

MONITORING OF JOINT FOREST MANAGEMENT IN INDIA : ISSUES AND METHODS

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Introduction

India's forests have suffered serious depletion over the years, in terms of their growing stock, forest cover, creaming out of important timber species and biodiversity, mainly because of commercial over-exploitation of the forests and the grinding poverty of forest dwellers. The direct dependence of forest dwellers on the forests is most evident in meeting their survival and subsistence needs e.g. collection of fuelwood, fodder, non-wood forest products, small timber, etc. But, unfortunately substantial number of them have been caught in the vicious circle of poverty that forces them to overexploit the nearby forests, causing serious depletion of the resource. In the process they have to sacrifice the long term sustainability of meeting their survival and subsistence needs and their livelihood. Due to heavy pressure, India lost 7,422 km² forests during the intervening period between 1987 and 1997 assessments. Even in the existing forests, open forests (with crown density between 10 to 40%) extend up to 2,61,310 km² i.e. 41.26% of the total forest area (Anon., 1997). Not only to halt the trend of degradation, but also to reverse the trend, most of the State Forest Departments in India have adopted Joint Forest Management as strategic shift for management of India's forests.

Joint Forest Management

"Joint Forest Management (JFM) is the sharing of products, responsibilities, control and decision making authority over forest land, between Forest Departments and local user groups, based on a formal agreement. The primary purpose is give to user a stake in forest benefit and a role a planning and management for the sustainable improvement of forest conditions and productivity. A second goal is to support an equitable distribution of forest products" (Hill and Shields, 1998). It is basically management of forests by State Forest Department with active participation of local population. Local people participate in forest protection, management and benefit sharing through an institution called Forest Protection Committee (FPC) or Village Forest Committee (VFC). The highlights of the programme guidelines promulgated by Ministry of Environment and Forests, Government of India, in this regard are summarized as follows (Poffenberger, 1990)

- *Developing partnership* : between communities and Forest Departments, facilitated by Non-Governmental Organisations, when helpful;
- *Access and benefits* : only to organize

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communities undertaking regeneration, with equal opportunity based on willing participation;

- *Right to usufruct* : all non-wood forest products and percentage share of final tree harvest to communities, subject to successful protection and conditions approved by State;
- *10 years Working Scheme* : micro plans detailing forest management institutional and technical operations should be developed by community management organization with local foresters;
- *Funding* : from FD social forestry programme nursery-raising, with encouragement to community to seek additional fund from other agencies
- *Use rules* : strict adherence to no grazing, agriculture or cutting trees before maturity, except as outlined in Working Scheme.

In essence JFM aims at achieving consonance among people, product and process by eliciting people's participation with sharing of benefits and inculcating a feeling of responsibility and involvement in forest management.

Many countries have shown positive inclination towards the JFM, whereas Nepal and India are committed to it and they have taken substantial lead in adopting it. The number of FPCs and forest area under JFM in India are increasing rapidly. However, JFM has caused mixed reactions among forestry professionals and concerned common citizens about its efficiency and viability. The opinion about its success varies from State to State and village to

village. At some places it has performed excellently and some places it has failed miserably. JFM is a challenging work due to complex ground reality, prevailing in different parts of country, variant prerequisites and available resources. In view of past experiences, stakes involved and heterogeneous performance, the monitoring of JFM has come to the centre-stage of national forestry agenda. The monitoring, may have to be carried out with respect to criteria addressing key issues.

Issues in Monitoring JFM

As discussed in preceding section, monitoring of JFM is very important from the point of view of contemporary forest management in India. Before, deciding specific method for the monitoring, it is important to identify key issues, which shall provide basis for the monitoring. In Indian context, monitoring methods for JFM must address following issues :

Sustainable Forest Development : Sustainable forest development may be defined as the forest development, which conserves forests for perpetuity and posterity, with meeting present needs of people without compromising the future needs and ecological diversity of the forests. In addition to providing sustenance needs of people in terms of fuelwood, fodder, non-wood forest products, small timber etc., the forests play significant role in fulfilling environmental necessity of the country. These forests are sources of many rivers, which are life-line for down the stream population. Further, they act as catalytic agent for charging underground water. Therefore, sustainable forest development must progress towards well stocked, socially beneficial, environmentally benign and

economically viable forests. Since JFM has been adopted to achieve SFD, the monitoring of JFM must incorporate criteria associated with the health of forests, peoples perception and participation, environmental indicators and economic viability.

Objective of Monitoring : The methods of monitoring shall vary with respect to the objective of monitoring. The following could be the objectives :

- To make JFM successful (to decide future course of action as well as to change ongoing works);
- To review impact of JFM;
- To identify socio-economic variables, which make JFM successful;
- To identify prerequisites of JFM;
- To monitor micro-plan;
- To provide basic information for taking decision, formulating policy and projects and selecting strategy;
- To analyse benefit sharing arrangements and marketing of forest products;
- To examine functioning of FPC.

Process Responsiveness : Forestry in India has traversed from product to people project, and people to process projects. JFM is one of the important process projects, being implemented. Therefore, its monitoring methods must address process responsiveness among the member of FPCs e.g. whether they are acting as custodian of the forests in the area.

Performance Appraisal System of FPC : The performance of FPC is critically important for the success of JFM. Therefore, monitoring method may have in-built system for monitoring the performance of FPCs with few criteria. These could be transparency, attendance and participation in the meeting of FPC, rules, awareness, initiative, independence, etc. The structure and system of FPCs may also be analysed.

Participation of Woman : Women are primary collectors of fuelwood and fodder and non-wood forest products. Further, gender issue has been categorically given due importance in the memorandum of understanding of JFM. Therefore, participation of women could be one of the important issues for monitoring of JFM.

Monitoring of Micro-plans : The implementation of micro-plan is the key to the sustainability of JFM. It gives the details of work and provide the basic framework of continuity of activities around which success of JFM revolves. Besides, it has been observed that non-implementation of micro-plan has pushed JFM towards failure.

Criteria and Corresponding Weights : It is obvious from above discussion that there would be many criteria for monitoring of JFM. Assigning corresponding weights, in accordance with the relative importance of the criteria is essential issue for over all analysis. Further, their relative weights may not be uniform as their importance varies from place to place.

Monitoring Agencies : In-house monitoring and monitoring by external agency have their own advantages and disadvantages. Depending upon objectives of monitoring and level of competence, agency or individual may be identified.

Sampling Design : Sampling design may be decided on the basis of pilot survey, homogeneity in the JFM area and objectives of the monitoring. Further, sampling design shall also be decided by statistical requirement of data collection and subsequent analysis.

In addition to above issues, spatial units for monitoring, qualitative and quantitative monitoring, temporal framework of monitoring etc. are important issues for developing methodology for monitoring of JFM. Given the nature of complexity of issues, there could be many variants of methods for monitoring and the choice of the appropriate method in a particular case shall be the key to successful monitoring in the case.

Method for Monitoring JFM

The choice of appropriate method is critically important not only for the success of monitoring exercise, but also for the future of JFM. The method must be suitably tuned to its objectives and relevant issues discussed in preceding sections. As there are a large number of complex issues and JFM is being implemented in areas with heterogeneous ground realities, there could be various methods. Any method for monitoring shall consume resources. Giving due importance to optimization of resources, monitoring and stage of development of JFM, following three methods may be used broadly for monitoring of JFM in India :

- (i) Comprehensive Monitoring
- (ii) Mid-term Monitoring
- (iii) Six-Monthly In-House Monitoring

(i) *Comprehensive Monitoring* : As its name signifies, the Comprehensive Monitoring must look into each and every aspect of

JFM. It is better to hire external agency for carrying out the work, once in five years. The external agency, in this context stands for agency other than implementing agency. The performance of JFM may be examined with respect to criteria associated with sustainable development. Weighted Criteria Method may be applied for the calculation of index scores for every FPC, Division and State. For the calculation of index scores, appropriate weights to criteria, scaling and normalisation of the scores have to be carried out. Further, for scoring against each criterion, sub-classes/zones have to be identified. Though there may be large number of criteria, following criteria may be used without compromising comprehensiveness and quality of monitoring (Table 1).

As far as possible the data shall be collected from authentic source and measurement may be done scientifically. In case of people's participation and perception and economic viability, comprehensive and consistent questionnaire may be used. These questionnaire may be filled up through semi-structured interview. Given the composition of the FPC, stratified random sampling may be used for the selection of the respondent. Against each criteria and sub-criteria a score may be calculated or assigned for each FPC, stratified random sampling may be used for the selection of the respondent. Against each criteria and sub-criteria a score may be calculated or assigned for each FPC. For example let there be a, b, c and d hectare area under Dense Forest, Open Forest, Scrub Area and Non-Forest Area respectively under FPC. If it is agreed to assign 3, 2, 1 and 0 scores to Dense Forest, Open Forest, Scrub Area and Non-Forest Area respectively, the score for the FPC with respect to Forest Cover

Table 1
Criteria for Comprehensive Monitoring

Criteria	Basis for Sub-classes/Zones
1	2
Health of Forest :	
(a) Forest cover	: Classification of forest area into dense, open, scrub and non-forest area.
(b) Growing stock	: Calculation of volume of important timber species in each dia-class.
(c) Biodiversity index	: Simpson index.
(d) Regeneration Status	: Assessment of regeneration status into category of profuse, adequate, inadequate and no regeneration.
People's Perception and Participation :	
(a) People's participation	: Different levels of participation e.g. participation in response to an order or force, voluntary participation stimulated by a reward, voluntary participation due to awareness, participation by giving suggestion and constructive criticism and participation with creativity.
(b) General enthusiasm	: Attendance and participation in the meetings of FPC.
(c) Women's participation	: Attendance and participation in the meetings of FPC, role in protection and other development work.
(d) Forest offence	: Number and nature of offence, changing trend.
(e) Cooperation in protection	: Reduction in illicit felling, control on grazing and fire.
(f) Process responsiveness	: Adoption of the role of natural custodian.
Environmental Factors :	
(a) Underground water	: Difference in level of water table in normal season and lean season.
(b) Flow in stream	: Flow in stream during lean season.
(c) Soil condition	: pH-value, moisture retentively.
(d) Wildlife conservation	: Habitat suitability index.

Contd...

1	2
Economic Viability :	
(a) Economic benefit	: Benefit received so far and trend.
(b) Perceived future benefit	: Expected tangible and intangible benefit in future to the individual and society.
(c) Income distribution	: Proportion of the benefit accrued to poor people.
(d) Marketing support	: Value addition to marketable products.
Institutional Development :	
(a) Functioning of executive committee of FPC	: Faith in the committee.
(b) Performance of FPC	: Perceived level of satisfaction.
Micro-plan :	
(a) Opinion about micro-plan	: Perceived benefit.
(b) Implementation of micro-plan	: Benefit obtained.

may be $(3a+2b+1*c+0*d)/(a+b+c+d)$. Thus for each criteria a score may be calculated for FPC. If required, score against a criteria may be scaled. Then index score for each FPC may be calculated by using Weighted Criteria Method :

$$\text{Index score of FPC} = \sum W_i S_i / \sum W_i$$

Where

W_i = Weight of i^{th} criterion

S_i = Score of the FPC w.r.t. i^{th} criteria

The weight for criteria may be obtained with the help of a questionnaire, to be filled by different group of stakeholders. Delphi Technique may be used for arriving at consensus on the issue.

For calculation of index score of a division, weight of each FPC may be calculated on the basis of the membership, forest area under them, etc. The score may

be obtained using following formula :

$$\text{Index score of division} = \sum W_i I_i / \sum W_i$$

Where

W_i = Weight of i^{th} FPC

I_i = Index Score of the i^{th} FPC

As qualitative market research is carried out to find reasons behind marketing decision, socio-economic survey may attempt to find out why particular event is happening and how it may be tackled. In case of socio-economic data, being collected by two or more than two individuals, the data may be normalised w.r.t. to standard deviation and mean of data of each criterion separately. Similarly index score for each state may be calculated.

The comparison of the score of a particular criterion in subsequent year

w.r.t. the score of base year, shall provide overall gain w.r.t. than criterion. Similarly, the comparison of index scores of two different years shall provide overall gain during the intervening period. Further, comparison of scores of obviously successful area to poorly performing area may help us in identifying variables, needed for the success of JFM. For comprehensive spatial and temporal analysis, all data may be kept on a package of Geographical Information System with functionalities of overlay analysis, index overlay analysis, buffer analysis, point pattern analysis, etc.

(ii) *Mid-term Monitoring* : Mid-term monitoring may be carried out once at the middle of the two comprehensive monitorings. In this case, progress made in the implementation of micro-plan in first two and half years may be reviewed. On the basis of the review, targets for the next half may be finalised. Further, performance of the FPC may be examined and necessary changes may be suggested in the executive committee. Besides, attempt may be made by monitoring committee to find solution of any emerging or existing problem regarding JFM. It is advisable that this monitoring may also be carried out by external agency. Though for the monitoring, it may not be essential to collect complete set of data in details, sample data may be collected and full set of data may be simulated. Simple questionnaire may be developed to collect opinion/information on broad issues. Even for Forest Cover etc., instead of collecting data for each FPC, situation may be

visualized from the map of the division. It may not be necessary to undertake analysis. However, projection may be worked out so that if necessary, corrective measures may be taken up. Further, problems e.g. forest offences, grazing, etc. may be examined.

(iii) *Six-Monthly In-House Monitoring* : Six-Monthly In-house Monitoring may focus on the implementation of micro plan. In this monitoring, progress made in the last six months and from the beginning of the JFM, may be reviewed and accordingly targets for next six months may be fixed. This monitoring may be taken up either by executive committee of the FPC or a specially constituted committee of the FPC. Regarding issues like conditions of forest health, a sample information may be collected. Further, extreme cases e.g. places for unusually high success or failure may be analysed so that lessons may be learnt.

Conclusion

The monitoring of any project is essential for the success of the project. The monitoring methods discussed above shall provide basic framework of monitoring of JFM. According to specific situation and objectives, these methods and their questionnaires may be modified. If the methods are adopted for monitoring of JFM, it will go a long way in making JFM a sustainable forest management system. Though the methods have been discussed above with reference to JFM in India, they may be used in other countries in similar projects.

SUMMARY

Most of the States of India have adopted Joint Forest Management (JFM) to halt the trend of forest degradation and reverse the trend. The performance of JFM varies from village to village and State to State. Given the stakes involved and complexity of ground realities,

monitoring of JFM is critically important for the success of JFM. In the paper three methods of monitoring viz. Comprehensive Monitoring, Mid-term Monitoring and Six Monthly In-house Monitoring have been suggested. Comprehensive Monitoring, to be taken once after five years, reviews JFM with respect to health of forests, people's participation and perception, environmental factors, economic viability, performance of FPC and micro-plan. Weighted Criteria Method has been suggested for calculation of index score for each FPC, division and state and Delphi Technique may be used for arriving at consensus on weights of different criteria. In this methods index score for each FPC, Division and State shall be calculated. The score shall represent the performance of JFM in the area. Detailed spatial and temporal analysis shall be carried out with the help of GIS package. Mid-term Monitoring is comparatively less comprehensive and monitors the implementation of micro-plan and functioning of FPC. It may come out with the solution of existing or emerging problems. Six Monthly In-house Monitoring is simplistic and focuses on micro-plan. These methods may be modified according to local situation. Hopefully, the monitoring methods will go long way in making JFM successful and viable system.

भारत में संयुक्त वन प्रबन्ध की पड़ताल करना—मुद्दे और विधियाँ

बाला प्रसाद

सारांश

भारतवर्ष के अधिकांश राज्यों ने वन व्यावसाय की प्रवृत्ति को रोकने तथा उसका क्रम उलटने के लिए संयुक्त वन प्रबन्ध को अपना लिया है। संयुक्त वन प्रबन्ध की क्रियाशीलता में गांव-दर-गांव और राज्य-दर-राज्य अन्तर पाया जाता है। इस कार्य में लगे हुए निहित दांव और जमीनी वास्तविकताओं को देखते हुए संयुक्त वन प्रबन्ध की जांच करना संयुक्त वन प्रबन्ध की सफलता के लिए बेहद अनिवार्य है। प्रस्तुत अभिपत्र में जांच पड़ताल करने की तीन विधियाँ अर्थात् सर्वसमावेशी पड़ताल विधि, मध्यावधि पड़ताल विधि और छमाही घरेलू पड़ताल विधि अपनाने का सुझाव दिया गया है। सर्वसमावेशी पड़ताल पांच वर्षों के बाद एक ही बार की जाएगी और इसमें वनों के स्वास्थ्य, लोगों की इसमें प्रतिभागिता और उनके विचार, पर्यावरण कारक, आर्थिक सुशक्क्यता, वन संरक्षण समितियों की क्रियाशीलता और अणुयोजनाओं की दृष्टि से संयुक्त वन प्रबन्ध की समीक्षा की जाएगी। प्रत्येक वन संरक्षण वन समिति, मण्डल और राज्य को कितने निर्देशक अंक दिए जाएं इसकी गणना करने के लिए भारत कसौटी विधि सुझाई गई है और विभिन्न कसौटियों को कितना महत्व या भार दिया जाए इसमें एकरूपता लाने के लिए देल्फी प्रविधि उपयोग में लाई जा सकती है। ये अंक उस क्षेत्र में संयुक्त वन प्रबन्ध की क्रियाशीलता का प्रतिनिधित्व करेंगे। जीआईएस पैकेज की सहायता से क्षेत्र और समय विश्लेषण कराए जाएंगे। मध्यावधि पड़ताल तुलनात्मक दृष्टि से कम सर्वसमावेशी रहेगी और उसमें अणुयोजनाओं के क्रियान्वयन तथा वन संरक्षण समिति के कार्यों की पड़ताल की जाएगी। इसमें वहाँ की वर्तमान तथा बीच में उठ खड़ी हुई समस्याओं का समाधान भी बताया जा सकता है। छमाही घरेलू पड़ताल सीधी-साधी होगी और इसमें जोर अणुयोजनाओं पर रहेगा। इन विधियों में स्थानीय दशाओं को देखते हुए फेर बदल भी किया जा सकता है। आशा है कि पड़ताल की ये विधियाँ संयुक्त वन प्रबन्ध को सफल और सुशक्क्य प्रणाली बनाने में बहुत दूर तक सहायक रहेगी।

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