

# A Review on the Evolution and Status of Joint Forest Management in India with special focus on West Bengal

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## Abstract:

West Bengal is one of the Indian states where state of forest resources is somehow gloomy. As per current assessment, 11879 sq.km or 13.38% of total geographical area of the state is recorded forest area which is comparatively lower against national level of 23.38%. This analytical study is an elaborative analysis about the success and failures of the JFM in West Bengal and in particular in the economically backward district of Bankura. From the outcome perspective, the program has provided many village communities with genuine access to significant livelihood sources. In West Bengal, for instance, after the implementation of the program, the member households have been able to receive a sustained income from final yielding of timber, while in certain areas employment opportunities have gone up. In addition, with free access of some forest products, the women, especially, the poor women in many FPC-managed forests have got back a certain amount of dignity.

**Keywords:** JFM, FPC, Common Property Resources, Forest Resources, NTFPs.

## 1. Introduction

Since time immemorial, forests have been looked upon as a significant source of livelihoods of the people residing in or on the periphery of forests. Apart from providing livelihood means, forests supply a wide range of subsistence needs, including fuel wood for energy, fodder for livestock, small timber for domestic use, raw materials for industrial requirements and various non-timber forest products for medicinal and other purposes. Forests also play a major role in mitigating environmental degradation, developing watershed, conserving bio-diversity etc.

Being one of the Common Property Resources (CPRs) on earth, forests have two crucial features: firstly, exclusion of users of such resources is difficult, and secondly, each user is capable to subtract from the welfare of all other users. Thus, being vulnerable to the “tragedy of commons”, forest resources often suffer from overexploitation which in turn leads to degradation of these resources. The situation becomes worse when there exists the lack of effective institutions to govern and manage the resources in a sustainable, efficient and equitable manner.

In this context, it is of paramount significance to protect and manage the world's existing forest resources properly. Decentralization of natural resource management and access rights from state to local communities and user group has been an important tool in developing countries over the last few decades. In 1972, the United Nation's conference on Human Environment at Stockholm drew the attention towards community participation in protection and improvement of environment and related issues, which was reiterated by the World Commission on Environment and Development in 1987 through its report titled 'Our Common Future'. Accordingly, in forestry sector, many countries adopted a statement of principles, known as "forest principles" for management, conservation and sustainable development of forests, which suggested provision for participation of local communities, indigenous people, forest dwellers, NGOs in the development, implementation and planning of forest management strategies. ((Ostrom'1999, Behera & Engel'2006, Vemuri'2008, Pratap'2010)

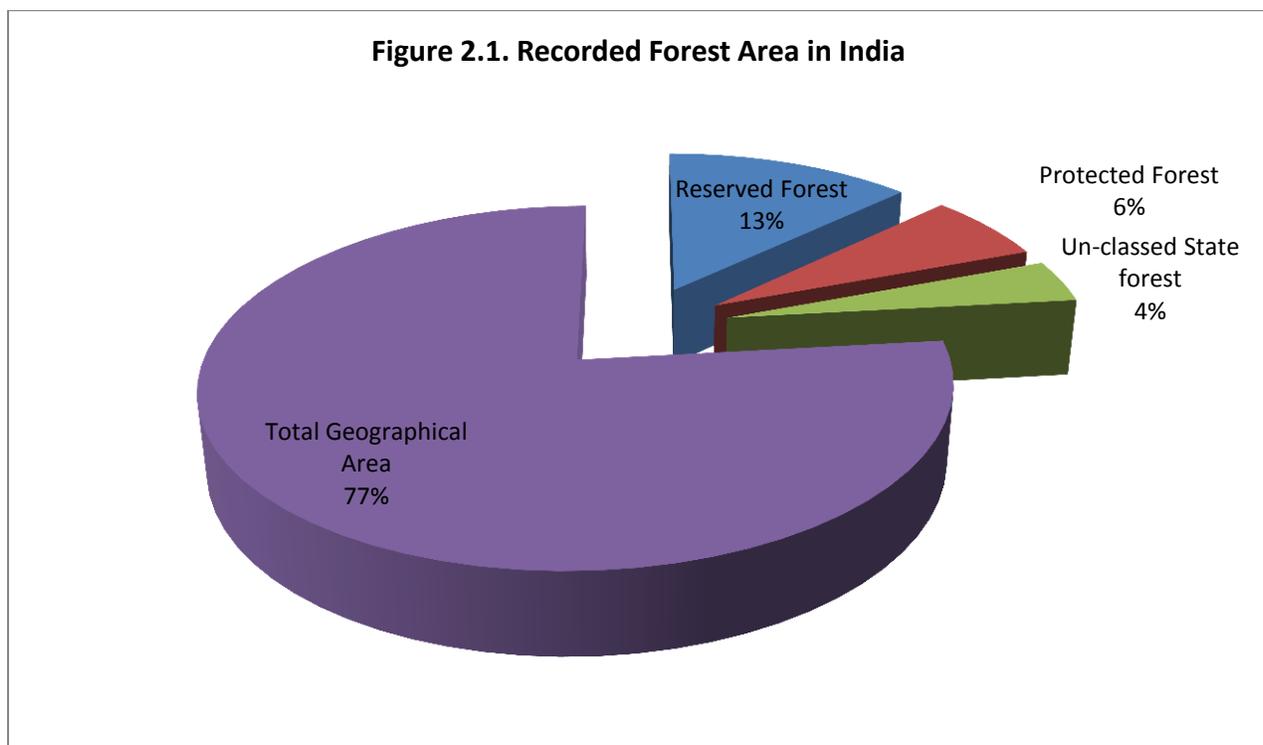
India had been at the forefront of adopting community-based forest management on a national scale. During 1980s, the growing depletion of India's forest resources had brought into focus the insufficiency of traditional forest management system in sustaining the forest resource base against increasing pressure of human as well as livestock population along with rapid industrialization, urbanization and economic development. To check further depletion of forest resources a radical shift in Indian forest policy occurred in 1988 which opened up opportunities for the local communities in the process of forest management. Accordingly, in 1990 the Ministry of Environment and Forests, India issued a circular requesting all the states to adopt **Joint Forest Management(JFM)**, an initiative towards sustainable forestry with the aim to establish a relationship between the state forest departments and local communities on the basis of sharing responsibilities and benefits. The country has, at present, 1,18,213 JFM committees managing about 2,29,38,814 ha of forest area and involving about 1,45,18,219 members. (MoEF, GoI; Godbole'2002, Behera' 2003, Behera& Engel'2006, Kant & Cooke' undated, Forest Research Institute, Dehradun'2011.)

As an Indian state, West Bengal played an impressive role in implementing JFM. Followed by a major success in rejuvenating degraded Sal forests(in collaboration with local villagers) at Arabari forest range, Midnapore district, the first state wide policy supporting the JFM program was issued on July 12, 1989 encouraging the formation of Forest Protection Committees (FPCs)

to protect the state forest lands along with the profit sharing scheme. Accordingly, by now, 4394 FPCs have been formed in the state managing about 592243.7ha. of forest land and involving about 493713 members.(Sate Forest Report)

## 2. State of Forest Resources in India

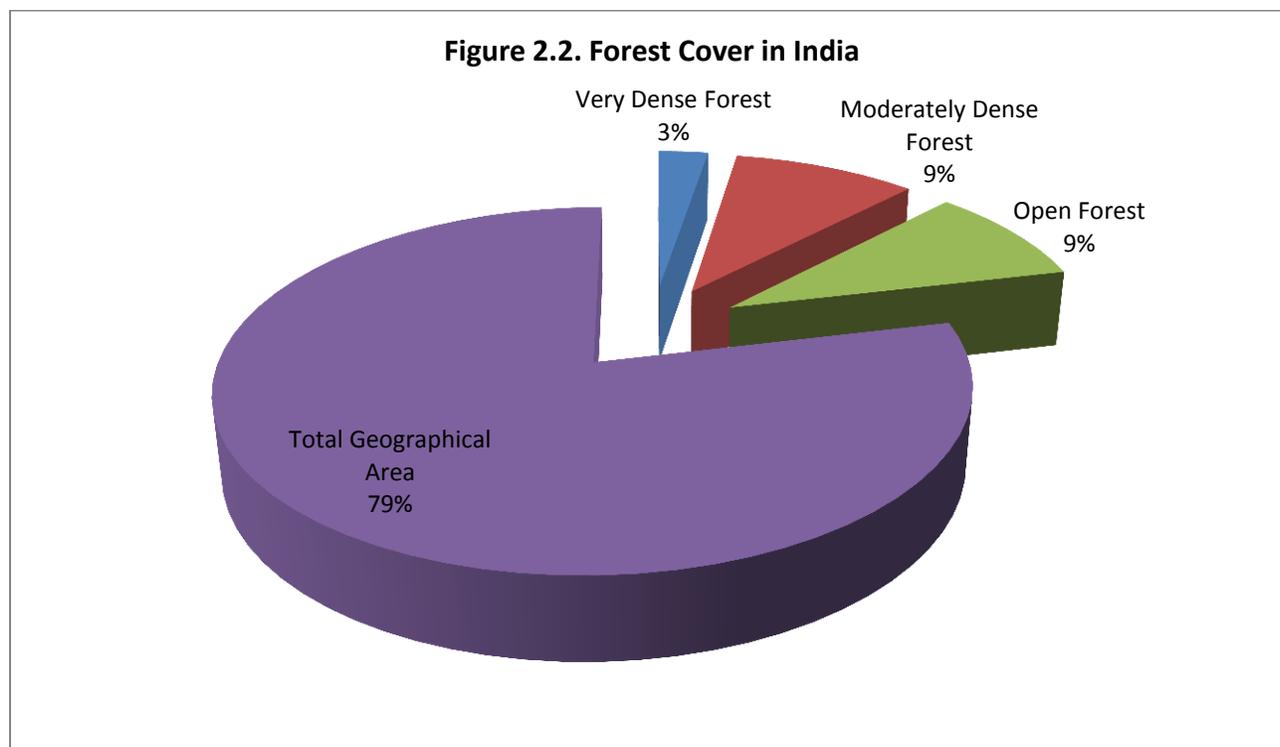
As per current estimate, about 4 billion hectares, or about 31 percent of the world's land area, is covered with forests. Of this, around 2% is found in India. According to data, the country has, at present, 764,566 sq. km of recorded forest area<sup>1</sup> covering 23.26% of geographical area of the country with majority of the area being reserved forest (424,985 sq.km or 12.93% of country's geographical area) followed by protected forest (209,440 sq.km or 6.37% of country's geographical area) and un-classed state forest & others (130,141 sq.km or 3.96% of country's geographical area). (ISFR'2015)



Source: India State of Forest Report' 2015

<sup>1</sup>By definition, Recorded Forest Area refers to all the geographical lands recorded as 'Forests' in government records which largely consists of Reserved Forests and Protected Forests which have been constituted under the provisions of Indian Forest Act 1927; besides Reserved Forests and Protected Forests, it may also include all such areas which have been recorded as forests in the revenue records or have been constituted so under any state act or local law.

In terms of tree canopy density, however, the country owns 701,673 sq.km of forest cover area<sup>2</sup> which constitutes 21.34% of country's geographical area. Of this, area covered by very dense forest is 85,904 sq.km(2.61% of country's geographical area),that with moderately dense forest is 315374 sq.km(9.59% of country's geographical area) and open forest is 300,395 sq.km(9.14% of country's geographical area).Thus, majority of the forest covers found in the country are either moderately dense or open.(ISFR' 2015)

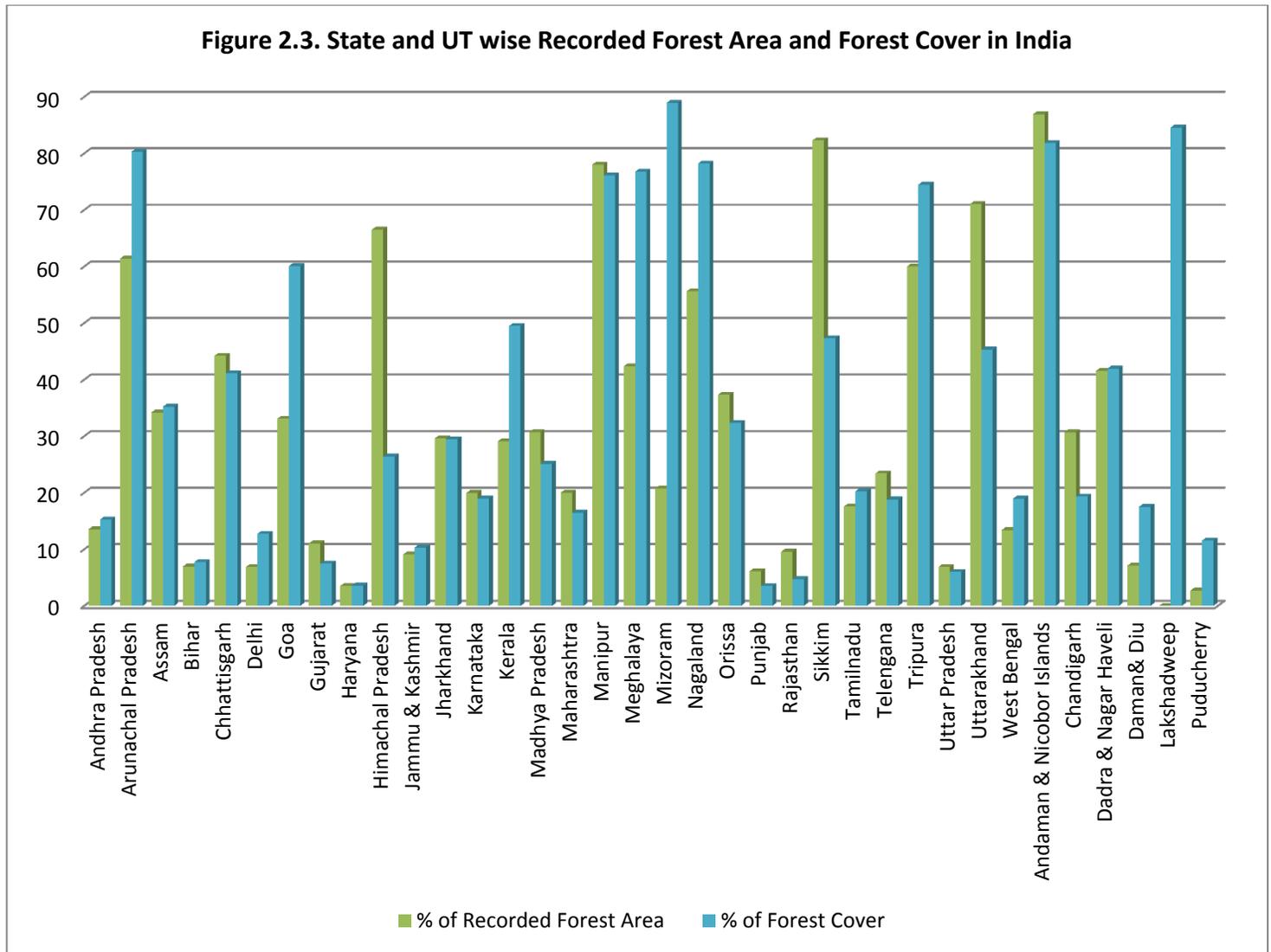


Source: India State of Forest Report' 2015

Among state/UTs, percentage of forest area (w.r.t. total geographical area) is maximum in Andaman & Nicobar Islands (86.93%) followed by Sikkim (82.31%), Manipur (78.01%), Uttarakhand (71.05%) Himachal Pradesh (66.52%), Arunachal Pradesh (61.39%) and Tripura

<sup>2</sup>Forest Cover refers to all lands more than one hectare in area with a tree canopy of more than 10% irrespective of land use, ownership and legal status and thus all areas bearing tree species including bamboos, orchards, coconut, palm etc. within recorded forest, private, community or institutional lands meeting the above defined criteria are termed as Forest Cover. The Forest Cover, further, consists of Very Dense Forest (area with tree canopy density of 70% and above), Moderately Dense Forest (area with tree canopy density and 40% and more but less than 70%) and Open Forest (area with tree canopy density of 10% and more but less than 40%).

(60.02%). In terms of forest cover, however, majority is found in Mizoram(88.93%) followed by Lakshadweep(84.56%), Andaman & Nicobor Islands(81.84%), Arunachal Pradesh(80.30%), Nagaland(78.21%), Meghalaya(76.76%), Manipur (76.11%) and Tripura (74.49%).(World Bank’2013, ISFR’2015)

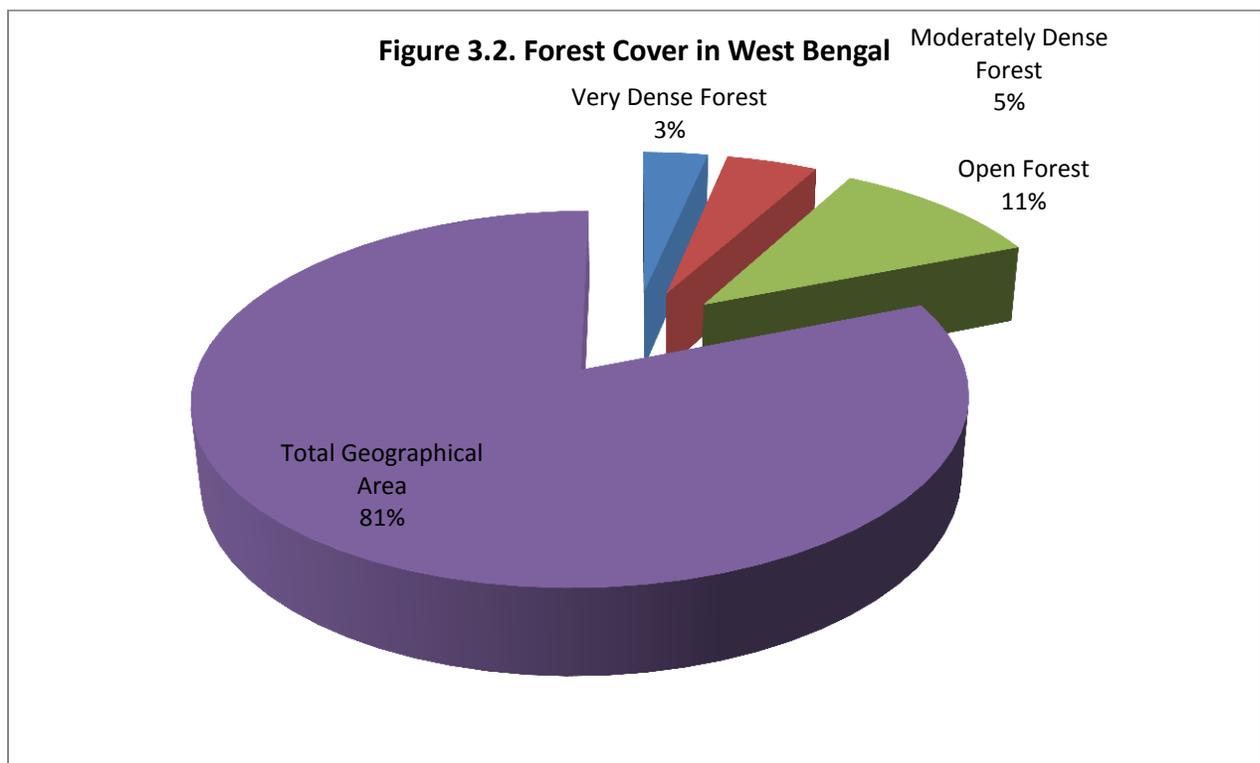
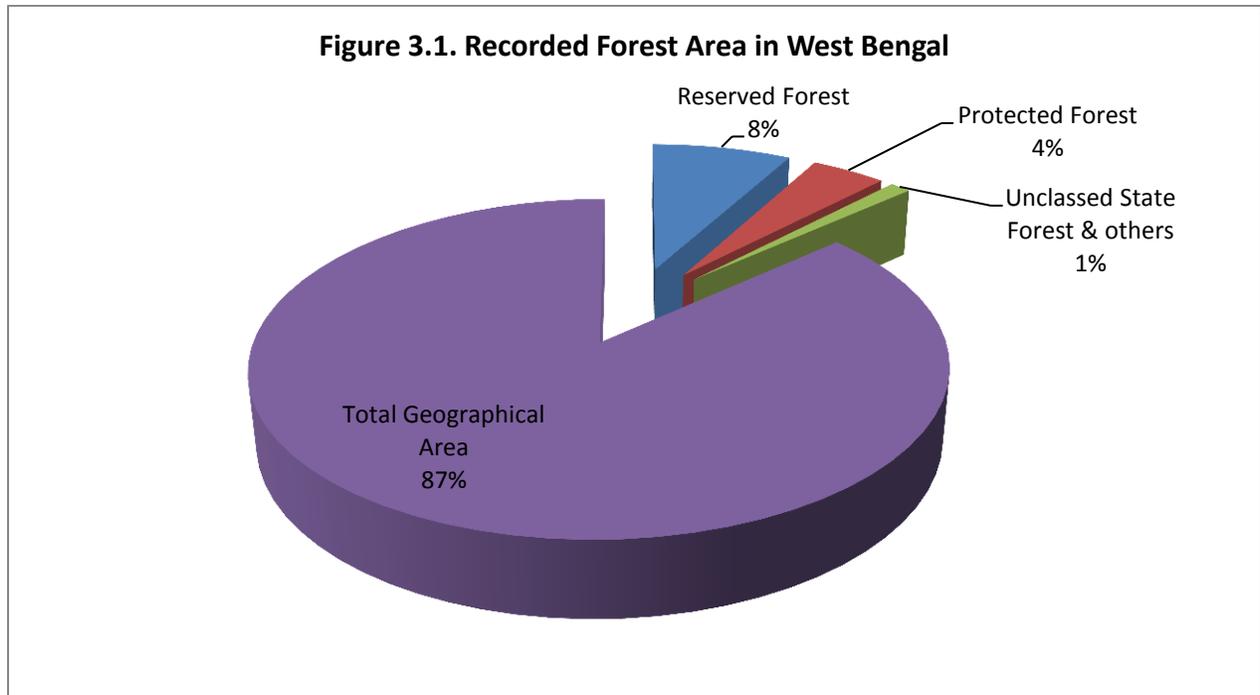


Source: India State of Forest Report’ 2015

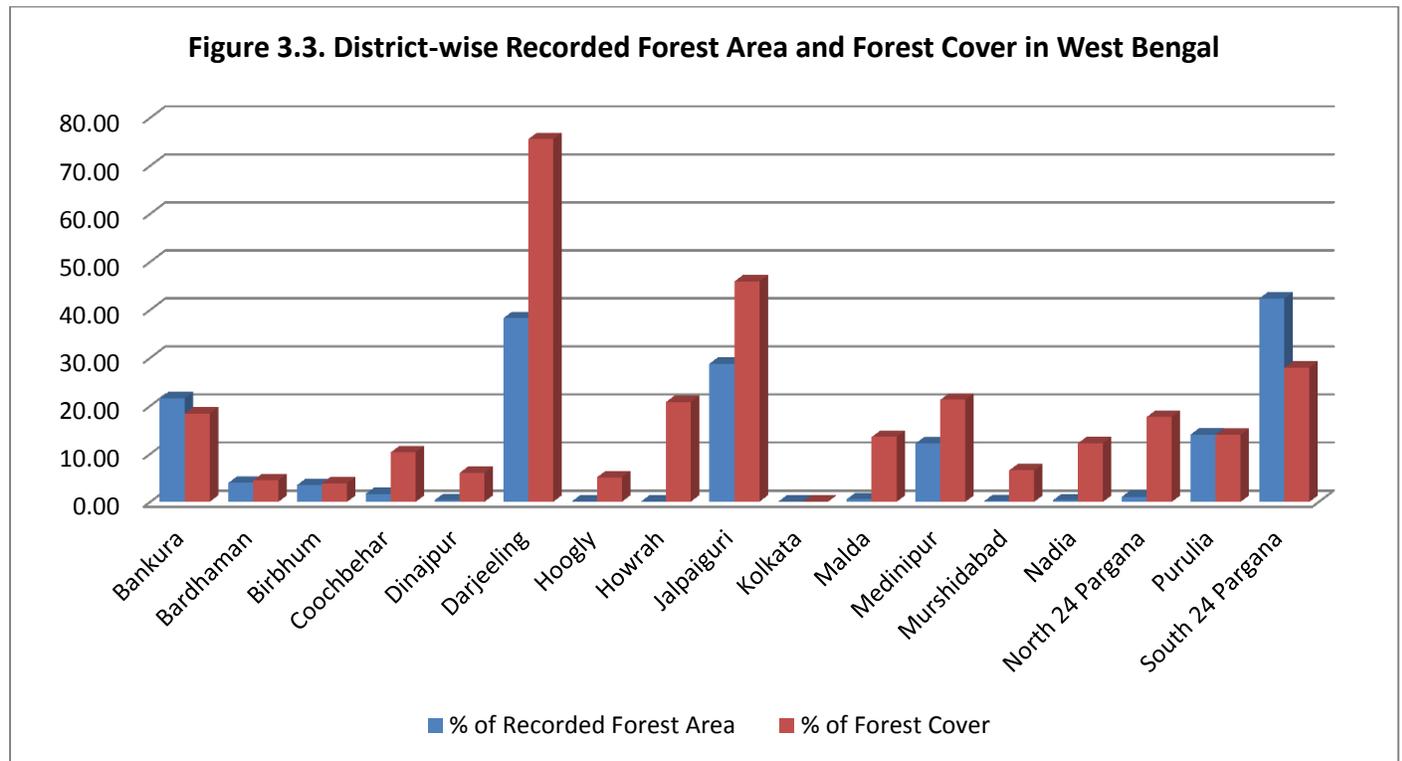
### 3. State of Forest Resources in West Bengal

West Bengal is one of the Indian states where state of forest resources is somehow gloomy. As per current assessment, 11879 sq.km or 13.38% of total geographical area of the state is recorded forest area which is comparatively lower against national level of 23.38%. Based on tree canopy

density, the state owns a (forest cover) area of 16828 sq.km which constitutes 18.96% of the state's total geographical area. A major portion (59.38%) of the state's forest area is reserved while in terms of forest covers of the state the majority (57.69%) is open.(ISFR' 2015)



Among districts, maximum forest area (in percentage term w.r.t to total geographical area) is found in South 24 Parganas(42.37%) followed by Darjeeling(38.23%), Jalpaiguri(28.75%) and Bankura(21.53%);while in terms of forest covers, Darjeeling (75.52%) has the majority followed by Jalpaiguri (45.86%), South 24 Parganas (27.93%) and Medinipur (21.26%).(WBSFR'2011-12, ISFR'2015)



Source: WBSFR'2011-12 &India State of Forest Report' 2015

#### 4. Evolution and Status of JFM in India

The initiative of Joint Forest Management is the latest in the history of Indian forest policies as it emerged after the country went through different stages of forestry. During colonial era sole motive of forest administration directed towards the promotion of State interests through commercial forestry. The first legislation on forest during this era was adopted through the Forest Act of 1865 where provisions were made to protect trees, to prevent fire and to restrict cultivation and grazing in forest areas. The act, however, was replaced by a more comprehensive forest legislation through Forest Act of 1878 which enabled the government's sole right over forests. The first formal forest policy in India was issued in 1894 in the form of Forest Policy of

1894 .The policy was centrally influenced by the Volcker Commission Report, where forests were considered to be the biomass provider for the agricultural sector. In the policy, forests were divided into four classes: 1) forests, those generally situated on hill slopes to protect plains from damage caused by landslides and hill torrents; 2) forests, as the reservoir of valuable timber trees; 3) forests, as the supplier of inferior timber, fuel wood, or fodder to fulfill people's needs and 4) forests, those included 'pastures and grazing grounds '. In general, the sole objective of the policy was administration of state forests with restriction of rights and privileges of inhabitants staying within or adjacent to the forests. In order to strengthen forest laws, a new forest act was formulated in 1927 succeeding the 1878 Act, though the act was adopted by Indian states in 1947, that is, after independence. The 1927 Act made a provision for the transfer of a reserved forest to a village forest which led to greater dissociation of forest- fringe communities and turned forests into open access regions. The act also showed a positive attitude towards people's role in the forest management process but this was overshadowed by the State's intension of revenue generation. After independence, a new forest policy was adopted by the government of India in the year 1952 in which forests were classified into protection forests, national forests, village forests and tree lands. In the policy, recommendations were made to wean tribes from shifting cultivation practices and to control grazing and other activities in forest areas. To accommodate and endorse the heavy demand on forests the policy encouraged industrial expansion which, in turn, left a negative effect on forest-dependent communities leading to several people's movements against State policy. Accordingly, a string of forest development corporations was set up in the late 1970s to 'corporatize' the process of production forestry in the country. In the context of allowing people's involvement in forestry, the 1952 Policy laid down that 'it would be the duty of the forester to awaken the interest of the people in the development, extension and establishment of tree lands wherever possible, and to make them tree-minded'. But, unfortunately, the policy could not provide any strategy of how to bring about public participation in forest management and ultimately up to late 1980s Indian forest policies were guided by the so-called British directions. (Damodaran & Engel'2003; Balooni & Innoue'2009; Pratap'2010)

After a long journey, the 1988 forest policy became a landmark in the history of Indian forest policies which not only laid the foundation for the preponderance of conservation over commercial forestry but also recognized the importance of people's involvement in the

management of forest resources. The policy aimed to fulfill some key objectives: a) maintenance of environmental stability through preservation and restoration of the ecological balance of the country; b) conserving the natural heritage of the country by preserving the remaining natural forests with the vast variety of flora and fauna; c) meeting the requirements of fuel-wood, fodder, minor forest produce and small timber of the rural and tribal populations; d) increasing the productivity of forests to meet essential national needs by encouraging efficient utilization of forest produce and maximizing substitution of wood and e) creating a massive people's movement with the involvement of women, for achieving these objectives and to minimize pressure on existing forests. To pursue 1988 policy, the Ministry of Environment and Forests, Govt. of India, in June' 1990 outlined the framework for involving village communities and voluntary agencies for the protection and regeneration of degraded forest lands and the development of forest lands situated in the vicinity of the villages. Thus, JFM emerged in the country attempting to create a new relationship between 'state' and 'community'. As per 1990 JFM guidelines of central govt. of India, all the states in the country have resolved to implement JFM making it one of the largest community- based natural resource management program in the world with the aim to reach the national goal of 33% of the forest cover. (Behera'2003, Vemuri'2008, Pratap'2010)

Presently, the country has 1,18,213 JFM committees (across twenty eight states and one union territory) managing about 2,29,38,814 ha of forest area and involving about 1,45,18,219 members Among states/UTs, Madhya Pradesh has the maximum number of JFMCs followed by Uttarakhand, Maharashtra and Orissa .(FRI-Dehradun'2011).

**Table 4.1.State/UT wise Status of JFM Committees and Area under JFM in India**

States/UTs	No. of JFMCs	Area under JFM(ha)	No. of families involved
Andhra Pradesh	7,718	1519000	1438000
Arunachal Pradesh	1,013	100377	33048
Assam	1,184	52499	294834
Bihar	682	462333	211674
Chhattisgarh	7,887	3319000	1117000
Goa	26	10000	336

Gujarat	3,067	414151	417032
Haryana	2,487	41188	66036
Himachal Pradesh	1,023	205056	263024
Jammu and Kashmir	4,173	38736	429796
Jharkhand	9,926	1721700	429796
Karnataka	3,848	808020	272805
Kerala	576	107404	78501
Madhya Pradesh	15,228	6687390	1700000
Maharashtra	12,665	2403344	2708597
Manipur	665	166767	24102
Meghalaya	285	17245	39210
Mizoram	613	55990	80685
Nagaland	951	42929	159587
Orissa	12,494	1148676	1642982
Punjab	1,224	178333	91850
Rajasthan	5,316	858614	571051
Sikkim	219	88518	46000
Tamil Nadu	3,487	756446	482269
Tripura	920	241138	79445
Uttar Pradesh	3,426	183393	706050
Uttarakhand	12,738	564221	629000
West Bengal	4,368	646084	505149
A & N Islands	4	262	360
<b>Total</b>	<b>1,18,213</b>	<b>2,29,38,814</b>	<b>1,45,18,219</b>

Source: National Workshop on JFM 27-28 June 2011, Forest Research Institute, Dehradun

## 5. Evolution and Status of JFM-the West Bengal Context

West Bengal is one of the Indian states where Joint Forest Management (JFM) inlaid, brought up and developed as a successful model of forest conservation through active participation of local people. The concept has its origin in the innovative experiment (regarding rejuvenation of degraded 'Sal' forests) in early 70s in Arabari range of Midnapore district in South West Bengal.

During the experiment, Ajit Kumar Banerjee, a renowned forest officer as well as silviculturist, found it difficult to study the growth and regeneration of trees in the research area due to the disruptions coming from local villagers. In order to stop these disruptions, when Banerjee visited local villagers to discuss about the problem he realized that, collaboration of those villagers is essential in rehabilitating the forests in the area and it is too necessary to assure them some benefits as rewards of their efforts. With this realization, a strategy was adopted by the forest officials of Arabari range, where 618 families of 11 villages were motivated towards the rejuvenation of 1,186 ha. of degraded Sal forests of the area by roping in their participation. In lieu of their active participation, the villagers were promised to earn perpetual entitlement of their family needs of firewood, small timber and NTFPs along with 25% of the net income earned through final felling of the timber. In addition, they were provided 50,000 person-days of employment annually through productive investment. The strategy proved successful and was applied on a large scale in other parts of the state. Thus, participatory forest management evolved in West Bengal. However, it took almost 20 years to implement the program officially. After the national forest policy of 1988 came into existence in India, the first state wide policy supporting participatory forest management (popularly known as Joint Forest Management in Indian term) was issued on July 12, 1989 encouraging the formation of Forest Protection Committees (FPC) to protect the state forest lands along with the profit sharing scheme. (Pattnayak & Dutta'1997, Joshi' 1998-99, Banerjee'2004, Vemuri'2008, Balooni& Innoue'2009, State Forest Report'2011-12)

By 1989, when JFM was formally issued in West Bengal, there were already 1200 FPCs in the state managing about 1,52,000 ha of forest lands on voluntary basis. Within next year there were added another 522 FPCs managing about 69442 ha of forest lands. Thus, by 1990 (the year of formal existence of JFM program on national scale), the state owned 1722 FPCs which covered about 2,21,442 ha. of state's forest land. The number, by 2014, has increased to 4394 to FPCs covering about 5,92,244ha. of forest land. A major part of these FPCs are located in the districts of Southern West Bengal, namely, Bankura, Medinipur, Purulia, Bardhaman and Birbhum. (State Forest Report)

Table 5.1. FPCs in West Bengal as on 31<sup>st</sup> March'2014

Zone	Division	Total no of FPC	Area protected(ha)	No of members					
				Male	Female	Total	SC	ST	Others
Hilly	Darjeeling	75	14456.99	3890	433	4323	139	1025	3159
	Kalingpong	64	26237.86	3582	195	3777	204	875	2698
	Kurseong	46	13287.62	1165	1643	2808	431	1198	1179
	Wildlife 1	0	0	0	0	0	0	0	0
Duars-Terai	Jalpaiguri	62	20148.16	10701	601	11302	4818	3526	2958
	Baikunthpur	66	14023.78	6192	131	6323	4529	790	1004
	Coochbihar	25	4102.9	2932	209	3141	1497	517	1127
	Wildlife 3	25	7020.79	4360	180	4540	727	2483	1330
	B.T.R(E)	17	9331.09	3340	103	3443	1548	1334	561
	B.T.R(W)	33	25595.8	4064	489	4553	768	2563	1222
North Bengal plains	Raigunj	21	1162.6	1727	74	1801	864	412	525
	Malda	3	103.368	381	47	428	240	180	8
South Bengal	Midnapur	364	45956.45	48038	2801	50839	10131	9186	31522
	Jhargram	474	52179.31	38254	2449	40703	9135	14906	16662
	Kharagpur	248	31401.04	29025	1586	30611	7028	8952	14631
	Rupnarayan	213	26397.78	26331	1343	27674	6419	7814	13441
	Bankura(N)	543	53102.54	50845	2094	52939	19947	7917	25075
	Bankura(S)	642	44460.37	55761	4763	60524	14599	18651	27274
	Panchet	231	28466.18	27328	1562	28890	10952	4706	13232
	Purulia	213	30845.22	20812	898	21710	7035	5913	8762
	Kangsabati(N)	244	17641.2	23578	851	24429	5677	8089	10663
	Kangsabati(S)	305	25446	29561	569	30130	4293	10899	14938
	Burdwan	73	17758.05	16582	3086	19668	7818	5349	6501
	Durgapur	24	2436.439	1957	1964	3921	1112	1405	1404
	Birbhum	198	9008.23	16869	352	17221	6095	5586	5540
Howrah	4	479.08	815	319	1134	537	238	359	

	Nadia-Msd	111	1648.71	913	44	957	246	254	457
	PurbaMedinipur	19	1813.11	4760	1097	5857	1256	50	4551
Estuarine	S.T.R	11	25199	7951	597	8548	7689	362	497
	24-Pgs(S)	40	42534	10801	10718	21519	11830	514	9175
<b>Total</b>		<b>4394</b>	<b>592243.7</b>	<b>452515</b>	<b>41198</b>	<b>493713</b>	<b>147564</b>	<b>125694</b>	<b>220455</b>

Source: Principal Chief Conservator of forests, Govt of West Bengal

## 6. Outcomes of JFM

India's Joint Forest Management (JFM) program is one of the largest co-management regimes for conservation of natural resources in the world. Originating in small experiments in few states like West Bengal, the initiative of JFM represents a major effort in the country over the last few decades to make policy work for both forests and people. (Joshi' 1997-98, Khare *et al*'2000, Vemuri'2008)

Khare *et al* (2000) in a study has shown that, though JFM represents a positive step towards well-established forest management with the potential to empower and increase livelihood security among the forest-dependent communities, it remains institutionally fragile.

Behera & Engel (2006) in a study based in Andhra Pradesh, India have tried to analyze the evolution of JFM institution in India in the light of the New Institutional Economics using Williamson's 'four levels of institutional analysis' framework. The study reveals that, although co-management of forests is certainly a right movement, the uncertainty regarding transfer of property rights to local communities causes disincentives among the FPCs in considering effects of their actions. Moreover, the lack of accountability and the prevalence of asymmetry both in the FPC leaders and forest department bureaucrats raise rent-seeking activities. In this context, the study suggests that, transformation of administrative rights into legal rights would be helpful for the improvement of the security of community rights and an independent vigilance system to organize the JFM activities may be one potential way to improve accountability.

Another study by Behera (2009) based in Andhra Pradesh, India has tried to identify and analyze the factors determining differential outcomes of JFM. The study shows that, those JFM

committees which are smaller in size, have scarce forest resources and initiated by NGOs are more likely to perform well.

Bhattacharya *et al* (2010), in a study based on a preliminary assessment of the status of JFMCs in the forest tracts of central and central-eastern parts of India have shown that, although in most of the states, JFM policies were designed to secure the forest livelihoods and to mitigate poverty along with forest conservation and rejuvenation, but due to lack of proper mechanism for conflict resolution and accountability, lack of collaboration between the forest departments and local communities, improper allocation of resources and benefits the program has suffered. Moreover, the forest department's autonomy over distribution and delimitation of forest lands, micro-planning has left minimal place for the communities. In this context, the study suggests that, local communities should be given the freedom to manage and protect the forests without undue influence of the forest department in their decision-making process; shift in policy need to be developed to secure the rights of the JFMCs; direct market channels for the forest products need to be evolved.

***The West Bengal context:*** Early after formal existence in 1989, JFM led to reckonable success in rejuvenating the degraded forests of West Bengal. To acknowledge this success, the FPCs of the state were rewarded with the Paul Getty award in 1993. (Deb'2010) Apart from this, the state achieved success on the grounds of increasing timber production as well as decreasing illegal extraction of timber, increasing flow of NTFPs, decreasing conflicts among stakeholders etc. Joshi (1998-99) has clearly stated about the various achievements of JFM in the state:

*“Forest cover has increased, timber production has increased, conflict between foresters and communities has decreased and the yield of NTFPs has increased. According to satellite surveys, the forest cover in West Bengal increased by 4.5% between 1988 and 1991. Of this increase in forest cover, 67% has occurred in South West Bengal, the region that contains the largest number of FPCs, although it has only 37% of forest land. Although only a minor portion of the total timber production comes from the South West region (4%), the total timber extracted has increased from a low of 72,590 m<sup>3</sup> in 1989-90 to 84,903 m<sup>3</sup> in 1994-95. The number of forest personnel assaulted is another broad indicator – this has decreased from a high of 60 in 1982-83 to 18 in 1994-95. Similarly the number of forest offences (cases of illegal extraction) of timber has decreased.”*

Pattnaik & Dutta (1997), based on a case study of six villages in Bankura district, West Bengal, has revealed the success of JFM on various grounds: a. There has observed a significant decline in the seasonal out migration of the villagers which clearly indicates the growing income generation opportunities provided by the JFM to the villagers. b. The patrolling activities carried out by both men and women on rotation basis, have helped to diminish forest loots and illegal feelings, on a large scale. c. The area has been ecologically improved. Local people have themselves observed improvement in soil preservation, rainfall as well as temperature, which clearly indicates the improvement in environment of the villages; in certain areas, along with reappearance of some plant species wildlife has been gradually rejuvenated.

Banerjee (2004) has, however, described JFM as “*a two-way street, one of which can lead to great heights in respect of ecological resurrection and livelihood improvements, and the other to ecological and livelihood downturns.*” With regard to the positive aspects of JFM in West Bengal, the author has highlighted some facts: a. The women and the poor in many FPC-managed forests have got back a certain amount of dignity as they are now free to collect forest produces (except few). b. A friendly relationship has been established between the FD and the FPC members. c. FPCs households are receiving a sustained income from felling activities, while in certain areas employment opportunities have gone up. d. Some improvements in biodiversity and forest quality have also taken place in certain forests areas of South West Bengal.

There are some negative aspects also: a. The West Bengal JFM orders have not fully reflected the objectives of 1988 National Forest Policy. For example, the state has limited the operation of JFM to degraded forests only, while 1988 National Forest Policy emphasized on conservation of natural forests. b. The FD has failed to (technically and socially) manage the forests. For example, no initiative has been taken to improve the productivity of NTFPs, which are a significant source of livelihoods to the poorer sections of the community. It has been seen that, where the local forester is in charge of a large forest area (with more than 10 FPCs), he is generally not available to assemble and attend the FPC-meetings, which in turn results in many FPCs meetings not being called for months. c. No compensation has been given to those who sacrificed their subsistence for the sake of ecological improvement in post-JFM period. d. From the view that, FPC are mainly responsible for JFM activities, there has existed lack of interest of

many forest officials in promotion of JFM . e. The role of poor, particularly, that of poor women has remained minimal in such program.

Das and Sarkar (2008), in a study based in Bankura district, West Bengal, has revealed that, due to the strict dominant cooperative strategy of community under the program, both of the communities and government have been economically benefited. The coordinated action by the community, belonged to marginal landholding, small landholding and landless agricultural households, has helped them to generate a substantial increase in forest income after JFM. The program has also provided higher economic outcome to the government, which they failed to achieve before the execution of the program. However, the authors have drawn the fact that: the policy JFM would not be able to retain the poor households (who are mainly dependent on forest resource for their livelihood security and that live below poverty line) from illegal extraction of timber products until and unless a considerable income from legal forest sources meet their subsistence.

Another study by Das & Sarkar (2008) based in Bankura district, West Bengal, reflecting the comparison between JFM and non-JFM households in terms of distributional aspects of forest income, has shown that, after JFM situation forest income has increased for all JFM households with a decrease in non-forest income, whereas in the non-JFM villages non-forest income has marked a higher rate of increase than their forest income. However, this improvement has been mainly limited within lower income groups.

## **7. Conclusion**

India's Joint Forest Management (JFM) program, with the aim to establish a relationship between the state forest departments and local villagers on the basis of sharing responsibilities and benefits, has been one of the largest co-management regimes regarding forest protection and management in the world. From the outcome perspective, the program has provided many village communities with genuine access to significant livelihood sources. In West Bengal, for instance, after the implementation of the program, the member households have been able to receive a sustained income from final yielding of timber, while in certain areas employment opportunities have gone up. In addition, with free access of some forest products, the women, especially, the poor women in many FPC-managed forests have got back a certain amount of dignity. (Khareet *al'* 2000, Banerjee' 2004, Vemuri'2008)

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