

Pilot study on assessment of Status of Sustainability of Forest Resources in India

Food and Agriculture Organization of the United Nations (FAO) compiles and publishes Global Forest Resources Assessment (GFRA) periodically. As per the direction of Committee on Forestry (COFO) 2001, an expert consultation was held at Kotka in July 2002 to deal with the general framework of GFRA programme. One of the recommendations was to use the Criteria & Indicators (or Thematic Areas), common to various international processes, for development of future GFRA. As a follow up to this, a meeting of Advisory Group (AG) to GFRA was held in Nairobi in October 2002 where a methodology was proposed which incorporated measurement of several global variables to address each criteria for sustainable forest management (SFM). It was also suggested that a pilot study be conducted in a few countries to test and modify the proposed methodology.

Accordingly, India was selected as one of the countries for conducting such a pilot study and the responsibility for the same was given to Forest Survey of India (FSI). FSI is an organization under the Ministry of Environment & Forests (Government of India) which has been carrying out assessment of forest cover in the country on biennial basis for the last 17 years along with conducting field surveys to estimate growing stock and distribution of trees inside and outside forest areas.

Objectives:

Forest Survey of India, conducted a pilot study to assess the status of sustainability of forest resources in India based on the internationally accepted six common criteria which are:

- Extent of forest resources and Contribution to the Global carbon cycle,
- Forest ecosystem health and vitality,
- Biological diversity,
- Productive functions,
- Protective functions, and
- Social and Economic functions.

These have been reorganized as eight criteria by splitting Criterion numbers 1 and 6 into two each, viz. 1(a) Extent of Forests & 1(b) Contribution to Global Carbon Cycle and 6(a) Social functions & 6(b) Economic functions.

The aim of the pilot study was to develop a methodology for assessment of sustainability of forest resources in the country and to actually make the first rough assessment in the process. This was accomplished by carrying out the following tasks for each criterion:

- Identification of variables relevant to each criterion.
- Compilation of data and trends for different variables identified for each criterion.

- Making qualitative assessment of sustainability of forest resources in India.

Methodology

The pilot study for India was carried out in five stages over two expert consultations. A group of 33 experts representing a number of stakeholders in forest management was invited to participate in the pilot study. Foresters, conservationists, academicians and biologists representing Government departments and institutions (both central and state) formed this group but forest industry, non-government organizations and sections of people living near or in the forest were prominent groups missing from the exercise. This was primarily because of time and logistic constraints and also because at this first attempt the main emphasis was on development of methodology even if the results obtained were not as realistic as might be desired. However, the participants/experts for the study had worked in and/or had experience of different parts of the country and, in a way, represented a satisfactory cross section of the country.

Stage I: Identification of variables

During the first expert consultation, a list of plausible variables under each of the eight criteria were presented to the experts to start consultations. After a lively discussion a total of 48 variables were identified as important indicators of respective criterion. Although, their relevance, directly or indirectly, to the forest sustainability issues in India were kept in mind, no serious consideration was given to ready availability of data in respect of these. Further, classification of these variables into “global” or “regional” was not considered necessary to the pilot study at this stage.

Stage II: Assigning of weights to each criterion and variable

Each criterion had to be given weights pertaining to their relative contribution to the sustainability of forest resources. Similarly, within each criterion, various variables had to be given weights corresponding to their relative importance to that criterion. Perception of each expert towards these criteria and variables was reflected in the weights they assigned to these. When a variety of disciplines and stake-holders is represented in an expert group it is expected that there will be substantial differences of opinion regarding the weight that should be assigned to each criterion and variable. To harmonize these differences and to obtain an “overall” opinion the iterative process of “Group Convergence Method” (GCM) was utilized.

Accordingly, each expert was asked to give a mark between 0 and 100 to each criterion on the basis of his or her perception about its importance and contribution. These marks were then converted to a percentage figure so that the total for all the eight criteria for each expert was 100. The mean value of all the

participants for this converted figure was intimated to the participants and those who were far from the mean were invited to explain why they gave the marks they did and persuade others to revise their marking. After a very spirited and educative debate all were asked to give a revised marking in the second iteration. Many experts modified their evaluations. Differences between mean values and an experts' marked values was debated again and in the third iteration the means were found to be well within 10 percent of the previous iteration figures. These figures were now taken to have "converged". The same exercise was repeated for all the 48 variables where convergence was achieved after just two iterations.

Stage III: Compilation of national data and trends

On arriving at a consensus with regard to weights to be assigned to all 8 criteria and 48 variables, the next step was to compile national data and trends for each variable. Over two dozen experts were requested to act as resource persons and were assigned variables related to their field of expertise. They were asked to compile and collate data for the given variable(s) from existing literature in a period of two weeks following Stage II. They produced their reports, supporting documents and references for the second expert consultation.

Stage IV: Evaluation of data and trends

In the second consultation, each of the assigned experts presented his/her report to the entire group along with the data and also reported how reliable and complete they thought the data were in their view. It was pre-decided to see if a particular variable, on the basis of data and trends, represented "sustainable" or "un-sustainable" forest resources or did it indicate movement "towards sustainability" or "towards un-sustainability".

On the basis of the presentations and ensuing discussion for each of the variables, a score between 1 and 100 was given by experts for each of the variables. This score for a variable reflected every expert's valuation of the status of forest sustainability in India on the basis of that variable alone. A score between 1 and 25 would be interpreted to mean "unsustainable", from 26 and 50 would mean "towards un-sustainability", from 51 to 75 would be interpreted as "towards sustainability" and a score of 76 or above would mean "sustainable." Each expert was also required to rate the "reliability" and "completeness" of data presented on a scale of 1 to 5 where 5 represented "very good" and 1 represented "very poor."

Stage V: Assessment of sustainability of forest resources

In this final stage, using the mean scores for the variables and their weights the contribution of each criterion towards assessment was computed. Overall assessment of sustainability of forest resources in the country was computed from these figures. The mean value was assessed as 55.8 with standard error of 1.7. An exercise was carried out using the mean scores given by each expert to see what was their assessment of sustainability individually. Of 33 experts only 3 assessment values were below 51 and the rest were above 51. Thus the group by and large agreed with the composite average assessed during this exercise. The result to assess the status of sustainability of forest resources of India through criteria is given below:

Table27: Status of Sustainability of Forest Resources of India through Criteria

Criteria		Relative Weight	Score	Weighted Score
1(a)	Extent of forest	14.9	69.2	10.3
1(b)	Contribution to Carbon	10.1	61.0	6.2
2	Forest Health & Vitality	13.3	48.0	6.4
3	Biodiversity Function	12.7	58.3	7.4
4	Production Function	12.3	52.0	6.4
5	Protection Function	12.6	59.7	7.5
6(a)	Social Function	11.9	47.1	5.6
6(b)	Economic Function	12.1	49.3	6.0
Total		100.0		55.8

Inference:

Analysing the figures in the above table we find that experts are of the opinion that of all the criteria, Criterion 1(a) "Extent of Forest" and Criterion 2 "Forest Health and Vitality" are relatively more important than others.

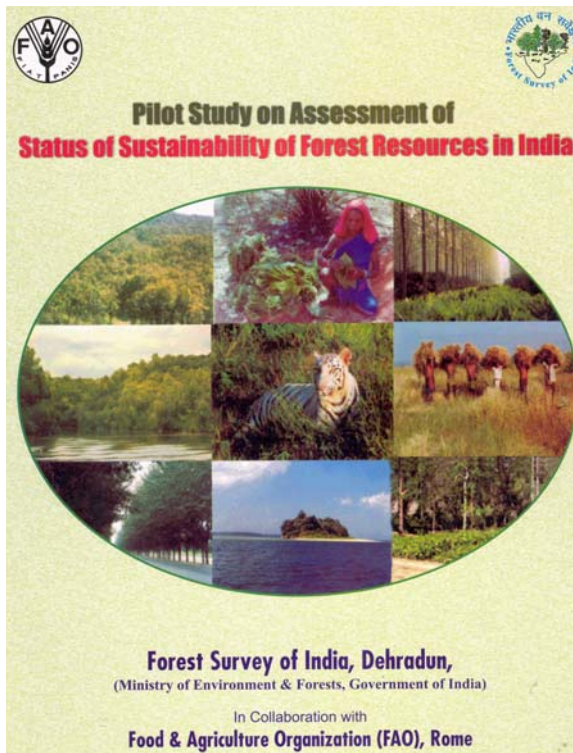
The final value of 55.8 implies that the over all status of sustainability of forest resources in India may be classified mildly as "towards sustainability". A value of 50 or below would mean that the status of sustainability is a cause for concern. Perhaps, the situation is still not very satisfactory but the country as a whole seems to be moving in the right direction. The capital stock of "Health & Vitality of Forests" and the flow of "Social Services" and "Economic Goods" are the three criteria that show a score of less than 50 in the above table and need special attention.

In view of the fact that the overall score assessed for sustainability is near the bottom of the category “towards sustainability” (range 51 to 75), frequent periodic monitoring with inputs from a larger and more diverse group of experts is required.

It was also suggested that such exercise should be carried out for smaller forest administrative entities, such as states or forest divisions/districts or even tiny Joint Forest Management units.

The average opinion of experts regarding reliability and completeness of data showed that out of 48 variables, data for only one was considered “very good”, data for 8 variables was considered “good” and data for as many as 30 variables were considered only “satisfactory”. The experts felt that data for 9 variables was “poor”. Thus, there is a need to improve periodic measurements and quantitative assessment of several forest related parameters.

A report on Pilot Study on Assessment of status of sustainability of forest resources in India has been published by Forest Survey of India describing the details about different criterion required for sustainability.



Report



Participants during Expert Consultation Meeting