeneration and community need based management of forest
Management	VFCs should be registered under Karnataka Societies Act. Interested members from the village should form the promoter's committee from the General Body and work out bylaws.
Membership	Open to all households residing in the notified area or jurisdiction of the VFC by paying Rs 2/-; for SC/ST Rs 1/-
Managing Committee	15 members comprise Managing Committee. 11 (Chairman, women-2, SC/ST-2, Artisans-1, Land less Labour-1 and General-4) are elected by General body and 4 are ex-officio members. Section Forester will be ex-officio Secretary from Karnataka Forest Department.
Election of Managing Committee	General body to elect 10 members and Chairman. Local Revenue Inspector will be the presiding officer to conduct the election for VFC
Tenure of Managing Committee and Meetings	Five years. It should meet once in a quarter of a year
Functions of Managing Committee	(1) Planning, (2) Implementation of the approved Joint Forest Planning and Management (JFPM), (3) Sharing of the produce, (4) Carrying out day to day affairs; protection and conservation
JFPM area	Forest having less than 25% of canopy and other Govt. lands. This area is not sold/leased/handed over to the VFC but the beneficiaries have usufructory rights over the produce
Sharing of produce	(1) Free access to leaves and fodder, (2) Harvested produce is shared between the Forest Department and VFC in a 50:50 ratio. Out of its 50% share, the VFC credits 25% to the Village Forest Development Fund, the rest of the produce is distributed to VFC members or credited to Village Development Fund
Memorandum of Understanding	Signed between the VFC (Managing Committee) and the Forest Department.
Financial Assistance	The village Forest Development Fund will be created from revenue generated from sales proceeds and membership fees. Forest Department will provide initial expenditure.
Decision Making	VFC, jointly with the Forest Department, decides about planting of trees and the species to be planted, based on their requirement.
Access to usufructory rights	Households in the jurisdiction are eligible to enter the forest to collect the produce like fruits, grass, twigs and branches for bonafide use.
Women's participation	Women are members or co-members of the VFC. Out of the 10 elected members of the Managing Committee, at least two should be women
Maintenance of records	The Secretary (Forester or Guard with SSLC qualification) is responsible for maintaining accounts, minutes and funds of the VFC
Supervision	Forest Department officers of rank DCF and above should attend Managing Committee meetings of all VFCs, at least once in 6 months.
JFPM Plan	Prepared by the Managing Committee in consultation with the Forest Department and approved by the General Body. Final approval by the DCF
Role of NGOs	NGOs can act as promoters, but cannot claim benefits for participation.
Employment generation	To execute the JFPM plans local labor can be employed on a priority basis, and wages paid according to department norms.

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Keeping, these JFPM developments in the state it is essential to understand rate of spread of JFPM, performance of JFPM, factors contributing for rate of spread and performance, extent of community participation, role of external fund and impact of JFPM on institutional, ecological and economic change. This study largely based on the secondary data collected from Forest Department and studies conducted on

JFPM in Karnataka is almost eight-year old. Moreover JFPM is being implemented in the state under two major external funding such as DFID funded Western Ghats Environment and Forestry Project (WGEFP) and OECF- Japan funded Forestry and Environment Project for Eastern Plains (FEPEP). WGEFP already completed its project period from 1992 to 2000. In which JFPM is intensively implemented, more than 500 VFCs are formed and around 56,632 ha of forest brought under protection in Uttara Kannada and Shimoga forest circle. Further FEPEP is in operation from 1996 in 17 districts. Apart from this there are couple of area oriented special JFPM programmes are running under Central Special Scheme.

2. Need for assessment of JFPM in Karnataka

Soon after the adoption of JFPM order on 2nd April 1993, the first VFCs was formed during 12th April 1993 at Talagadde village in Ankola taluk of Karwar division. Though the VFC was started during 12th April 1993 the first VFC to sign the MoU with the Forest Department was Kangod of Sirsi taluk during 12th January 1995 in Uttara Kannada district. So far in the Karnataka 2,332 VFCs have been initiated. Out of this, 1,658 VFCs are supported under externally funded Forest Development Programmes, which accounts for 71% of the VFCs in the state.

Joint Planning is consultative process by which the Forest Department, local people and other forest users jointly discuss the ecological and environmental conditions of a specific area of the forest and the scope for it to meet one or more of their specific needs. The afforestation, protection and benefit-sharing plan that emerges should, in principle, reflect the views of all members of the village community. Joint Management refers to sharing the responsibility of forest management among Forest Department, community and voluntary organization (if present). They share the profits from the proceeds at equal ratio. However, under different conditions, responsibility and sharing of sales proceeds varies. Similarly, Joint Management may apply to all or only certain category of vegetation types within a particular area.

The state of Karnataka enjoys rich heritage of flora and fauna. The state accounts for 5.11% of the total forest area in India. The state has 20% of its geographical area under forest (KFD, 1999) and estimated forest cover is 17%, further 13% is under dense forest and 4% under open forest (FSI, 1997). Assessment of forest cover for the period of 1993-97 in the state shows that there is an increase in forest cover of 60 km², dense forest increased by 2 km², open forest by 55 km² and mangrove by 3 km² (FSI 1993, 1997). Increase in open forest is due to massive afforestation programme on degraded forest area. However for same period at all India level the net loss of forest accounted was 9,710 km² by losing dense forest of 18,316 km² and developing open forest of 11,100 km² (FSI, 1993,97).

3. Status of Forests and Waste lands in Karnataka

<p>Issues for Assessment</p>	<p>Rate of Spread of JPPM > Number of VFCs initiated > Number of VFCs signed MoU > Number of VFCs prepared Micro plans > Area covered under JPPM > Membership</p>	<p>Status of JPPM > Relative coverage of VFCs and Area per district > Status of MoU signed and Micro plan prepared > Area covered to Total Forest, Open Forest and Wasteland > Area covered per VFC</p>	<p>Financial Issues > Externally funded Forest Development Programmes > Cost effectiveness of different programme – Cost/ha & Cost/VFC > Major Expenses under Externally funded Forest Development programme</p>	<p>Impact of JPPM Ecological Impact: Status of Forest - Species Composition - Benefit sharing Economic Impacts: Biomass Requirements - Alternative Developments Social and Policy Impacts: Community Participation - Constitutional status of VFCs - JPPM amendments</p>
<p>Parameters</p>				

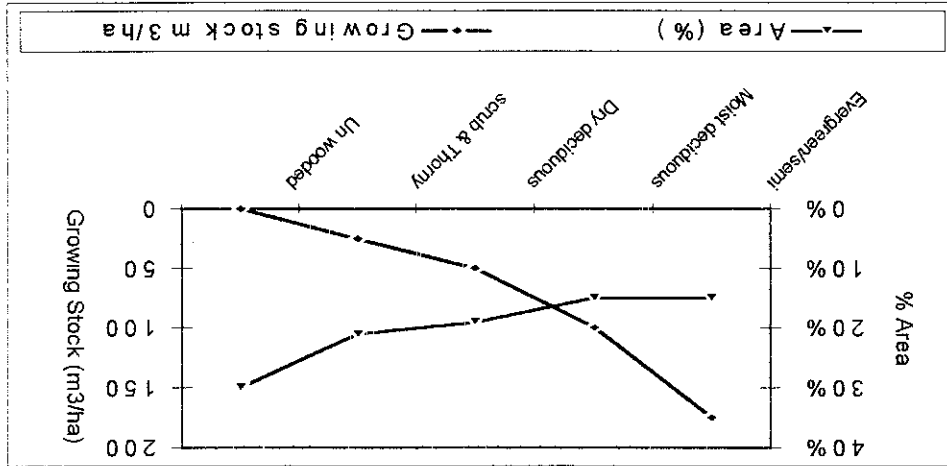
Box III: Issues, parameters studied for assessment of JPPM in Karnataka

JPPM by academic, NGOs and other organizations. Details regarding parameters studied are given in the box III

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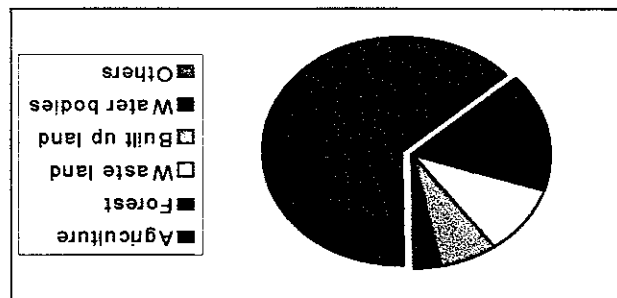
Wasteland available in different district varies from 26% in Bangalore Rural district to just one percent in Kodagu district. Moreover wasteland estimated for different district is also area available for afforestation activities. In state wasteland estimated is 10% along with 4% of open forest is available for any Forest Development Programme. In some districts area available as wasteland and open forest is

Figure 2: Growing stock indifferent forest types during 1995



Land use pattern in the state shows that there is no change in the area under agriculture between 1988 to 1995 and it accounts for 63% (Figure 1). However, forest cover during 1988 was 13% and has improved to 17% during 1995. Similarly wasteland estimated was 14% and it has been reduced to 10% during the same period (FSL, 1995). It implies that massive afforestation programmes undertaken in Social Forestry and JPFM have improved status of forest. Most dominant forest type in the state is non-wood, scrub and thorny type of forest, which account for 51% of the total forest. However area under evergreen and semi evergreen forest is 15% of the total forest, which is dominated by *Dipterocarps*, *Lophopetalum*, *Hopea*, *Cedrella toona*, *Calophyllum*, *Canarium* and *Vateria* etc (Figure 2). The growing stock in these forests varies from 175 m³/ha in evergreen and semi evergreen forest to 25 m³/ha in scrub and thorny forest (KFD 1995).

Figure 1: Land-use pattern in Karnataka during 1995



Formation of Village level Committee and raising of plantations along with natural regeneration of forest are key processes of the JFPM. So far in the state 2,332 VFCs have been formed and the area brought under protection is 77,286 ha. WGEFP and RPEEP are two major projects (Table 2), which are external funded programmes. Among district maximum number of VFCs have been initiated in Uttara Kannada (310) followed by in Shimoga (190), the two districts covered under WGEFP. In

4.1 Spread of JFPM in Karnataka

In view of two major externally funded projects in Karnataka and nearly lapse of such years, it needs to assess spread and performance of JFPM in Karnataka. In this study we assess JFPM spread, in terms VFCs formed, area covered and look further how JFPM could potentially spread in the state.

4. Assessment of JFPM in Karnataka

Source: Annual Report - 1999, Karnataka Forest Department, Bangalore, FSI, 1995 and 1997

Name of the Districts	Forest Area (ha)	% Forest	Area cover	% Open forest	Waste land (ha)	% Waste land
Bangalore (U)	7364	3.36	-	-	-	-
Bangalore (R)	109438	18.82	11.73	8.86	152029	26.14
Bellary	174353	20.71	8.29	6.83	162292	19.28
Bidar	48231	8.85	0.83	0.73	40554	7.44
Belgaum	224557	16.74	8.07	1.25	144723	10.79
Hassan	54107	7.94	15.16	2.63	57135	8.38
Kolar	103941	12.64	5.01	4.86	94297	11.47
Tumkur	86517	8.16	3.81	3.63	276699	26.11
Gulberga	113785	7.01	1.14	0.56	68883	4.25
Bijapur	82758	4.85	0.20	0.20	211218	12.37
Chitradurga	156229	10.84	2.30	2.04	195585	13.58
Dharwar	143673	10.46	5.35	2.48	69749	5.08
Mysore	412962	34.55	28.96	13.65	65175	5.45
Mandya	27279	5.50	5.20	5.08	46680	9.41
Raichur	65075	4.64	0.00	0.00	93633	6.68
Shimoga	327016	38.63	58.05	10.49	69962	8.26
Chickmagalur	217908	30.26	46.20	5.24	83071	11.54
Uttara Kannada	829153	80.57	75.81	4.14	40442	3.93
Dakshina Kannada	518130	61.38	43.31	10.50	65300	7.74
Kannada Kodagu	125952	30.71	81.45	1.54	3563	0.87
Karnataka	3828428	19.96	16.89	3.93	1940990	10.12

Table 1: Area under forest and Wasteland in different districts in Karnataka. All values expressed in % are to the geographical area.

significant, for instance in Bangalore rural it is 35% followed by Tumkur (30%), Bellary (26%) and Mysore (20%). Further in nine districts wasteland available is more than 10% to its geographical area (Table 1).

Uttara Kanada programme was initiated during 1993 and in Shimoga during

1996.

FEPP in Karnataka was funded by OECF-Japan started during 1996 and is still in operation. So far in this project 1,173 VFCs have been initiated in 17 districts (Table 2). Under this programme more number of VFCs have been formed in Hassan (181) followed by Kolar (177), and Belagum (122). States contribution at national level is number of FPCs formed is 6.5% and area brought under protection is very negligible, it less than 1% of the area brought at all India level.

In WGEPFF afforestation activities were initiated on large scale, in Uttara Kannada the area afforested was 49,973 ha followed by Shimoga 6,659 ha (Table 2). However area handed over to VFCs in Uttara Kannada was 12050 ha, it accounts for 24% of the area covered under WGEPFF. Further in FEPP area brought under protection is 20,654 ha, however area target for 1,50,000 ha at the end of 2001 (KFD, 1996). The process of afforestation and handing over of area to VFC was initiated during 1997, so for 14% of area afforested has been handed over to VFCs for protection.

Table 2: Village Forest Committees formed and Area brought under JFPM in Karnataka

Districts	JFPM (WGEPFF)		JFPM (FEPP)		Total	Area/ VFC	Open Forest %
	VFCs	Area	VFCs	Area			
Bangalore (U)	0	0	13	0	13	0	0
Bangalore (R)	6	0	92	0	98	0	0
Bellary	7	0	38	1995	45	1995	44.33
Bidar	12	0	27	1851	39	1851	47.46
Belagum	33	0	122	1000	155	1000	6.45
Hassan	2	0	181	155	183	155	0.85
Kolar	2	0	177	7993	179	7993	44.65
Tumkur	90	0	100	111	190	111	0.59
Gulberga	116	0	39	80	155	80	0.52
Bijapur	12	0	52	2720	64	2720	42.50
Chitradurga	19	0	104	2526	123	2526	20.54
Dharwar	88	0	63	365	151	365	2.42
Mysore	39	0	50	360	89	360	4.04
Mandya	22	0	41	55	63	55	0.87
Raichur	34	0	54	746	88	746	8.48
Shimoga	190	6659	8	530	198	7189	36.31
Chickmagalur	9	0	12	166	21	166	7.92
Uttara Kannada	310	49973	0	0	310	49973	161.20
Dakshina Kannada	103	0	0	0	103	0	0.00
Kodagu	65	0	0	0	65	0	0.00
Total	1159	56632	1173	20654	2332	77286	33.14
							10.24

Source: KFD, 1999 and Office of Chief Conservator of Forest (OECF), Banaglore.

Among districts Kolar accounts for 39% of the area brought under JFM. Further in the district such as Bijapur, Chitradurga, Bellary and Bidar, considerable amount of area has been brought under protection. Whereas in Bangalore rural district no area has been reported, however 98 VFCs have been formed in the district. Similarly in the districts such as Tumkur, Hassan, Gulbarga and Dharwar area brought under protection is less however, in these district more number of VFCs have been initiated.

Formation of VFC, followed by signing of MoU with Forest Department and preparation of Microplan are key activities of JFPM at village level. It enables VFCs to initiate JFPM activities formally in the village. Signing of MoU and preparation of Microplan was active only in Uttara Kannada. Whereas, in other districts signing of MoU and preparation of microplan was partial. In Uttara Kannada 90% of the VFCs have signed MoU and 92% of the VFCs have prepared Microplans. However in Shimoga 57% of VFCs have signed MoU and 78% of the VFCs have prepared Microplan. Further in FEPEP good number (74%) of VFCs have signed MoU but only 20% of the VFCs have prepared Microplan (Table 3).

Table 3: Number of VFCs initiated, MoU signed and Micro Plan prepared under externally funded JFPM programmes

Programmes	Number of VFCs	Signed MoU	% of VFCs signed MoU	Micro-Plan prepared	% of VFCs prepared Micro Plan
WGFFP	485	375	77	419	86
Uttara Kannada	300	270	90	275	92
Shimoga	185	105	57	144	78
FEPEP-OECF	1173	865	74	240	20
Total	1658	1240	75	659	40

Source: Office of Conservator of Forest, Shimoga and Canara circle and Office of Chief Conservator of Forest, KFD, Bangalore.

Interestingly, in some of the VFCs plantation activities have been completed before preparation of Microplan. The process of signing of MoU and preparation of Microplan seems to take long time. But it is important to complete these processes before initiation of JFPM activities in order to ensure participation of community. It may be required to train village communities on these aspects, in order to understand process, also assistance from NGOs would also help to complete these formalities at earliest as possible.

The relative coverage of area under JFPM in state also varies from less than 1% to 65% of the total area brought under JFPM in the state. Uttara Kannada alone accounted for 65% of the area brought under JFPM in the State followed by Kolar (10.34%) and Shimoga (9.30%). Whereas in all other districts, area brought under JFPM is less than 4%. Interestingly districts such as Hassan, Belgaum, Tumkur and Gulbarga accounted for less area brought under JFPM even though number of

districts such as Bellary, Bidar, and Chickmagalur. accounted for most VFCs formed. However, coverage of VFC was less than 2% in (7.85%), Kolar (7.68%), Belgaum (6.65%), Gulbarga (6.65%), and Dharwad (6.48%) under WGEFF. Among districts covered under FEPEP, Tumkur (8.15%), Hassan the state followed by 8.5% in Shimoga. However these two districts were covered VFCs were initiated in Uttara Kannada, which accounts for 13% VFCs initiated in all 20 districts, spread of VFCs varies from district to district. Maximum number of district varies from less than 1% to 13%. Though VFCs formation was initiated in potential area available in the district. The relative coverage of VFCs in different area covered under JFPM and area brought under programme with respect to Potential Spread of JFPM could be understood through relative coverage of VFCs,

4.2 Potential of JFPM

Source: Office of Conservator of Forests, Canara and Shimoga Circle.

Districts	Number of members enrolled	% total Households in the district
Shimoga	20,671	7
Uttara Kannada	27,700	14

Table 4: Number of Members enrolled in JFPM

(Bhat *et al.*, 2000)

Enrollment of village households as members of JFPM programme at state level is not available except for Uttara Kannada and Shimoga, where 48,371 members have been enrolled. However, in Uttara Kannada 14% of the total household have been covered in the programme and in Shimoga it is 7% (Table 4). As per JFPM order in the state any one family members usually head of the family become member of the VFCs, further amendment passed during 1996 has given opportunity for one female member of the family to enroll as member of General Body along with one male member. Micro level studies shows that all the potential members in VFC jurisdiction have not become members, for instance in Saralagi village in Uttara Kannada district out of 255 potential members only 215 have enrolled as members

The number of VFCs initiated per district was 141 in Western Ghats and 104 in Eastern Plain. Further, the area covered under JFPM per district was 8,458 ha in Western Ghats and 2,008 in Eastern Plains. Though the number of VFCs formed are comparable in these districts, but the area brought under JFM is more than four times in Western Ghats as compared to Eastern Plains. Though the potential to develop JFPM is more in Eastern Plains, but more effort has been put in Western Ghats districts. This may primarily be because of the project on Western Ghats Environment programme that was initiated during 1993. Only during later years the efforts have been concentrated in Eastern plains.

Parameters	Eastern Plains	Western Ghats	t-value	P
% Forest to geographical area	3.5 ± 3.81	40.26 ± 28.14	3.9	0.002
% Open forest to total forest	86.06 ± 15.94	20.82 ± 16.16	8.61	0.00000
% Wasteland to geographical area	13.67 ± 7.76	6.89 ± 3.4	2.5	0.02
Number of VFCs/district	104 ± 55	141 ± 85	1.18	0.28
Area covered under JFPM per district	2008.6 ± 2483.5	8458.3 ± 18481	0.91	0.39
Potential available for JFM (Total-Covered)	143835 ± 87674	99881 ± 59314	1.3	0.2

Table 5: Comparison between Eastern Plains and Western Ghats with respect to forest area, open forest and wasteland.

In terms of forest area available for JFPM in districts of eastern plains and Western Ghats it is found that Western Ghats has 40.26% of forests and Eastern Plains has 3.5% to geographical area. However, the % open forest area available to the total forest is more in Eastern Plains than in Western Ghats (Table 5). Further, the wasteland available as % to geographical area in Eastern plains is (13.67) higher than Western Ghats (6.89). Thus the potential area available in Eastern plain is higher than Western Ghats. A glance at the area covered and VFCs initiated in Western Ghats and Eastern Plain districts indicate that there is no statistical difference in these two areas.

VFCs formed in these districts is more. It was found that the area per VFC was less among districts that initiated more number of VFCs. Conversely, the districts that initiated less VFCs had more area for protection per VFC ($r_s = -0.69$, $n=14$) indicating that as the number of VFCs in the district increase, the area available per VFC decreases.

Further, micro level studies conducted at 8 VFCs in Uttara Kannada shows that General Body meetings were frequently conducted during initial years. However during later year's frequency of meetings declined and a lack of interest among community to participate was also observed (Bhat *et al.* 2000). Holding general body meetings is crucial as it provides a forum to inform the whole community the progress of the programme. Similarly, number of Management Committee Meetings held was less than stipulated. It is necessary to conduct Managing Committee Meetings periodically in order to have dynamic management strategies. It indicates the level of participation of both the village community and the Forest Department in the process of JFPM. This analysis provides better understanding of JFPM functioning and it is required to restructure the programme to make it people oriented.

5 Financial Issues

5.1 Externally funded Forest Development Programmes in Karnataka

Three major externally funded forest development programmes have been implemented in the state. Social forestry was active in the state from 1983 and it received external funding of Rs 84.95 crores from World Bank and ODA (Box IV). During this period there was shift from conservation forestry to production forestry. Exotic species such as Acacia, Casuarina, Eucalyptus were introduced. These exotic species have several advantages such as fast growth, can meet urban demand for poles, not easily grazed and high rate of seedling survival (Ravindranath and Hall, 1995). Apart from Social Forestry, JFPM received Rs. 678 crores from DFID and OECF- Japan (Box IV). Social forestry was active for nine years at rate of Rs.9.44 crores per annum however, JFPM duration is almost same as Social forestry but allocation is Rs.75.34 crores per annum. Thus JFM received almost eight times more funding than Social forestry.

JFPM stands differently from Social Forestry, emphasizing centralized forest management to decentralized forest management, revenue generation to resource development, single benefit to multiple benefits, mono culture to multiple cropping and unilateral decision to participatory decision making. JFPM funded by DFID is intensively implemented in two districts of Western Ghats area namely Uttara Kannada and Shimoga. JFPM funded by OECF-Japan is still active in 17 districts of eastern plains of Karnataka. These programmes have contributed for institutional development in forest management and protection of degraded forests.

Under CSS, out of four programmes implemented, afforestation programme was initiated in two schemes such as CSS-NTFP and CSS-AOFF. The investment was Rs.937.3 lakh and area covered was 10,481 hectare through 39 VFCs formed in Hassan, Tumkur and Gulbarga. Investment per hectare under these two programmes is Rs.10,973/ha in case of CSS-NTFP and Rs.8,878/ha in case of CSS-AOFF. Further area available per VFC is 91.57 ha/VFC in CSS-NTFP and 397.96 ha/VFC in CSS-AOFF. The area per VFC is high compared to any other externally funded programmes in the state (Table 7).

Under these three intensively funded programmes, the investment for afforestation is Rs.9, 500 lakh and area covered is 87,768 hectares (Table 7). In WGEFP Rs.6, 950 lakh was spent out of a total out lay of Rs 11, 100 lakh accounting for 63% of the total budget. The area covered is 56,632 hectares through over 500 VFCs in Uttara Kannada and Shimoga. The cost per hectare under this programme is Rs.12,279/ha.

Source: KFD Report, 1995

Programme	Donor Agency	World Bank and ODA	DFID (ODA)	OECE-Japan
Social Forestry		1/4/1983 to 31/3/1992	1/4/1992 to 31/3/2000	1996 to 2001
	Total out lay	84.95 Crores with 4.02 Crores from Government of Karnataka	111.54 Crores	566.54 Crores with 58.01 crores from Government of Karnataka
Objectives	(i) To increase the supply of fuelwood, small timber, fodder, bamboo to rural and semi urban area and for cottage industries (ii) Villagers tree conscious, in order to create assets for community (iii) Provide gain full employment for rural people	(i) To maintain the ecological balance and environmental stability (ii) To ensure the sustainability of living standards forest (iii) To ensure sustained yield of forest produce	(i) To launch and maintain tree plantation programme in all available land in the eastern plans (ii) Ecological up gradation and to meet requirements of the local people with respect to wood and non-wood forest products	
Achievements	41750 hectares of plantation raised and 50.75 crores of seedlings distributed	56632.5 hectares of plantations raised and 500 VFCs have been formed	With 4 years of project running 20654 hectares of plantations has been raised	

Box IV: Externally assisted Forest Development Programmes in Karnataka

The area so far afforested from the entire programme is 1.19 lakh ha. Apart from this 50.75 crore seedlings were distributed to public under Social Forestry programme in order to support farm forestry activities the state.

Source: Office of the Chief conservator of Forest (OECF), KFD, Bangalore

Name of the Model	Area to be treated (ha)
Arhaecologically important, ecologically sensitive wild life potential area	20,000
Degraded reserve forest for intensive protection	80,000
Degraded reserve forest for local needs	25,000
(i) Trench mound cum pit plantations	8,000
(ii) Mechanized plantations	6,000
(iii) Irrigated bamboo plantations	2,000
(iv) Irrigated bamboo and teak plantations	5,000
(v) Irrigated MFP orchards	24,500
Degraded lands out side reserve forests	

Box V: Afforestation programme planned under FEPP

FEPP is major JFM programme in eastern plains of the Karnataka. This programme is active over 138 taluks in 17 districts of the state. Fund allotted for afforestation under this project is Rs.36,290 lakh, accounting for 64% of the total outlay of the project. Total area targeted for afforestation is 4,70,000 ha through tree planting and soil conservation. Out of this 3 lakh ha will be covered under private farm lands and treated as farm forestry through distribution of variety of seedlings of fuel, fodder, green manure, small timber, NTFP, medicinal and bamboo species. The remaining 1.70 lakh ha will be covered under different afforestation programme. Out of this one lakh ha in reserve forest and 70,500 ha will be covered under degraded forests such as C & D land, gonal (grazing land), tank foreshores, road sides, canal sides, railway lines, urban area and land belonging to institutions (Box V).

CSS - Central Special Scheme, NTFP - Non-timber Forest Product, IAFP - Integrated Afforestation and Eco-development Programme, AOFF - Area Oriented Fuel and Fodder Programme, FWD - Fuelwood Deficiency programme, Source: WGFP Report - 1999, Office of the Chief Conservator of Forest (OECF), KFD, Bangalore

Programmes	Number of VFCs	Area covered (ha)	Investment (Lakhs Rs)	Investment per Hectare (Rs/ha)	Area per VFC
WGFP	500	56632.5	6954.087	12279	113.26
CSS-NTFP	14	1282	140.680	10973	91.57
CSS-IAFP	27	-	-	-	-
CSS-AOFF	25	9199	816.700	8878	367.96
FWD	27	-	-	-	-
FEPP-OECF	1173	20654.5	1593.080	7712	17.60
Total	1766	87768	9504.547	10829	49.69

Table 7: Cost effectiveness of externally assisted forest development programme in Karnataka

Major expenses under two externally funded forest development programmes were a) formation of VFCs, b) establishment of new plantations and regeneration of less degraded forests. These two are participatory components of the programme. In WGEFF and FEPEP major activity undertaken was afforestation, for which 63% (though not all area brought under plantations was through JFPM. Please see footnote on Table 9) of total outlay was spent under WGEFF and 64% under

5.3 Major Expenses under externally assisted forest development programmes in Karnataka

Source: Bhat *et al.*, 2000

JFPM Plantations				
	Area (ha)	Number of Seedlings	Seedlings per ha	Cost (Rs/ha)
Ghattikai	30	41,600	1,387	8,980
Bellankere	46	59,455	1,293	10,801
Social forestry Plantations				
Bedkani	20	28,500	1,425	12,875
Thyarsi	18	28,800	1,600	16,135

Table 8: Cost effectiveness of JFPM and Social Forestry at plantation level

While comparing cost effectiveness of JFPM plantations across externally funded programmes, the cost per hectare is varies from Rs.7,712/ha in FEPEP to Rs.12,279/ha in WGEFF and area available per VFC also varies from 367 ha in CSS-AOFF to 17 ha in FEPEP (Table 7). Further Social forestry plantations raised during 1983-92 shows that cost per hectare is Rs. 20,347/ha, however it includes cost of seedlings which were raised for public distribution. Further cost per hectare of JFPM and Social Forestry plantation in Uttara Kannada are very much similar to cost estimated for state. In case of JFPM plantations, in two VFCs such as Ghattikai and Bellankere cost per hectare are Rs.8,980/ha and Rs.10,801/ha respectively. However cost per hectare for Social Forestry plantations at two villages such as Bedkani and Thyarsi are Rs.12,875/ha and Rs.16,135/ha. These figures have been arrived by taking actual expenses incurred for plantations (Table 8).

So far under FEPEP project area afforested is 20,654 hectares through 1,173 VFCs. The money spent for afforestation programme is Rs.1,593 lakh and it is estimated at cost of Rs.7,712/ha for total outlay planned Rs.36,291.4 lakh to cover 1,70,000 ha. The cost per hectare is lowest among all other externally funded programmes in the state (Table 7). Further, area available per VFC is 17 ha, it very low compared to other programmes in state.

The potential area available for afforestation is 4% of geographical area under open
 Nearly 10% of the open forest in the state is brought under the JFPM programme.

6.1 Ecological Impact:

6 Impact of JFPM in Karnataka

WGEPF - Western Ghats Environment and Forestry Project
 FEPEP - Forestry and Environment Project for Eastern Plains in Karnataka
 Source: KFD, 1999 and Office of the Conservator of Forest (OECF), Bangalore
 *Though total afforestation cost is Rs. 69.54 crore, the investment under JFPM is
 only Rs. 22.97 crore accounting for 20.8% of total investment. Because the
 plantations raised under JFPM is only 18,709 ha

Activities	WGEPF		FEPEP-OECF	
	Amount	Percent	Amount	Percent
Afforestation*	69.54	62.98	362.914	64.06
Buildings	7.42	6.73	64.144	11.31
Vehicles	2.18	1.98	4.615	0.82
Training	1.52	1.38	21.179	3.91
Equipment	2.01	1.83	35.746	6.31
Staff	9.63	8.73	60.146	10.62
Operating cost	16.49	14.93	-	-
Repairs and maintains	1.60	1.45	14.915	2.63
Research and studies	-	-	1.925	0.34
Total	110.41	100	566.554	100

Table 9: Major Expenses (in crore rupees) under WGEPF and FEPEP-OECF

FEPEP. Under WGEPF 15% was operating cost that includes formation of VFCs, distribution of biogas, improved stoves, distribution of bamboo, housing materials, poles etc. However in FEPEP no such investment was made for these purposes. Apart from afforestation, investment made for other activities such as buildings, vehicles, and staff have small variation between WGEPF and FEPEP. Money allotted for training under FEPEP is 4% and for equipment it is 6.31% whereas in WGEPF it was less than 2%. The pattern of expenses indicates that though goal of both the two projects is providing institutional structures for protection of degraded forests, under FEPEP no substantial area has been brought under JFPM. Studies conducted at national level shows that out of 23 states, which have implemented JFPM, 8 states have received external funding of Rs. 1,724 crores. The proportion of money spent for participatory component is 28% at national level and it varies among different states from 3% in Andhra Pradesh to 100% in Haryana (Saxena 1997). It is not clear that what are the other expenses for which more money spent apart from participatory component (Murali et al, 2000).

The two model adopted under the JFFM programme are Plantation and Regeneration Model. Plantation model was implemented to establish new plantations on degraded

6.3 Forest Management Strategies

Non-JFFM plantations raised during 1992 to 1999; Other plantations includes Avenue plantations, Canal plantations and School forestry; Mixed Species includes Natural regeneration, Match wood, Teak, Soft wood, timber species; Multipurpose plantations includes Species of NTFP, Acacia, and other fuelwood species; Source: WGFP Report - 1999, Annual Reports from 1992 to 1999, KFD, Bangalore

JFFM		Non-JFFM	
Species	Area (ha) % area	Species	Area (ha) % area
Mixed species- Enrichment plantation	28768	Fuel wood and miscellaneous species	968869
Bamboo and Cane	6678	Other plantations	269569
Multipurpose-local needs	31811.5	Eucalyptus	138163
Herbs and Shrubs	150	Cashew	40428
Silvipasture	220	Teak	25140
		Softwood	9171
Total	67627.5	Total	1465778

Table 10: Afforestation strategies under JFFM and Non-JFFM programmes

More importance is given for timber as well as fuel wood species in JFFM plantations as compared to non-JFFM plantations (Table 10). During the year 1993-1999, assessment of JFFM and non-JFFM plantation shows that nearly 66% of the stems in non-JFFM plantations are belong to fuelwood species, whereas in JFFM plantations it was 47%. However, importance was also given to timber and non-timber species in JFFM plantations, with nearly 42% of stems belonging to mixed species enrichment plantation. In addition, species important to artisans were also raised in JFFM plantations that occupied nearly 10% of the stems.

6.2 Species composition

Area Covered	77,286 Hectares
% of Geographical Area	Less than 1
% of Total Forest Land	2
% of Open Forest	10
% of Wasteland	4
Potential Area Available for JFFM	4 % of Open forest and 10% of Wasteland
	to total geographical area

Box VI: Status of Forest under JFFM

JFFM forest and 10% under wasteland category. So far a total of 3% of open forest and wasteland and less than one percent of geographical area has been covered under JFFM (Box VI). The area covered is not so significant. The contribution of state to national level is 6.5% of RPCs formed and less than 1% of the area brought under

Fuelwood
 needs of the people and these have to be met from the forest. The farmers, artisans
 Fuelwood, fodder, leaf manure, small timber, bamboo and NTFPs are basic biomass

6.4.2 Biomass Requirements

Major economic incentives to community from JFPM are (1) Sharing benefits generated out of JFPM plantation with Forest Department at equal ratios and (2) Meeting biomass requirements such as fuel wood, fodder, NTFP etc. Plantations raised under the programme are found to provide woody biomass or tree based NTFPs. In Uttara Kannada sharing of benefits has accomplished. Though 21 VFCs out of 310 VFCs have shared income however, income was generated from older Social Forestry plantations and not from the JFM plantations. The Aghanashini VFC obtained highest profit of Rs. 2,10,295 and minimum profit obtained was Rs.2,368 at Katagarakoppa VFC. The average profit obtained per VFC was Rs. 55,714. Though the scale of profit shared may be small but it is a very good initiative in order to motivate community to participate with genuine interest.

6.4.1 Benefit sharing

6.4 Economic Impacts

Condition of the Forest Land and Management strategy	
Open, eroded and less fertile	Very thin forest, not much eroded
<ul style="list-style-type: none"> > Monocultures (mostly with Acacia) > Felling/clearing of plantations > Mixed species plantations 	<p>Plantation Model</p> <ul style="list-style-type: none"> 1st year- no operation in the forest (stop collection of firewood, NTFP, timber and grazing) 2nd year- thinning of the forest to allow regeneration and planting new seedlings where regeneration is poor <p>Regeneration Model</p>

Box VII: Forest Management Strategy followed in JFPM

Under this model, plantations dominated by Acacia species were raised forestland. After the harvesting, mixed species plantations will be raised, which includes firewood species such as Acacia and to some extent local species (Box VII). Even though the regeneration model is part of the management strategy, it was largely neglected and all the focus was on the expensive, conventional, plantation model. This plantation model was not significantly different from the plantation model adopted by the Forest Department during pre-JFPM period. Regeneration model requires full participation of the local community at all stages, particularly in the initial years, to protect the regenerating forest, to regulate extraction and grazing.

Grazing of live stock is one of the serious problems faced by the village community. This problem is enhanced as plantations raised on degraded forests are closed to grazing for initial three years. Previously these were the potential areas for grazing in the village. Further, increasing livestock population in the village and lack of alternative arrangements such as establishment of fodder farms, have enhanced this problem to greater extent. For instance, Uttara Kannada faced serious problems of grazing during JFPM programme, while Forest Department raised only 3 ha of fodder farm throughout the programme period. This resulted in shifting of grazing pressure to other adjacent areas, which increased travel distance and human efforts required grazing animals.

Fodder

Total area raised (ha)	49,973
Area handed over to VFCs (ha)	12,050
Number of Households benefited	27,700
Expected Fuelwood production in tons(@)	73,200
Supply of Fuelwood to Household (2t/hh/y)	36,150

Box VIII: Meeting fuel wood demand in Uttara Kannada under JFPM

and land-less people are dependent on forests for subsistence. However, efforts made by the Forest Department to meet firewood requirement of JFPM villages by raising 47% of the plantation under firewood model. The analysis carried out for Uttara Kannada (See box VIII) indicates that plantations raised under JFPM are sufficient in meeting fuelwood requirements of JFPM beneficiaries. In the districts 12,050 ha of area handed over to VFCs under WGEFF and total number of beneficiaries covered were 27,700 households. It is expected that fuelwood production from above area is 73,200 tons at the rate of 6 t/ha/year. So it is sufficient to meet the fuel wood requirement of 36,150 households at the rate of 2 ton/household/year, which is more than the requirement of the beneficiaries covered under the programme. Apart from fuelwood, it is very difficult to estimate how other biomass requirements such as timber, NTFP etc. are being met from JFPM areas. However, mixed species plantation raised accounted for 43%, which includes natural regeneration of timber species along with planting matchwood, teak, softwood, timber species and 10% of the plantations accounted for bamboo and canes in order to provide material for local artisans (Table 10).

Community participation in JPPM is crucial because they are partners in forest management with State Forest Departments. The National forest policy of 1988 promoted participation of local communities in protecting and regenerating degraded forests. Community participation at State level is poorly understood. However, study conducted at Uttara Kannada district indicates the level of community participation in JPPM programme not adequate. People have been involved in selecting land for raising plantations and also species for planting at the time of preparation of the microplans. However they have not been involved in raising the plantations, as the Forest Department undertook the entire responsibility of raising plantations, managing and protecting them during the initial three years. Communities have cooperated with Forest Department in implementing several support programmes such as installation of ASTRA stoves, biogas units. In some of the VFCs members were also involved in controlling illicit cutting in plantation and natural forests.

6.5.1 Community Participation

6.5 Social and Policy Impact

Source: WGFP Report, 1999

District	Biogas plants	Smokeless Stoves	Adike Astra Stove
Shimoga	1,356	10,056	362
Uttara Kannada	650	8,828	-
Total	2,006	18,884	362

Table 11: Biomass conservation programmes in Shimoga and Uttara Kannada under WGFP

Biomass requirements of the community specially firewood can be met either by supplying fuelwood from the plantation or providing efficient biomass devices such as biogas, ASTRA stoves in order to reduce pressure on forests. Intensive fuelwood conservation programme such as distribution of biogas units, ASTRA cooking stoves, adike (arecanut) cooking ASTRA stoves have been implemented. Data available for two districts, Shimoga and Uttara Kannada shows 18,884 ASTRA stoves, 2,006 biogas plants and 362 Adike stoves have been implemented. The impact of JPPM on the ongoing biomass conservation programme is very critical for forest conservation efforts in the State (Table 11).

6.4.3 Biomass conservation programme

The VFC membership norms prescribed in the Government Order states that only one representative per household can become a member. It is likely that only male heads of the families became members of the VFC, resulting in exclusion of women from the VFCs and consequently, from active participation in JRFPM. The role of

6.5.2 Participation of Women, Landless labourers and Artisans in VFC Activities

The time has come wherein the state and community have jointly managed forests and have reached a stage of sharing their profit. It is positive and significant initiative in motivating the community to participate in forest development activities. Benefits derived so far from plantations raised during pre-JRFPM period have been shared between community and Forest Department at equal ratio. Further communities must distribute 50% of their share (or 25% of the total profit) to individual household beneficiaries and 50% as village forest development fund. Though amount received was small and not sufficient to distribute among household, it is positive and significant step in motivating community to participate in future forest development programmes.

JRFPM plantations are protected by trenches and fences and grazing was strictly banned during initial three years. Forest Department also appointed a watchman during that period. This resulted in increasing cost besides resulting in minimal participation of village community in forest protection during the initial years. Because of non-involvement of communities during plantation and protection of JRFM areas, communities are facing difficulties in managing the forests that were hitherto under the FD control. This may primarily be because of lack of experience in forest management and difficulties in convincing all the households concerned in protecting and bringing the desired results.

The community participation was observed in microplanning exercise during which information on demands for forest resources, level of dependency of locals on forests, inventory of natural resources in the villages, seasonal activities etc. were worked out. However, while microplanning have been prepared important matters such as financial issues and priority areas in which investment needs to be made were not adequately discussed with community. Analysis of the minutes of some of the managing committee meetings showed that they had no information on the financial investments proposed or made.

Though a large number of NGOs are functioning in the State, very few of them have been involved activity in the JPPM process. Involvement of NGOs is considerably high in Uttara Kannada and Shimoga districts. This is because of provision made for involvement of NGO under WGEFP. In Uttara Kannada, 12 NGOs are actively involved in training, motivating, mobilizing community for JPPM process in the district. It also helped the VFCs to form federation. This will help to strengthen VFCs across the districts and to tackle various problems they are facing. NGOs act as the facilitator between FD and community. They provide training on

6.5.3 Role of NGOs

The artisans are not found everywhere in the state, but as per the Government Order, wherever artisans are present, they are to be represented in the Managing Committee. The FD has made efforts to meet the requirements of the artisans, by raising 5,387 ha of exclusive plantations based on the artisan model. One such plantation of Bamboo has been raised in Kangod, Sirsi division, as mentioned earlier in the micro level study.

Participation of women in JPPM process was not given adequate importance, although they play a constructive role in the management of forests. In many places, women are not only unaware of the origin of the decisions but also of the very existence of the VFC. There are six exclusive women VFCs in the Uttara Kannada district, where all the Managing Committee members are women. They include Satgeri in Karwar division and Banasgeri in Haliyal division. It is interesting to note that in Banasgeri, the women are involved in JPPM because most household are land-less and are seasonal migrants (Saxena *et al.*, 1997). Manjuni in Karwar division is another VFC with active participation of women in JPPM. This VFC has four women members in the Managing Committee (Correa, 1997). Field discussions showed that in case of the landless, though representation is provided in the Managing Committee, but the decisions are made, by and large, by the dominant community of the village.

woman as a promoter, who initiates the JPPM process, was minimal. However, the Government Order has been amended subsequently in 1996, to enroll both husband and wife in a family as VFC members. The Government Order provides representation of two women in the Managing Committee. In general, women elected to the Managing Committee belong to dominant groups in the village.

2. JFPM provided institutional arrangements for forest management at local level.
state.

1. External support has played vital role in the spread of JFPM programmes in the participatory forest management in the state are:

Some of the positive reflections of JFPM in Karnataka in order to promote

7. Summary and conclusions

The Government of Karnataka passed JFPM order during 1993. Over a period of time only one amendment was passed during 1996. Major changes encountered in this amendment were enrollment of women member along with men of the households is a must and extension of JFPM to higher canopy area where community can protect natural forest also. The results of this study show that it is required to pass series of amendments by looking into drawbacks of the programme so far experienced in the state. In order to strengthen community participation and better management of forests in the state.

So far JFPM was implemented under Forest Department's perspective. Constitutional status of VFCs as village democratic units is not clear. Though provisions were made under JFPM order in states, VFCs can register as society under Mysore society act or Cooperative society under Cooperative Society Act. None of the VFCs have been registered under these provisions. They have been recognized by Divisional Conservator of Forest of Forest Department to initiate JFPM activities in village. MoU has been signed between Forest Department and VFCs. In future to enable VFCs to act an independent body, it is required to provide legal support. It enables VFCs to take decisions on mobilizing fund, extending JFPM on non-forested lands. It is very relevant that most of the VFCs have been covered in state is under external funding. The question raises about the sustenance of VFCs when such funds are stopped. This indicates that some policy supports are required in order to sustain VFCs existence under JFPM programme.

6.5.4 Policy impacts

They also educated VFCs on the roles and responsibility of the members, the importance of women participating in the JFPM and leadership development. A constructive step initiated in JFPM programme to involve NGO has resulted in building confidence among community to work as partners in forest management.

- in these VFCs are not sufficient to meet various constraints:
6. VFCs have not adequately supported by legal framework such as registration of the VFC under societies act or co-operative society act. The amendments passed in these VFCs are not sufficient to meet various constraints:
 5. Fuelwood supply is adequate in most VFCs. However, it is not clear how JFPM plantations are going to meet biomass requirements specially the timber and NTFP.
 4. Under forest management strategy, major emphasis was given to plantation model rather than regeneration model that is cost-effective as well as community oriented activity.
 3. Reduction in frequency of General body and Management Committee meeting shows that lack of interest among community to participate in the programme.
 2. Participation of community was limited and FD dominated in decision-making such as allocation of finance for various activities and prioritizing of activities.
 1. Potential districts for promoting JFPM such as Bangalore rural district, Bellary etc., in terms of area available for protection is more, have not been given adequate importance.

The inadequacies of JFPM programme in state are:

6. Intensive implementation of fuelwood conservation programmes such as promotion of biogas plants, ASTRA stoves has taken place.
5. Major investment made under externally funded programme is for afforestation activities in which participatory component is genuinely supported.
4. Nearly 10% of the open forest has been reclaimed in the state and it is very significant in some districts such as Uttara Kannada, Bijapur and Bidar.
3. Afforestation programme undertaken under JFPM programmes is able to meet biomass requirement (at least fuelwood) of JFPM beneficiaries.

The JFPM process has resulted in increased interaction between the Forest Department and the village community through initiation of village level organization in the state. Adequate role given for NGOs as facilitator, help in monitoring community towards programmes. This in turn has strengthened the efforts of the Forest Department to contribute for better coordination of natural forests and vegetation of the degraded areas. It also improved community access to the forest for meeting their requirement of firewood.

- Though, good beginning has been made to initiate people's participation in forest Management, it is necessary to learn from the experience so far. Here are some of the observations based on the findings of the study:
1. It is required to set up criteria for spread of JFPM programme in different districts. This study suggests one such criterion i.e., the potential area available in terms of open forest and wasteland.
 2. A re-examination of programme is required to strengthen JFPM in the state. The community should be given an adequate role in decision-making and be involved at various level of decision-making.
 3. Forest Department should allocate some budget for VFCs that are not supported from external agencies. It is also important to work out strategies for sustaining VFCs that are presently supported through external agencies.
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