

Evaluating the Joint Forest Management: A Review of Impact, Performance and Constraints

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ABSTRACT

The Joint Forest Management Programme (JFM) has been a major thrust area of forest management over the last two decades. The programme is operating with main objective of forest management and empowerment of local livelihoods through sustainable resource utilization and income generation opportunities. This paper summarizes the previous standard studies carried out in India and abroad to examine the effectiveness and efficiency of the programme to meet its aforesaid objective. The paper focusses mainly on presenting the most of the previous literatures concerned with impact assesment of the JFM programme on income and employment of the rural households associated with the programme. Further, its role in equality in income distribution has also been emphasized. Apart from that, literatures concerning the problems faced by different stakeholders in implementation of the programme has also been summarized. The present paper will provide a brief overview to the policy makers regarding effectiveness of the programme operationalized in different parts of the country and will support the decision makers at all level of decision making in understanding the location specific constraints associated with the programme and targeting financial resources and better management of resources to fulfill overall goal of the JFM programme.

Key words: Joint Forest Management, forest, sustainable, income distribution

INTRODUCTION

We are living in an age where human activities have intervened with the Earth's ecosystem at an unprecedented rate and affected its geology and physiology, moving us from the Holocene into a period aptly termed as the Anthropocene⁸. Currently, almost 90% of the world's plant activity is found in ecosystems

where humans play a significant role, and these ecosystems themselves are dominated by an increasingly homogenous group of flora and fauna. The situation is analogous within India where forests have provided a habitat and livelihood to approximately 360 million people²⁹.

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Forests cover 31% of total land area worldwide, which is an area just over 4 billion hectares¹⁵. FAO defines a forest as an area that covers a minimum of 0.5 to 1.0 hectares with tree crown cover of more than 10 to 30%, where the trees have a potential height of a minimum of 2 to 5 meters at maturity. This definition includes areas which are temporarily unstocked due to human intervention or natural causes, but have the potential to revert back to forest¹⁴.

Forests harbour much of the world's territorial biodiversity, and India is one of the 12 mega-biodiverse countries in the world. Forests provide a range of ecosystem services. Ecosystem services are divided into direct and indirect services. Within direct provisioning services, forests provide water, timber and other raw materials for domestic and industrial use, food and fruits, fuel as fuel wood is a significant source of cooking fuel, and fodder for livestock grazing, medicinal plants, and other non timber forest produce (NTFP)³⁹. Forests also regulate soil, water and climate and act as carbon sinks, by absorbing around 11% of India's carbon dioxide emissions annually³. Besides, forests have been important in India culturally and spiritually for generations as traditional Indian culture and customs embraced environmental protection and conservation of forests and wildlife, for example, through sacred groves and worshiping of trees and animals.

All of these play a vital role in the socio-economic well being of forest dependent communities. In India, there is a strong dependence of the societies on their surrounding ecosystem for survival. This has resulted in a deep ethnology of conservation and judicious use of these natural resources over many generations in rural India, which includes poor individuals and tribal hamlets³⁹. Using forest products to satisfy basic needs such as food, fuel and fodder for sustenance in an unchecked manner can often lead to deforestation and forest degradation. Deforestation is prolific across the globe with manifold causes that vary from country to country. Poverty and population growth often

act as catalysts and diverting forests for agriculture, both small and large scale, is a major cause of deforestation across the globe. However, demand for timber also drives deforestation whilst contributing to land use change emissions²⁸.

Pressure on Indian Forest

Forest and tree cover of the country is 78.29 m ha, which is 23.81 per cent of the geographical area. This includes 2.76 per cent of tree cover¹⁹. India has only 1.8% per cent of the global forest area but has to support 16 per cent of the world's human population⁹. A burgeoning population means continuously increasing demands for natural resources. Of the 1.21 billion people in India, 27.5 per cent live below the national poverty line and most of them depend directly or indirectly on forests for their livelihood. Almost all of the 83 million tribal people depend on forests directly for their survival. Of the total population using fuel wood, 23 % of population is obtaining fuel wood from forests¹⁹. This tremendous pressure results in the degradation of forests, which further affects their livelihood. Thus, protection of forests in India cannot be discussed independent of the people dependant on it.

In India, increasing greenhouse gas concentrations are expected to raise temperatures, reduce water flow and decrease crop yields³⁶. At the same time, India already suffers severe food shortages and food prices are expected to double in the next twenty years¹⁵. Thus, in such a world where humans are simultaneously a cause of the problem and the solution, it is essential to find ways to involve people in utilizing the limited resources in a sustainable manner and preserving essential ecosystem functions today and in the future.

Joint Forest Management (JFM) In India

Origins and evolution of JFM

To understand the concept and process of Joint Forest Management (JFM) in India we need to delve into the evolution of the forest policy and legislations in the country. Though the initial set of policies and laws on forestry dates back to the colonial period and the immediate

post-independence period, one notices a paradigm shift in India's forest policy and legislations in the 1980s, with the passage of the Forest (Conservation) Act, 1980. This Act highlighted the primacy of conservation of forests over the previous emphasis on utilizing 'forests' for meeting the requirements of agriculture and industry.

The first forest policy of India was enacted during the British period in 1894. This policy was centrally influenced by the Volcker Commission Report, which posited forests to be a biomass provider for the agricultural sector. After independence, the Government of India enacted a new forest policy in the year 1952 that, while largely subscribing to the philosophy of the 1894 policy, nevertheless highlighted the functional classification of forests. The 1952 policy classified forests into protection forests, national forests, village forests and tree lands. The policy recommended weaning of tribes from shifting cultivation practices and controlling of grazing and other activities in forest areas. Functional classification presupposed that forests had to be typified in terms of their relative ability to subserve agricultural and industrial systems in India. Accordingly, forests in hilly regions had to be preserved and protected on account of their possible role in preventing soil erosion and water runoff from agricultural catchments. Forests that had the potential for timber and related raw materials required for the industry were to be exploited on the basis of 'scientific working plans' to yield raw materials. Meanwhile, in 1973, the National Commission on Agriculture came up with the idea of production forestry based on 'high productivity' man-made plantations. A string of forest development corporations was accordingly set up in the late 1970s to 'corporatize' the process of production forestry in India³⁴. This development was in consonance with the prescriptions of the National Forest Policy, 1952.

In the late 1970s, the Government of India and the State Governments initiated the social forestry movement with a view to carrying out tree planting in and around village

areas. This was ostensibly designed to meet the growing demand for firewood and small wood required by the local communities. It was also in line with the thinking implicit in the National Forest Policy of 1952.

In the mid and late 1970s, the spread of the 'Chipko' movement in the U. P. Hills (now in Uttarakhand) led to a situation where the accepted tenets of the 1952 National Forest Policy were questioned by the environmental movements in the country. The adverse consequences of large-scale diversion of forestlands to non-forestry purposes (which hit an astounding rate of 150,000 hectares per year prior to the 1980s), were too glaring to be ignored by the policy makers³⁵. Accordingly, the Forest Conservation Act of 1980 was enacted by the Government of India to check diversion of forestlands for non-forestry purposes. This act made it obligatory for State Governments to seek prior approval of the Central Government for undertaking diversion of forestlands for non-forestry purposes. Meanwhile, in pursuance of the 1972 Wildlife (Protection) Act, the Government of India set up an extensive network of protected areas in the country. By the end of the 1980s, protected areas accounted for 13.6 million hectares with the constitution of nearly 70 national parks and 411 wildlife sanctuaries in different parts of the country.

The other major development was the growing protest against forest plantations in different parts of the country. The movement against Eucalyptus plantations in the early 1980s raised serious questions about the ecological desirability of raising industry-oriented monoculture tree plantations in Indian forest areas. The key issue was how to resolve the growing biomass shortage for agriculture. As mentioned earlier the Social Forestry Programme initiated in mid-1970s had aimed to raise fuel wood and biomass generating plantations in non-forest lands. But its track record of the program was dismal. Further the program suffered for want of the participatory element.

These concerns caused the Government of India and the States to shift

their policy towards a massive afforestation program in the wastelands of the country, which were estimated to be of the order of 175 million hectares. The National Wasteland Development Board (NWDB) was set up in the year 1985 to promote the afforestation process in community and private lands, with the involvement of stakeholders. The NWDB schemes included establishment of rural fuel wood plantations, treatment of micro-watersheds in the Himalayan States, promotion of tree growers' cooperatives, establishment of people's nurseries and farm forestry activities. In due course, afforestation programs of the NWDB were restructured to cover degraded forestlands as well.

Despite these initiatives, the trend of depletion of forest cover in India continued unabated. Working plans were not successful in conserving forests. The Forest Survey of India came up with the finding that only in 15 per cent of the forest area covered by working plans, adequate regeneration was noticed. Fire and grazing were held to be the culprits in this regard. Further, it was noted that in over 60 per cent of the area covered by the Working Plans, the annual cut exceeded the increment on account of unauthorized felling³⁴. Between 1983 and 1987, the country lost forest cover at the rate of 47500 hectares per annum. However, these developments were not without their exceptions. The success of two community-driven "greening" movements in India opened the eyes of the policy makers to the immense potential afforded by people's participation in the management of forests. The first one was a community-based forest conservation movement initiated in Araberi in Midnapur District of West Bengal during 1971-72, while the second one was a grassroot movement in the Sukhomajri village in Haryana in the 1980s, to rejuvenate forests and agricultural systems in the village. In Araberi, the movement was triggered by a Silviculturist of the State Forest Department, who by offering incentives to local communities induced them to protect and regenerate degraded Sal forests. The local communities,

which were organized into 'forest protection committees' (FPCs), successfully protected the degraded forests from illegal felling, overgrazing, fire, and encroachment. In Sukhomajri, in Haryana State, the movement started from amongst the people. Construction of earthen dams stabilized agricultural output in the village. Forests in and around Sukhomajri village regenerated as a result. The regenerated forests in turn provided valuable biomass, including *bhabar* grass to local communities.

These instances awakened the policy makers at the Central level to the need to go beyond the legalistic "Forest Conservation Act, 1980". Institutional measures for arresting the alarming trend of forest depletion in the country were actively considered. The National Forest Policy 1988 was accordingly enacted by the Government of India with a strong focus on conservation, environmental stability and ecological balance through association of tribals and local communities in protection, regeneration and development of forests. In pursuance of the National Forest Policy of 1988, the Government of India issued a 'circular' in June, 1990 for involvement of village communities and village associations (VAs) in the regeneration of degraded forest lands. This marked the birth of the Joint Forest Management (JFM) movement in India.

JFM defined

Scholars and policy makers have defined Joint Forest Management (JFM) in different ways. One source defines JFM as 'a concept of developing partnerships between fringe forest user groups and the Forest Department (FD) on the basis of mutual trust and jointly defined roles and responsibilities for forest protection and development'²⁵. The other definition of JFM runs as follows: 'JFM is a forest management strategy under which the government (represented by the Forest Department) and the village community enter into an agreement to jointly protect and manage forestlands adjoining villages and to share responsibilities and benefits'⁴.

The objectives of JFM programme

- Maintenance of environmental stability through preservation, restoration of the ecological balance and reduction of degradation of forests in the country
- Conserving natural heritage of the country by preserving the remaining natural forests which represent the remarkable biological diversity and genetic resources of the country.
- Checking soil erosion and denudation in the catchment areas of rivers, lakes and reservoirs.
- Bio-diversity conservation.
- Empowerment of local people giving them greater responsibility for forest management and increasing motivation to conserve the forests
- Equity, through management of forests, and eventually the improvement of local livelihoods through sustainable resource utilization and income generation opportunities.
- Increasing the productivity of the forests to meet the essential national needs.
- Meeting the requirements of fuel wood, fodder, minor forest produce and small timber of the rural and tribal populations.
- Increasing substantially the forest/tree cover in the country through massive afforestation especially on all denuded, degraded and unproductive lands.
- Creating a massive people's movement with the involvement of women, for achieving these objectives and to minimize pressure on existing forests.

Structures of JFM

Until recently, Forest Protection Committees (FPCs) were by and large, not legal bodies as they were not recognized or registered under the Societies Registration Act or through related, enabling legislations. However, states such as Gujarat, Karnataka and Rajasthan had provided for registration of FPCs under the Cooperative Societies Act in the early stages itself²³.

Structures and nomenclatures of JFM have varied from state to state. In general, one can delineate the following structure for JFM.

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The base of the JFM structure, which comprises of village level institutions, is referred to as “forest protection committees”. These bodies include a “General Body” and a “core”, “Executive” or “Management Committee (MC)” elected by the General Body for discharging the assigned functions. The General Body comprises of eligible members of the village. The eligibility criteria for membership vary from state to state. In most states, adults are eligible for joining the General Body. The General Body elects the local community representatives in the Executive Committee. The Executive Committee has elected members ranging in number from 5 to 15. It also includes ex-officio, non-elected members drawn from the Forest Departments, local NGOs, village schools, village administrative and development officers and in some cases representatives of the Gram or Mandal Panchayats. The states of Bihar, Himachal Pradesh, Karnataka, Jammu and Kashmir, Kerala, Madhya Pradesh and Punjab give representation for underprivileged communities and castes and women in the Executive Committee. Andhra Pradesh has moved towards compulsory 30 per cent representation for women in the Executive Committee. The states of Gujarat, Jammu and Kashmir, Karnataka and Madhya Pradesh require inclusion of two women representatives in the Executive Committee and provide for both ‘husband’ and ‘wife’ from a given household to be members of a General Body. The term of the Executive Committee is generally for two years in most of the states. However, in Arunchal Pradesh, Jammu and Kashmir, Madhya Pradesh, Maharashtra, Tripura and West Bengal, the tenure is of one year. In Karnataka, Nagaland and Tamil Nadu, the tenure of the Executive Committee is five years. The Executive Committee undertakes decision-making, planning and implementation of management plans.

Contribution of JFM in Livelihood and Family Income

Sarin³⁴ conducted a study on livelihood analysis of JFM in Chamoli district of Uttarakhand, concluded that forest based income is a major contribution to the livelihood of rural people. JFM users group were operating the forest based micro enterprises. Income generations from sale of non timber forest products (NTFPs), forest nursery and medicinal plants had started. The quality of life has been improved through easy access to fuel wood, fodder and water.

Dave *et al*¹¹., examined changes in livestock farming associated with JFM programme in Almora district of Uttarakhand. Based on survey of 259 households, the paper concluded that forage availability had decreased with commencement of JFM programme. They pointed out that improved forest condition may not necessarily leads to improvement in livelihoods of the farmers.

Murli²⁴ based on the empirical research carried out in Wayanad and Calicut districts of Kerala found that the institutional development of JFM through Forest Protection Committee (FPC) widened its impact on livelihoods. Evidences showed that the JFM programme has been contributing to rural livelihoods mainly in two ways: (1) better flow of forest products through the improvements of forest resources and (2) through the development of livelihoods assets at the grassroots level, which are the basis for sustainable livelihoods.

Behera *et al*⁵., based on their study carried out in Patwar village of Andhra Pradesh concluded that JFM had tremendous potential to reduce poverty and promote social inclusion in rural communities by improving the livelihoods of the poor and excluded, in particular the livelihoods of women, dalits and disadvantaged ethnic groups. However, there was existence of large gap between the potential of the programme and its achievements in reality.

Dev *et al*¹²., conducted impact study of JFM on four eastern districts of Nepal (Dhankuta, terathum, Sankhuwasabha and Bhojpur). They found that impact were diverse ,but had been generally positive in terms of

improved levels and security of forest products and benefit flows, household income-generating opportunities, development activities, and improved social capital for collective planning and action. Nevertheless, impacts to date were below their potential, and the needs of rural households required more investigation to determine what further opportunities existed and how policy and extension agency might offer specific needs-oriented support.

Ajaz- ul- islam², carried out a study in Ushkara village of Jehlum Valley Forest Division of Baramulla district in Kashmir valley where JFM programme was launched in 1991 aiming at popularization of tree consciousness among villagers, self-sufficiency in terms of fuel, fodder, timber and other non-timber forest products, reduction of pressure in traditional forests and efficient utilization of common lands. Analysis of the benefit components based on data from 137 beneficiaries revealed that the JFM programme had impact on meeting tangible benefits to the beneficiaries. The programme was comparatively less effective in accruing intangible benefits to the beneficiaries. The overall level of impact of JFM programme on its beneficiaries was medium. There was significant difference in level of impact of JFM programme among landless, medium and large land holders.

Rao *et al*³²., based on their study in Shivmogga district of Karnataka revealed that the JFM programme was supporting to the people's livelihood by providing fire-wood, fodder/grass, and non timber forest products on regular basis. In addition, the programme collected community fund from both forestry and non-forestry sources, which had multiple effects to carry out forest management and community development activities. These activities were also equally supportive to improving the local people's livelihood. The study concluded that JFM programme was not only effective for collective forest management, but also it was equally imperative for empowering the local people to

seize forestry activities as a means of rural livelihood improvement.

Kafle²⁰ conducted a study on contribution of JFM programme on user's household income using data from 92 household of Gorkha district of Nepal. Non – farm sources were found as the major and largest source of income of households contributing 65.5 per cent share in household income followed by agriculture income (16.9 %), livestock income (2.3 %). JFM programme supported 12.3 per cent of total household income to poor, 4.06 per cent to middle and only 2.78 per cent to rich class households. As there was huge difference in household income across the three classes, the absolute income of JFM to rich class households was the largest though it seemed greater to the poor in percentage income terms. Participation of poor class households was found low in decision making activities.

Somanathan *et al*⁴⁰, assessed impact of JFM programme on household income in Theni district of Tamil nadu using 100 households samples. Results indicated that JFM programme had positive impact on betterment of household economy of the site. The rich and medium groups of people were more benefited than the poor people. The mean livestock unit was increased after implementation of JFM programme. The feeding pattern of animal was also changed from grazing to mostly stall feeding. The mean total income was increased by 11 percent. The regression analysis showed that land holding size and livestock holding size affects the income of the users directly.

Damodaran *et al*¹⁰, conducted a study on household dependency on JFM programme in Salem district of Tamil nadu. It was found that household's wealth status (reg. Coefficient for rich = -0.420 ; poor = 0.019), proximity to the forest (reg. Coefficient for distance, rich = -0.280; poor = 0.083), forest visit (reg. Coefficient for frequent forest visit, rich = 0.257; p = 0.066) exerted a strong influence on appropriating fuel – wood from the forest. Above all, income status of households was found to be key determinant

of household's fuel-wood collection from the forest. Poor households were highly dependent on the forests for fuel-wood in order to sustain their day-to-day livelihood. Authors felt that the high dependence of poor coupled with their large population size in the region (more than 27%) would possibly cause forest degradation.

JFM and its Impact on Employment Pattern

Gangadharappa *et al*¹⁶, conducted a study to examine the type of employment generation by the JFM programme in Kalpetta district of Kerala and found that the programme could provide three kinds of employment. First kind of employment is direct employment like wage labour in various JFM activities. Second, self employment like removal of head loads of firewood and fodder from the forest, rising of food crops: cereals, vegetables and fruits through agri–silvicultural practices, social and farm forestry programme, which help build the fuel and fodder resources of the rural areas besides ameliorating the living condition of masses. Thirdly, secondary employment generated through both primary forest industries like saw mills, sawing and planning of wood, pulp and paper, plywood and panel products, wood seasoning and preservation, wood wool, tanning etc and secondary forestry industries like sports and athletic goods, match splints and veneers for match industry: boxes, crates, drums, barrels; furniture and cabinet; bullock-cart and agricultural tools and implements etc.

Adhikari¹ observed that sustainable management of common pool resources was still an important question facing both development planners and the academia. Experiences from JFM programme in Nepal had so far indicated that poorer households were still marginalized even if resources were managed through JFM programme. The author analyzed the socio-economic attributes of households that determine labour allocation decisions for forest product collection activities. This will help better understand why poorer groups have not been benefited from the programme. He highlighted the need

for more effective policy and institutional interventions that would ensure efficient and equitable access to the local level natural resource base.

Gowda *et al*¹⁷, conducted a study in Raichur district of Karnataka to examine the impact of JFM on rural- urban migration and found that roughly 600 people used to migrate outside Neelamangalam Panchayat area before the JFM was implemented in 1999. Within five years this figure was halved to around 300 after implementation of JFM programme.

Poffenberger³⁰ documented experiences of JFM programme in five Southeast Asian nations. He examined shifts occurring in the forest policy sector in Cambodia, Indonesia, Philippines, Thailand and Vietnam, following the decline of JFM paradigms over the last decade and the emergence of new generation of environmentally and socially oriented policies and legislation. The study explored how these new policies, laws and national programs were affecting forest dependent people across the region in an effort to track the transition in forest management on the ground. He explained that JFM system was affecting forest cover, biodiversity, rural livelihoods and employment positively.

Dhakal *et al*¹³, examined the relationship between JFM policies on the one hand and income and employment in rural area Jharkhand on the other, by modelling the effect of forest management constraints on JFM user groups. Based on data from 259 households in Palamu district, they showed that current JFM policies were insufficient to generate a bare subsistence income for the poorest households and suggested that a policy change to JFM using a more flexible agro forestry model could overcome rural unemployment problems and increase incomes with ensuring sustainable resource use from the forests.

Nagaraja *et al*²⁶, conducted a study on impact of JFM programme on employment of rural people in Tamilnadu and Karnataka and reported that the programme generated paid employment for local people equivalent to 20

million rupees i.e., 0.11 million person days of paid employment during Aug 2006 – July 2007.

Joint Forest Management and Equality in Income among Users

Gauli¹⁸ conducted study on behavioural assessment of joint forest management users groups (JFMUGs). Using information from four JFMUGs of three districts, Nawalparasi, Rupandehi and Kapilbastu of western Terai in Nepal. He found that there was almost equal level of participation across different caste groups in labour work. Still there were disparities in decision-making and benefit sharing. Upper and middle caste people were mostly involved in above activities. There was no enabling environment for poor people to participate in decision making and benefit sharing. Their main involvement in JFM programme was for labour work. There was lesser involvement of women in decision-making and benefit sharing. However, their involvement in labour work was higher than men.

Prabhakar *et al*³¹, conducted a household survey focusing on levels of participation and benefit sharing from JFM programme in Vizianagaram district of Andhra Pradesh. They reported that poorer households were significantly less benefited than wealthier households and in some cases even disadvantaged by the advent of participatory forestry in their villages. A major cause of this inequity was that FPC (Forest Protection Committees) are dominated by wealthier households. In addition, awareness levels of a range of JFM programme and FPC institutional issues were low, particularly among the poorest groups. Forests were managed below their productive potential and only a limited proportion of member's forest product needs came from JFM programme.

Sarin *et al*³⁵, conducted a study in Chamoli district of Uttarakhand. The household survey was carried out focusing on sharing of income among different classes of farmers. Small and medium farmers were found to realize low returns than large farmers which prove that JFPM development

programme has brought unfair distribution of income across different classes of farmers.

Mittal *et. al*²²., based on their participatory action research with four JFM user groups in Madhya Pradesh concluded that despite large scale expansion of JFM programme in the state, there were no clear and consistent contributions to the livelihood, especially of the poor. The paper discussed six factors affecting the ways by which benefits from JFM programme were generated and distributed. The six factors analyzed were; limited support from District Forest Office, limited access of committee members to new information, limited knowledge and technique for forest management, limited access of the poor in the Forest Protection Committees (FPC) decision-making, inappropriate arrangements for forest products distribution, and emphasis on forest protection rather than management.

Richards *et al*³³., developed an economic methodology, usable by Forest User Groups (FUG) for increasing equity transparency in JFM in Nepal. A main indicator for inequity was labour collection time. The return per Labour Day rose with the wealth group, reflecting shorter distances to collect forest products and more on –farm tree resources among the wealthier households. It was suggested that a suitable equity indicator to act as a proxy for more complex economic indicators, and which could be more easily collected in a participatory way, was the time needed (average hours per day) to collect a bundle of subsistence forest products per unit of household demand (a composite of livestock ownership and household size). They suggested that gender-based equity indicator would be the number of female hours per day. Similarly, livestock ownership and household size should be a sufficient proxy for use levels.

Sharma *et al*³⁷., analyzed the household income by income group in south forest division of Gujrat. Results showed that out of the 42 sample households, share of half of the households in total income was just 30 percent. The middle income group constituted 40 percent of the sample households and had

48 percent share in total income. The rich group constituted 7 percent of the sample households having 14 percent share in total income. The richest group represented only 2 percent of the sample households and had 7 percent share in the total income. Among the middle group, self-employment constituted 45 percent of the household income. The richest group got 64 percent of their household income from the salary predominantly coming from the government. The households in the lowest income group relied mainly on off-farm income for subsistence living. The low income households captured 29 percent of the income from the JFM while the highest income groups were confined to 5 percent only. Gini coefficient of household income distribution including JFM income was 0.242 while excluding it was 0.265.

Constraints and Challenges of JFM Programme

Murthy²⁵ conducted a study on forest fires related aspect in Jharkhand. He reported that forest fires degrade the soil, inducing floods and landslides. The risk of forest fires from local people was high and destroyed JFM plantations. With difficult topographical conditions, hot and dry climate, low level of education, high dependency on forest resources, and lack of proper extension activities, JFM had difficulties coping with forest fires. Illegal logging, accidental burning, carelessness, and encroachment on forest land for cropping and infrastructure development by local people had destroyed the JFM plantations. Cattle grazing, smokers, and accidental burning comprised 54 percent of the known causes of forest fires; while 32 percent were of unknown causes.

Sarin³⁴ based on his study in Chamoli district of Uttarakhand pointed out a number of limitations of JFM programme. Higher dependence upon the co-operation given by local people is an essential requirement for smooth functioning of the programme. There could be different levels of such co-operation ranging from active participation to indifference. If the programme is launched on commercial lines, there could be every danger

of it passing into the hands of the urban people, rather than bringing benefits to the poor, for whom it meant. The objective of the programme might become too far-fetched and ambitious. As a result, the people involved might become disheartened and would tend to stay away from further participation of any kind. That would break the morale of entire community.

Yadav⁴² in his study examined the effectiveness of Forest Protection Committees (FPCs) in Kadapa district of Andhra Pradesh in implementing their operational plans. The participation of users in managing JFM in terms of sustainability was assessed. The external support and technical assistance to FPCs after they were formed was inadequate and site specific plans that reflect local conditions were lacking, leading FPC towards forest protection rather than effective management of the forest. Some FPCs were benefiting more than others because of superior resource management. There were two main factors, which contribute to the success of JFM process: the commitment of users and the forest resource condition. In this regard, the institutional arrangements of the FPCs and the incentives for participation in forestry activities were assessed because these affect the whole JFM process. On the forest resource management side, the overall forest resources managed by the community were found as being underutilized because of the lack of awareness and technical know-how. The study attempted to identify whether FPCs were capable of managing forest sustainably. He reported that larger groups were less active, capable of mobilizing users, and managing large patches of forest. Small groups tend to be more cohesive and actively involved in forest management and contribute to generate assets. In principle, each group had an equal opportunity of receiving support from external agencies but this varied in practice.

Biradar⁷ examined the predicament of JFM user groups and FPCs in Chikmagloor district of Karnataka and indicated that JFM programme implementation had taken place in relatively low accessible areas and remote

areas had not come under preview of JFM interventions in Karnataka. The study further established that there were lower representation of socially disadvantaged groups in FPCs, larger scale membership duplication, and those FPCs nearer to DFOs offices received better services compared to remotely located FPCs.

Kanel and Kandel²¹ explained that since inception of JFM programme officially in late 1990s in Nepal, movement had been evolving to involve local communities in the management and utilization of forests. The policy of the government was originally intended to meet the need of basic forest products required by the communities through active participation in forest development and management. Later, it was extended to include the mobilization and empowerment of the members of JFM user groups in the development of their local communities. It was observed that the trend of forest degradation had decreased since the handing over of national forests to local communities, but a number of unintended social anomalies had also cropped up. Such anomalies essentially constituted inequity and unfairness at the local and national level and in terms of long-term sustainability of forest resources. They provided an overview of various issues of JFM programme. It called for rethinking on JFM programme in order to face the present day challenges of linking JFM with livelihood promotion, good governance, and sustainable forest management. It also focused on strategy for reforms in JFM programme.

Gowda *et al*¹⁷, based on their study conducted on 160 households in Raichur district of Karnataka, explored that participation of poor and dalit in forest protection and plantation was high but it was low in training and income generating activities. Although, poor and dalits participation in meeting was quite satisfactory but was limited to only physical presence. Participation of poor in income generating activities was very low compared to other users. Fodder and Non Timber Forest Products (NTFPs) were having high demand from the

JFM programme. There was reduction in collection time for fuel wood and fodder. Most of the poor and dalit users were not satisfied with the timber and NTFPs distribution system.

Shrestha³⁸ conducted a study focussing on poor performance of JFM programme in Nepal and highlighted the problem of decentralized JFM policy and the forest bureaucracy. Decentralization universally imposed a formal democratic system based on equality without acknowledging unequal societies. In Nepal, there had been little reorganization of the forest bureaucracy. Despite being an international model for JFM, in Nepal the existing bureaucracy had been unable or unwilling to transfer knowledge to forest users.

Tripathi *et al*⁴¹., examined the constraints faced by local JFM users in Gadhwa district of Jharkhand. The primary data were collected through personal interviews and group discussions. The result showed that the existing constraints for local users mainly include non availability of regular work, nepotism, corruptions and fewer wage for the work.

Ojha *et al*²⁷., mentioned that an unequal relationship exists between the oppressed and the oppressor groups in Almora district of Uttarakhand. As a result, the local leaders and elite groups mostly dominate decisions of the user groups. Fulfilling the needs of poor was still a difficult practice in participatory forestry programme. Thus, supporting poor and disadvantaged groups for their livelihood sustenance was a big challenge of JFM in Almora district of Uttarakhand.

CONCLUSION

Forests support almost 90% of the world's terrestrial biodiversity. Forests directly support over one billion people globally by providing food, fuel, shelter and medicines. These people that directly depend on forests for their livelihood are often poor. Thus, the loss of forests through human intervention and climate change will impact these poor communities to the hardest. At the same time,

their lives and livelihood can be enhanced through good forest management practices²⁸. The need to manage our world's forests for global and local reasons spans ecological, economic and social domains. The importance of forest management is obvious considering that 40% of India's forests provide a home to around half of India's tribal population (indigenous people in India) and between 20 to 50% of their household income is derived from these forests⁶. Despite the recent industrialization and urbanization, India till date is an agrarian economy dependant on land and land based resources such as agriculture and forest based goods and services. In 1998, there were 100 million forest dwellers in India and another 275 million people who depended on forests for their basic needs and livelihood³⁹. Thus, forests need to be protected to ensure the long term supply of resources including fuel wood and fodder for the numerous people who rely on the Indian forests for their survival. The above review suggests that there had been few studies in selected region of the country to assess the share of the rural household income derived from the programme along with its impact on income distribution and employment generation among different user groups.

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