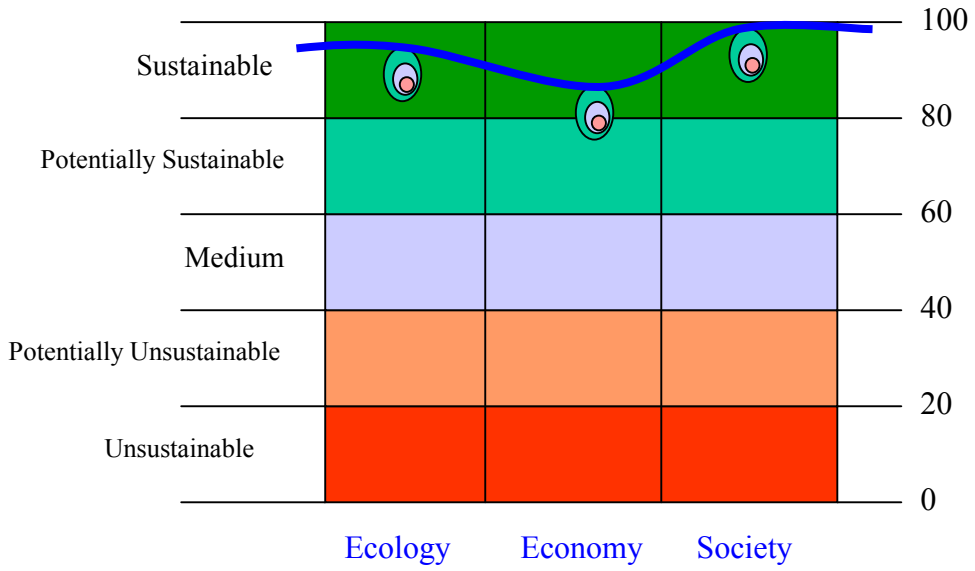
Measures of Success for Sustainable Forestry

Pursuing Progress towards Sustainability

Training Manual



MoS Meter

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(Draft in progress; comments are welcome)

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Bhopal, India

This training manual was prepared as part of the training programme on Measures of Success for Sustainable Forestry sponsored by the World Bank-WWF Global Alliance for Forest Conservation and Sustainable Use.

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No use of this publication may be made for resale or for any other commercial purpose whatsoever without prior permission in writing from the author.

Measures of Success for Sustainable Forestry is a **manual-in-progress**. We welcome your criticism, suggestions and feedback on applications and experience.

An electronic copy of the *Measures of Success for Sustainable Forestry* is available for download at International Network on Ethnoforestry: www.inef.org

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(to be compiled after the review and revision)

Preface

This training manual is designed for the use of stakeholders who are willing to pursue progress towards sustainability through the improved use of indicators in various sustainable forest management scenarios.

This training manual originated in a process of providing training to stakeholders under the Measures of Success for Sustainable Forest Management in South Asia. It draws on the learning during these training sessions organized at Indian Institute of Forest Management, Bhopal, India.

The manual and the associated training program have been prepared to meet the needs of the Forest Departments, NGOs, and Communities for improved use of performance indicators of sustainable forest management. Skills, methods and tools presented here have been tested in India, but are designed to be applicable throughout South Asian forest management scenarios including community forestry, joint forest management and protected area management.

The manual draws from author's fieldwork as a forest manager for 15 years in India. It also draws from the experience gathered from organising application oriented training programmes for a large number of stakeholders during the same period to support adaptive co-management strategies for sustainable forest management.

Measures of Success for Sustainable Forestry is a work in progress. We welcome your criticism, suggestions and feedback on applications and experience.

Acknowledgements

The training manual and the training program on Measures of Success for Sustainable Forestry benefited from the useful comments and contributions of many individuals including the participants of the first and second batch of the training on Measures of Success for Sustainable Forestry organized at Indian Institute of Forest Management, Bhopal, India (October 2000 and December 2000).

Author would like to thank the following for their invaluable support: Dr. Ram Prasad, Director, Indian Institute of Forest Management, Bhopal, India; Dr. Peter Jipp, Forestry Specialist, the World Bank, Washington, DC; Dr. Jessica Mott, Senior Natural Resource Economist, the World Bank, Washington, DC; Dr. Irshad Khan, Senior Forestry Specialist, the World Bank, New Delhi; Dr. R.R. Mohan, Senior Social Scientist, the World Bank, New Delhi; Dr. Meeta Vyas, Secretary General, WWF-India, New Delhi; Dr. Migma Sherpa, WWF US, Washington DC; Dr. Stephen Kelleher, WWF US, Washington DC; Dr. László Pintér, IISD, Canada; Dr. Marlene Roy, IISD, Canada, Dr. Ravi Prabhu, CIFOR, Indonesia, Dr. Froylan Castaneda, FAO, Rome, and Dr. Christel Palmberg-Lerche, FAO, Rome.

Special thanks to Dr. Niraj Kumar, Dr. C.S. Rathore, Dr. P.P. Yadav, Ms. Asha Khanna, Dr. R.K. Singh, Prof. S. Raghvan, Dr. P. Bhattacharya, Dr. K.N. Krishna Kumar, Dr. P.C. Kotwal, Mr. P. Raghuveer, Mr. S.D. Mukherji, Swapnil Shekhar, Rahul Bist, Deepti Jain and and Naina Ghatak for all the help they provided.

For preparation of the scales and calculations of the scores I have relied heavily on the IUCN's approach, particularly "Barometer of Sustainability", developed by the Robert Prescott-Allen. The contributions of the World Conservation Union (IUCN) to this manual are gratefully acknowledged. Parts of the manual layout draw on the "Capacity Building for Integrated Environmental Assessment and Reporting: Training Manual" prepared by László Pintér, Kaveh Zahedi and David R. Cressman prepared under the institutional collaboration of International Institute for Sustainable Development (IISD), United Nations Environment Programme (UNEP) and Ecologistics International, Ltd. Permission to use the relevant material is gratefully acknowledged.

This training programme that used this manual has been made possible by financial support from the World Bank-WWF Global Alliance for Forest Conservation and Sustainable Use.

Design of the Manual and the Course

The training programme on Measures of Success for Sustainable Forestry and the manual is designed in such a way that it will equip you to design, measure and communicate the sustainability of forest management in a variety of scenarios. The manual is designed for a rigorous six-day programme conducted by the experienced facilitators. After undergoing this training you will become the facilitator for conducting the training in your work scenarios. We have provided all the relevant material that you will need in your role as trainee, trainer and the field manager.

During this training program we will collectively prepare ourselves to examine the following issues:

- Principles of sustainable forest management, basic concept and necessity for measuring the sustainability.
- Relevant and applicable scientific and indigenous knowledge for achieving and measuring sustainable forest management in practical terms in south Asia.
- Criteria & Indicators for sustainable forest management; participatory designing and field implementation of representative basic set of indicators for sustainable forest management.
- Stakeholders and their participation for designing, measuring, implementation and local innovations for measures of success for sustainable forest management.
- Learning, feedback and strategies for adaptive co-management of forests.

The skills that you will be imparted shall include:

- Identification of Stakeholder and Management Objectives for Sustainable Forest Management
- Recognizing Implementable Indicators
- Turning Data and Information into Knowledge for SFM
- Information Dissemination, Learning, feedback and application for adaptive co-management of forests.

In order to examine the issues and impart the skills we will use a variety of learning and training methods:

- Brief introductory lectures
- Facilitated round-table discussions;
- Group discussions;
- Presentation by the participants
- Case studies;
- Questioning and brain-storming;
- Individual study;
- Demonstration of technical tools;
- Field visit, and
- Hands-on sessions.

The first three days in the training are included in what we call the **learning cycle** and last three days constitute the **reinforcement cycle**. Once you complete the training and reach your work scenarios the **application cycle** begins. It is then you will actually apply the learning in the field and provide us the feedback on the follow-up.

An Overview of the Training

Introduction

This training is aimed at forest-managers, natural resource managers, NGOs and stakeholders who are interested in carrying out the measures of success programme on SFM in the field. Thus, the training aims to equip the participants to measure the success efficiently through the yardsticks of stakeholders. It will introduce participants to the methods, the underlying principle and assumptions behind them, and how to collect the information and data and convert these into knowledge for SFM in the field situations. The training attempts to present a vast subject in a short duration. Thus, the schedule is very tight, intensive, and necessitates full time participation from all participants. We hope, that after completion of the training, each participant will be able to apply their learning in the field where they are working.

We shall conduct our fieldwork in real life situation either in a village where participatory forestry strategies have been implemented or we may go to an urban forests where a variety of stakeholders are managing their forests. This will require travelling to that site, data collection by group discussion, interviews, participants' observations and direct measurements in the forests. Participants should expect to encounter unexpected challenges and be prepared for the routine inconveniences. Organisers ask for participants' co-operation and patience and hope the training will be productive and useful.

We will keep our computer centre open round the clock to facilitate the participants. IIFM computer centre has excellent machines, e-mailing system, intranet and internet facilities.

Objectives and Course Description

The goal of the training programme is to help achieve the sustainability of forests and livelihood security of the forest-dependent people.

Two main objectives of this course are to develop an understanding of the Criteria & Indicators for sustainable forest management among the participants, and to equip them with the skills of participatory designing and field application of a representative basic set of performance indicators in the context of SFM in south Asia.

Participants may include various stakeholders from Community, Government Forest Departments and the Voluntary Agencies working for Sustainable Forest Management in south Asia. This is also an ideal course for the students of forestry and natural resource management.

Course contents

- **Principles of sustainable forest management, basic concept and necessity for measuring the sustainability.**
- **Relevant and applicable scientific and indigenous knowledge for achieving and measuring sustainable forest management in practical terms in south Asia.**

- **Criteria & Indicators for sustainable forest management; participatory designing and field implementation of representative basic set of indicators for sustainable forest management.**
- **Stakeholders and their participation for designing, measuring, implementation and local innovations for measures of success for sustainable forest management.**

Skills that will be Acquired During the Training

Skill 1: Identification of Stakeholder and Management Objectives for Sustainable Forest Management: Training Module helps participants familiarize them with the process of identifying the major groups interested in and dependent on the forest. They become familiar during the training course with a participatory process of identifying these stakeholders and determining the forest management objectives that will meet and harmonise each stakeholder's requirements without undermining the sustainability. Identification of a set of objectives, which are mutually agreeable to all stakeholders, provides basis for selecting Criteria & Indicators to be applied in the field to pursue progress towards sustainability.

Skill 2: Recognizing Implementable Indicators: Participants will get full opportunity to review a list of C&I relevant to South Asia to determine the reliability, feasibility and cost of collecting the required data to pursue progress towards sustainability. Training Module also addresses the issue how most C&I sets fail to prioritize among the many parameters they contain. Most C&I sets include an impossibly large number of indicators, fail to consider costs of implementation, and offer no guidance on how frequently they need to be measured. The most important part of this section of the course is to help participants distill from the large body of potential indicators which should be members of the "representative basic" set and how to minimize the cost of designing, measuring and communicating the results both in terms of money and time. The Training Module introduces mutually agreed filters to help participants distinguish the currently implementable from the currently unimplementable. These indicators, however, may become implementable as the information, data, knowledge and wisdom progresses in the future.

Skill 3: Turning Data and Information into Knowledge for SFM: There is already a tremendous amount of effort invested in data collection by forest departments throughout the south Asian region. However, much of this effort seems to have been wasted because data is stored without being analyzed or utilized to inform the management decisions. This Training Module incorporates simple participatory exercises to turn raw data into knowledge and coherently analyzed inferences. Basic objective are to help participants to turn data into information that categorically informs about the success or failure of forest management. The Course concentrates on data that are specific to a site that participants visit during the course. Vital questions and issues are placed before the participants in order to facilitate the learning process. Participants have access to a field-tested tool, MoS Meter of Sustainability, which helps concretize the concept of sustainability among all stakeholders even without any background and formal training in mathematics. A small exercise on interpolation is conducted to facilitate the calculations involved in the MoS Meter. The emphasis on MoS Meter draws from its usefulness among a wide range of stakeholders who are applying it in the field and also from the participants of the first training course at IIFM who found it useful on various accounts.

Skill 4: Information Dissemination for Application and Adaptive Management: The cycle is not complete until the information that has been collected and analyzed has found its way into the hands of the stakeholders and they are convinced (or otherwise) that their objectives are being met. The focus of the Course is on effective presentation of information with plenty of examples that participants take home with them for innovative replication using their own data. The message of this component focuses on how to construct a representative summary of the state of the forests that incorporates sufficient information to let forest managers and stakeholders know that management is sustainable and 'on track' and they are pursuing the progress towards sustainability. This also allows forest managers and communities to learn and design the adaptive strategies to pursue progress towards the full achievement of sustainability.

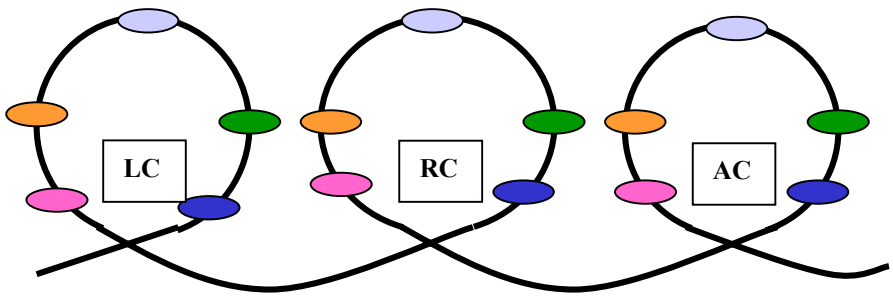
Training Cycle

Training Cycle is divided into three adaptation cycles. First two cycles are addressed directly during the training and the third cycle is addressed after the participants reach their work areas and apply the learning they acquired during the training.

1. Learning Cycle (LC): This cycle concentrates on the theoretical concepts of sustainable forest management and its relationship with livelihood security. This cycle runs through the context or a forest scenario, stakeholders and their objectives of forest management, strategies and actions to realize the management objectives, designing, measuring and communicating the Criteria & Indicators for sustainable forest management. This allows participants to grasp the fundamental theory and practice of SFM. Several hands-on facilitated sessions make the learning easy, effective and productive.

2. Reinforcement Cycle (RC): This cycle concentrates on the application of learning in the field to reinforce the theory and practice of sustainable forest management. Participants reach a village or a forest management scenario and describe the forest scenario, develop management objectives, design indicators and take measurements, analyse and communicate to know if stakeholders are pursuing progress towards sustainability.

3. Application Cycle (AC): This cycle concentrates on the application of the learning by the participants in their actual work scenarios. The most important activity in this cycle is the follow-up that participants will share with the course co-ordinator and other participants. Unless we apply what we learnt the training will not serve its intended purpose.



Reading Material

Participants Kit: Participants shall be provided the training manual that they carry with them for future use in the field. The manual can be used as a workbook and will serve as source book in the field.

Bunch, Roland. 1985. *Two Ears of Corn.* World Neighbors, USA, pp. 250

Margoluis, Richard and Salafsky, Nick. 1998. *Measures of Success: Designing, Managing and Monitoring Conservation Projects.* Islands Press, Washington DC, pp.362

Ingles, A.W., Musch, A. and Qwist-Hoffmann, H. 1999. *The Participatory Process for Supporting Collaborative Management of Natural Resources.* FAO, Rome, pp. 84

Biodiversity Conservation Network. 1999. *Final Stories from the Field.* Biodiversity Support Program, Washington DC, USA

Prasad, R., Raghvan, S., Phukan, B.R. and Joshi, B. 1999. Proceedings of the National Technical Training on "Evolving C & I for SFM in India", Indian Institute of Forest Management, Bhopal.

IIFM. 2000. *Bhopal-India Process for Sustainable Forest Management.* IIFM, Bhopal

IIFM. 2000. *Report of the Task Force on SFM in India.* Govt. of India Task Force on SFM, Convener, Dr. Ram Prasad, Director, IIFM, India.

Pandey, Deep N. 1999. Forests, Ethics and Yardsticks: Measures of Success for Sustainable Forest Management in South Asia. *The World Bank/WWF Alliance Workshop on Forest Certification and Verification,* Washington D.C., 9-10 November 1999.

Pandey, Deep N. 2000. *Measures of Success for Sustainable Forestry:* Himanshu Publications & IIFM, Bhopal, India.

Pandey, Deep N. 1998. *Ethnoforestry: Local Knowledge for Sustainable Forestry and Livelihood Security.* Himanshu, New Delhi. Pp. 92. Also available in the internet at http://education.vsnl.com/deep or http://www.inef.org/

World Bank WWF Alliance for Forest Conservation and Sustainable Use. 1999. *Annual Report.* Washington, DC.

Computer Software IMOSS is also being developed by Dr.C.S.Rahore. This will help measure the sustainability in the field by involving a variety of stakeholders. The final version of the programme shall be mailed to participants after incorporating the changes proposed by the participants as and when it is ready.

Internet Databank: In addition to the core kit, participants will have access to the FMIS Databank available at the IIFM website (www.iifm.org). Dr. C.S.Rathore heads the FMIS

project team. Participants may also to like visit the following websites for updates on sustainability:

INEF : www.inef.org
CIFOR : www.cifor.org
IUCN : www.IUCN.org
IISD : www.iisd.org

Training Schedule

All participants of the Measures of Success will learn the theoretical aspects and the practical application of the measures of success for sustainable forest management. Participants shall:

a. Read current literature about the sustainable forest management and criteria and indicators for SFM.
b. Discuss and debate the course contents as listed above in the classroom. The faculty will facilitate the discussion.
c. Conduct exercises
d. Conduct on-site research and record the information that will be used in the MoS Meter to measure the success of the SFM.
e. Decide on how the follow-up will be designed and implemented.

Expectations from the Participants

Willing Participation:
Participate in fieldwork, field note writing, class discussions, and computation exercise for the measures of success. You will have to complete the assignments given in class by the faculty. You can learn only if you try and err. The end will be pleasant and productive for all of us.

Presentations:
Apart from the class discussions you will present the results of the group discussions, exercises and the field study. You will also be required to form groups several times for accomplishing the learning tasks assigned to you. You will prepare the transparencies, flip charts, powerpoint as the case may be. After presentations and the discussion you will hand over a copy of the presentation to the facilitator for inclusion in the proceedings. We will compile the proceedings and send it to all the participants.

The presentation should summarize how you identified the stakeholder and management objectives for sustainable forestry, how you recognized implementable indicators for SFM, how you turned the data and information into knowledge for SFM, and how are you going to disseminate the information and, finally, apply this in your field work situation. You will also present a follow-up plan for your states.

Evaluation:
Learning and feedback are integral part of any training programme. We have designed the feedback based on the day's learning. At the close of each day, and at the completion of the training programme, you will be requested to fill out the evaluation forms provided in the training manual. It is optional to write or not your name in the feedback form. Evaluation will

help us to make further improvements in the training programme and provide us all an opportunity to collectively develop the training programme and methodology. Facilitators will appreciate your comments and individual discussion. You will find a lot of time for individual discussion during the breakfast, lunch and the dinner. We will appreciate your efforts for making the training lively, meaningful and productive collectively.

An Overview of the Daily schedule

Day One: Class themes:
Inauguration of the Training; introduction of the faculty and participants; discussion on goals, responsibilities, syllabus, and follow-up. Discussion on the daily feedback mechanism. Participants will discuss the principles of sustainable forest management, basic concept and necessity for measuring the sustainability in forestry. Stakeholders and their participation for designing, implementation and local innovations for measures of success for sustainable forestry.

Temporal Map for the first day

No.	Time	Programme/Action/session etc.
1.	9.30.00-10.30 AM	**Inaugural Session**
2.	10.30-10.45 AM	Tea
3.	10.45-11.30	'Brain-storming'
	11.30 AM- 12.00	Setting the Agenda of learning: Measures of Success for Sustainable Forestry, Objectives, structure, expectation from the participants and the faculty, intended output, intended follow-up, daily feedback and adaptations
4.	12.00-12.45 PM	Sustainable Forest Management: Challenges for New Millennium
5.	12.45-1.30 PM	Measures of Success for SFM: The World Bank-WWF Global Alliance for Forest Conservation and Sustainable Use - Skills and principles for measuring sustainable forest management in co-operation with stakeholders.
	1.30-2.30 PM	**Lunch**
6.	2.30.4.00	Formation of 4 groups to discuss the following management questions: • Do we know how to achieve sustainable forest management? If not, what more do we need to know? • Who matters most in achieving the sustainability of forests and why? • What is currently being measured and why? What else might we need to measure to capture the full range of sustainability? • How are we currently communicating the success of SFM to all concerned? What, if anything, is lacking? How can we improve? Groups will occupy 4 discussion spaces. Group discussion will conclude in 1.30 hrs. Groups will prepare transparencies / flip charts for their presentation, number them and write the names of the group members.
	4.00-4.15 PM	Tea
7.	4.15-6.00PM	Presentations by the groups; each group will get 15 minutes for presentation and 10 minutes for the discussion
8.	6.00-6.15 PM	Feedback and lessons

Essential Reading:

Pandey, Deep N. 2000. *Measures of Success for Sustainable Forestry.* IIFM/Himanshu, New Delhi/Bhopal;

Please read the introductory pages and material described under day 1.

Additional Reading:

IIFM. 2000. *Bhopal-India Process for Sustainable Forest Management.* IIFM, Bhopal

IIFM. 2000. *Report of the Task Force on SFM in India.* Govt. of India Task Force on SFM, Convener/Chair person, Dr. Ram Prasad, Director, IIFM, India.

Ingles, A.W., Musch, A. and Qwist-Hoffmann, H. 1999. *The Participatory Process for Supporting Collaborative Management of Natural Resources.* FAO, Rome, pp. 84, Read particularly page 16-17, 37-45, 70-75.

Margoluis, Richard and Salafsky, Nick. 1998. *Measures of Success: Designing, Managing and Monitoring Conservation Projects.* Islands Press, Washington DC, pp.362, Read pages 7, 23, 23-25, 46-50, 84, 111, 351, 351.

Day Two: Class themes:

Criteria & Indicators for sustainable forest management; participatory designing and field implementation of representative basic set of indicators for sustainable forestry. Relevant and applicable knowledge for achieving and measuring sustainable forest management in practical terms in south Asia. Sharing of experiences on designing and applying the measures of success for SFM. Discussion on Role of Strategic Communication among the stakeholders.

Temporal Map for the second day:

No.	Time	Programme/Action/session etc.
1.	9.30-10.00 AM	Recapitulation of yesterday's learning by the participants and facilitator
2.	10.00-11.00 AM	Stakeholders, their vision and management objectives for the forests: facilitated discussion on how to identify the stakeholders, examine the scenarios, set management objectives and how to design a set of indicators that will assess the progress towards sustainability
	11.00-11.15	Tea
3.	11.15-1.30 PM	Group formation for exercise in participatory design of performance indicators. Participants shall group in such a way that they have a mix of stakeholders. Each group shall elaborate a forest scenario with which the group is familiar (or they shall be given a scenario) including forest type, stakeholders, and management objectives (taking into account, to the extent possible, the aspirations of stakeholders not represented by group members). Based on the chosen management objectives you will design the indicators that will evaluate progress toward achieving the objectives while measuring the sustainability. "Filters" will be used to evaluate the chosen set of indicators. Filters include: simple and reliable, useful, cost-effective, agreed by stakeholders, and measurable. Each group will prepare a presentation/slides/flip charts during the same period. All resource persons will act as group facilitators.
	1.30-2.30 PM	**Lunch**
5.	2.30- 3.30	Role of Strategic Communication among the stakeholders
6.	3.30-4.00	Presentation by the first group
	4.00-4.15 PM	Tea
7.	4.15-6.00PM	Presentations and discussions continue for second, third and fourth group
8.	6.00-6.15 PM	Day's wrap-up. Feedback and lessons

Essential Reading:

Pandey, Deep N. 2000. *Measures of Success for Sustainable Forestry.* IIFM/Himanshu, New Delhi/Bhopal.

Please read the introductory pages and material described under day 2.

Additional Readings:
IIFM. 2000. *Bhopal-India Process for Sustainable Forest Management.* IIFM, Bhopal

Ingles, A.W., Musch, A. and Qwist-Hoffmann, H. 1999. *The Participatory Process for Supporting Collaborative Management of Natural Resources.* FAO, Rome, pp. 84, Read particularly chapters 1, 2 & 4.

Margoluis, Richard and Salafsky, Nick. 1998. *Measures of Success: Designing, Managing and Monitoring Conservation Projects.* Islands Press, Washington DC, pp.362, Read particularly page 3, 7-13, also chapter 2, Chapter 5 (page 83-104),

Day Three: Class themes:
Presentation of the case studies of application of the measures of success programme in the field. Introduction to MoS Meter, sustainability polygon and Barometer of Sustainability. Input of the data and information and analyzing the output to examine the sustainability of forest management practices. Criteria and Indicators used in the MoS Meter and other tools. Making suitable changes in the MoS Meter and other tools to suit the context in which participants may apply it.

Hands-on Session:
Getting familiar with the use of the **MoS Meter**. Introduction to other communicating tools such as Barometer of Sustainability (Prescott-Allen, 1998) and Sustainability Polygon (Herweg *et al.* 1998; Ritchie *et al.* 2000) will be provided. Putting conjectural values in the blank fields based on the experiences of participant's own earlier work experiences in the field. Participants must learn this thoroughly, as we shall require this knowledge when we collect the data and information in the field during the field visit.
Preparation for the field visit. Discussion on the Methodology of data and information collection.

Temporal Map for the third day

No.	Time	Programme/Action/session etc.
1.	9.30-10.00 AM	Recapitulation of yesterday's learning by the participants and facilitator
2.	10.00-11.00 AM	Introduction to MoS Meter of Sustainability, Barometer of Sustainability and Sustainability Polygon. Exercise on interpolation: interpolation shall be used for scoring indicators in the MoS Meter.
	11.00-11.15	Tea
3.	11.15-1.30 PM	Case Study: Exercise with MoS Meter; participants will continue the beyond yesterday's group exercise (see section 2.4 of day 2). For the indicators that were designed yesterday search the data available in the case study and calculate the score to assess the sustainability.
	1.30.-2.30 PM	Lunch

4.	2.30- 4.00	Exercise with MoS Meter continues. While preparing the presentations draw briefly on the scenario, management objectives, indicators from the yesterday's exercise (section 2.4). Prepare detailed presentation on the calculation of score.
	4.00-4.15 PM	Tea
5.	4.15-5.30PM	Presentations
6.	5.30-6.00 PM	Briefing for the field
7.	6.00-6.15	Day's wrap-up. Feedback and lessons.

Essential Reading:

Pandey, Deep N. 2000. *Measures of Success for Sustainable Forestry.* IIFM/Himanshu, New Delhi/Bhopal; pp 100

Please read the introductory pages and material described under day 3.

Additional Reading:
Pandey, Deep N. 1999. Forests, Ethics and Yardsticks: Measures of Success for Sustainable Forest Management in South Asia. *The World Bank/WWF Alliance Workshop on Forest Certification and Verification,* Washington D.C., 9-10 November 1999.

Margoluis, Richard and Salafsky, Nick. 1998. *Measures of Success: Designing, Managing and Monitoring Conservation Projects.* Islands Press, Washington DC, pp.362, Read particularly Chapter 6 (page 105-178).

Bunch, Roland. 1985. *Two Ears of Corn.* World Neighbors, USA, pp. 250. Particularly pages 10-36.

Day Four: Field Visit for Data and Information Collection:
Based on your classroom discussions you will collect data related to ecological, economic, social, and other related criteria indicators in the field. Participants will ensure that they are able to collect information related to the indicators that they and other stakeholders in the village decide to be important. Participants will use the methodologies, which are appropriate for data collection in the field situation in which they are. Participants will take care while collecting the information in order to facilitate the inputs for the analysis. Each field group will comprise of five participants.

The participants will start early. We will make arrangement for a working lunch and evening high-tea.

Temporal Map for the fourth day: (Field visit)

No.	**Time**	**Programme/Action/session etc.**
7.00-8.00 AM		Breakfast
8.00 AM		Departure for the field; reach the village and start the field work in the following sequence:
		Pooling of Minds and Hearts: Introduction with villagers, exchange of pleasantries, establishing rapport (village community and participants remain in one group): **30 minutes**

	Sharing of Knowledge: Participants and community members will form four groups. The groups will be of Foresters + villagers (3 groups) and NGOs + villagers (1 group) to discus the objectives of the forest management in the village; what strategy was adopted and what actions were taken to fulfil the objectives; how community knows that the objectives are being fulfilled; and what indicators they use and measure?: **1 hour**
	Search for Knowledge: Participants will then request the community members in their group to take them to their households to search that part of knowledge which resides in other community members, including aged and women, children etc., who may not have been able to share their knowledge simply because they were not present. **45 minutes**
1.30 PM	Community Lunch
2.30 PM onwards	Field visit in community managed forest to collect data on indicators. Participants will remain with the same groups they were in during the morning.
4.30 PM	Departure from the field

Essential Reading:

Pandey, Deep N. 2000. ***Measures of Success for Sustainable Forestry.*** **IIFM/Himanshu, New Delhi/Bhopal**

Please read the introductory pages and material described under day 4.

Day Five: Group exercise in class:
The participants will use the data collected in the field for ascertaining the sustainability of the forest area that they examined in the field. This exercise will include analysis of the data and information to get the values for the indicators by applying various approaches. Participants will be given the community indicators that were evolved under the ITTO pre-project of IIFM to compare and contrast the representative set that they evolved in the filed. This is also important to help participants realize that one can attempt to use the vast amount of information already being collected by the participants in their work scenarios.

Introducing and demonstrating the IMOSS and other software.

Temporal Map for the fifth day:

No.	Time	Programme/Action/session etc.
1.	9.30-10.00 AM	Recapitulation of yesterday's learning by the participants and facilitator
2.	10.00-11.00 AM	Time for preparation of the presentations. While preparing the presentations groups will also include discussion on which indicators were dropped and why to make the set of indicators representative.
	11.00-11.15	Tea
3.	11.15-12.00 PM	Brief presentations by each group on their set of indicators. Facilitated discussion on comparison of indicators evolved by the different groups. Differences and similarities among the groups?
	12.00-1.30	Calculation of scores for MoS meter. Full set of information on all the evolved indicators will be available to every participant irrespective of their group. They can access this information to make their set more representative and calculate the score for all the indicators that they are adopting as representative set. Plotting on the MoS Meter, Barometer of Sustainability, Sustainability polygon
	1.30.-2.30 PM	**Lunch**
4.	2.30- 3.30	Presentations and discussion
	4.00-4.15 PM	Tea

5.	4.15-5.00PM	Presentation and discussion
6.	5.00-6.00 PM	IMOSS software
7.	6.00-6.15	Day's wrap-up. Feedback and lessons.

Pandey, Deep N. 2000. *Measures of Success for Sustainable Forestry.* IIFM/Himanshu, New Delhi/Bhopal.

Please read the introductory pages and material described under day 5.

Day Six: Recapitulation and Follow-up Process

Recapitulation of the entire training course; Discussion on how participants will apply the inputs in the field that they had in the training; discussions and decision for the process of follow-up to make the learning in training more meaningful and sustain the process; small exercise for feedback: Success and Beyond.

The distribution of the certificates and departure with a firm resolve to follow-up.

Temporal Map for the sixth day:

No.	Time	Programme/Action/session etc.
1.	9.30-11.00 AM	Recapitulation of the learning during the training by the participants, resource persons and facilitator
	11.00-11.15 AM	Tea
	11.15-12.00 PM	Discussion on how participants will apply the inputs in the field that they had in the training; discussions and decision for the process of follow-up to sustain the process make the learning in training more meaningful. Preparation of plans of follow-up by the participants in two copies, one of this they will carry and one copy they will hand over to facilitator.
	12.00-1.30	Brief presentations of the plans by each participants (5 minutes each)
	1.30.-2.30 PM	**Lunch**
	2.30- 3.30	Success and Beyond: feedback
	3.30-4.15 PM	Parting Resolve Speech by Dr. Ram Prasad; Facilitator's remarks Distribution of certificates
	4.15 PM	Tea and departure

Pandey, Deep N. 2000. *Measures of Success for Sustainable Forestry.* IIFM/Himanshu, New Delhi/Bhopal.

Please read the introductory pages and material described under day 6.

Assessing the Follow-up

The follow-up of the programme; participants shall be assessed in the following steps:

Step 1. Participants will send the dates when they intend to organise the follow-up activities such as the training to field staff, exercise for measures of success etc. to the Course Coordinator.

Step 2. Course Coordinator may visit a sample of States to attend the programmes in the field.

Step 3. Participants will send a copy of the material that is generated out of the training and activities in the States to the Course Coordinator.

Step 4. Course Coordinator will initiate and facilitate the mailing list/list-serve and request the network members to pool in concrete terms what action they have taken, what was the result, who benefited, and what is planned next.

Step 5. The Course Co-ordinator will prepare a consolidated report and distribute to all the participants periodically.

Day One:
Sustainable Forest Management

Day One at a glance

No.	Time	Programme/Action/session etc.
1.	9.30.-10.30 AM	**Inaugural Session**
2.	10.30-10.45 AM	Tea
3.	10.45-11.30 AM	Brain-storming
	11.30-12.00 AM	Setting the Agenda of learning: Measures of Success for Sustainable Forestry, Objectives, structure, expectation from the participants and the faculty, intended output, intended follow-up, daily feedback and adaptations
4.	12.00-12.45 PM	Sustainable Forest Management: Challenges for New Millennium
5.	12.45-1.30 PM	Measures of Success for SFM: The World Bank-WWF Global Alliance for Forest Conservation and Sustainable Use - Skills and principles for measuring sustainable forest management in cooperation with stakeholders.
	1.30-2.30 PM	**Lunch**
6.	2.30.4.00 PM	Formation of 4 groups to discuss the following management questions: • Do we know how to achieve sustainable forest management? If not, what more do we need to know? • Who matters most in achieving the sustainability of forests and why? • What is currently being measured and why? What else might we need to measure to capture the full range of sustainability? • How are we currently communicating the success of SFM to all concerned? What, if anything, is lacking? How can we improve? Groups will occupy 4 discussion spaces. Group discussion will conclude in 1.30 hrs. Groups will prepare transparencies / flip charts for their presentation, number them and write the names of the group members.
	4.00-4.15 PM	Tea
7.	4.15-6.00PM	Presentations by the groups; each group will get 15 minutes for presentation and 10 minutes for the discussion
8.	6.00-6.15 PM	Feedback and lessons

1.1 Sustainability

Sustainable development evolved as a dominant policy priority over the last few decades (IISD, 1998). According to its classical definition, sustainable development is development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs (WCED, 1987). The concept is based on the recognition that the well-being of human society is closely related to the well-being of natural ecosystems (Chimbuya et al., 1997). The condition for overall sustainability is the well-being of both human and natural systems, as shown conceptually in Figure 1, the egg of sustainability (modified after IUCN, 1997).

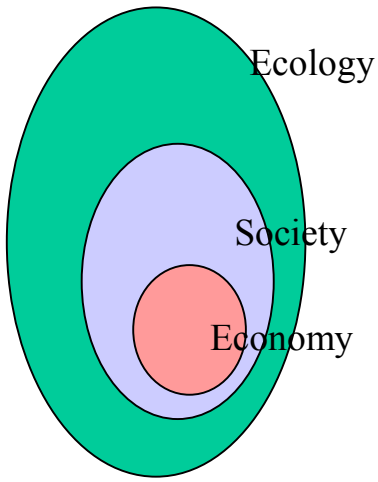


Fig. 1: Egg of sustainability (modified after IUCN, 1997)

This question often comes to our mind: why should we worry about the sustainable forest management? Answer to this question is not easy. South Asian communities in general have regarded that nature sustains the life on earth. Spirit of natural surroundings is considered rejuvenating. Forests, trees, lakes and gardens, are all manifestation of diversity in nature. Indigenous world-view holds that spirit of nature gives life to all. Forests alone bestow sweet fruits, cool water and fresh breath for life. An un-ploughed wilderness is regarded to be full of productive assets. It relieves us of stress and lets us enjoy and praise the nature. Even if while moving in the natural surroundings one is not able to get something physical, enrichment of soul can make sense to life.

Environmental concerns and actions for protecting the habitat is a gift that we can offer to all living being. Protection of biological diversity, and ecosystems will ensure the sustainability of essential ecological processes and life support systems.

Sustainability has been an issue of development of thought since ancient times. For example, two robust and ethical principles were designed in order to comprehend that whether or not the intricate web of nature is sustaining itself. Implicit in these principles is also the policy directions and technological suggestions. These principles roughly correspond with modern

understanding of **conservation, utilization**, and **regeneration** (Pandey 1996, 1998). Implicit in this is also the simplicity of approach for the measures of success. We shall deal with this a little while later. Suffice it to say that complexity of a system does not always necessarily require an equally complex yardstick.

1.1.1 Forest Conservation Ethics

Atharva Veda (12.1.11) hymn, believed to have been composed some 3000 to 5000 years ago, somewhere amidst deep woods in South Asia reads: "O Earth! Pleasant be thy hills, snow-clad mountains and forests; O numerous colored, firm and protected Earth! On this earth I stand, undefeated, unslain, unhurt."

Implicit here are the following ethics:

- We must ensure that earth remains forested.
- We must understand that human race can sustain only if the earth is protected.
- We must remember that humans to remain 'unslain' and 'unhurt' the ecosystem integrity must be ensured.
- Ecology, economy and society must be addressed concurrently.

1.1.2. Forest Utilization and Regeneration Ethics

Another hymn from *Atharva Veda* (12.1.35) reads:

"Whatever I dig out from you, O Earth! May that have quick regeneration again. O Earth! may we not damage thy vital habitat and heart."

Implicit here are the following ethics:

- Human beings can use or 'dig out' the resources from the earth for their sustenance.
- Resource use pattern must also help in resource regeneration.
- In the process of harvest no damage should be done to the earth.
- Humans are forewarned not against the use of nature but against the overuse and abuse.
- Ecology, economy and society must be addressed at the same time.

1.1.3. Implications for the 'Measures of Success':

Thus, taking the evidence from the above description the simplest and most robust measures of success for sustainable forest management in South Asia must include the indicators pertaining to the ecology, economy and society in order to effectively address the sustainability of forests in the region (fig. 2).

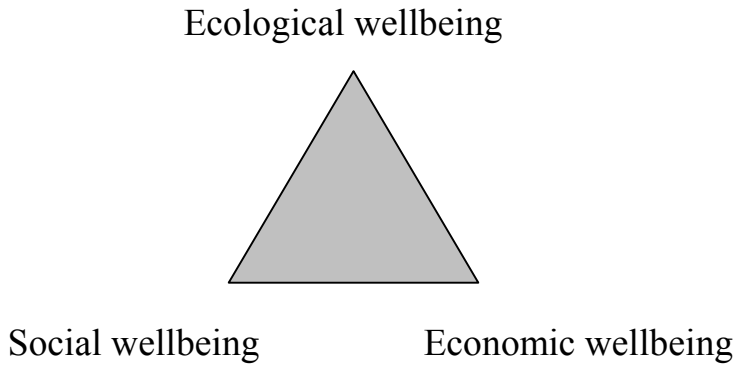


Figure 2: Three Segments of Sustainability

Table 1. Sustainability in perspectives

Forest Well-being	Societal Well-being	Economic Well-being	Outcome
▼	▼	▼	Unsustainable
▲	▲	▼	Unsustainable
▼	▼	▲	Unsustainable
▼	▲	▲	Unsustainable
▲	▼	▲	Unsustainable
▼	▲	▼	Unsustainable
▲	▲	▲	Sustainable

(Note: Several combinations of unsustainable situations are possible but sustainability has only one combination).

▲---Increase ▼---Decrease

(*Source:* Modified after Chimbuya *et al.* 1997, cited in Pinter *et al.* 2000)

We also have several studies that have examined the practices, beliefs, knowledge and wisdom in indigenous cultures across south Asia that have been used as a 'basis for the traditional coping mechanisms long before the rise of any religious beliefs' (Mebratu, 1998). These living traditions continue to guide the sustainability in several local communities in various scenarios. The scenarios and contexts may be different, but the fundamental facet of all these traditions continues to be the supremacy of nature to human being, therefore, nature being an object of reverence; living in harmony with nature; interconnectedness of all beings and nature, therefore, a holistic vision; and community as unit of action. These principles continue to guide the existence of community-conserved areas throughout the region (Pandey, 2000). A comparative analysis of the concept of sustainability by Mebratu (1998) concludes that 'an in-depth look at the different religious teachings, medieval philosophies, and traditional beliefs as the major repositories of human knowledge besides modern science reveals that…most of them contain a strong component of living in harmony with nature and with one another. This is the logical essence of what we, today, call sustainability'.

In response to the continued high rate of forest loss and the resulting disappearance of biodiversity and forest based goods and services essential for sustainable development, the World Bank (WB) and the World Wide Fund for Nature (WWF) formed an Alliance in June 1997. The Alliance goals are to help countries establish 50 million hectares of new forest protected areas, to bring an additional 50 million hectares of existing protected areas under effective management and to bring 200 million hectares of the world's production forest under sustainable management by the year 2005. The Alliance is working toward this goal by promoting forest conservation and internationally recognized best practices in forest management. The WB and WWF are working with governments, the private sector, other donors, NGOs, and local forest users to reduce the loss and degradation of all forest types worldwide (World Bank, 1999). Indian Institute of Forest Management, Bhopal is a leading partner of the Alliance in South Asia.

1.1.4 Sustainable Forest Management in South Asia

In South Asia, the WB/WWF Alliance follows a more "pluralistic" approach using verification which supports local initiatives that improve forest management by working with managers and forest stakeholders to identify and track progress toward local objectives of sustainable forest management. Many of the poorest communities are found in close proximity to forest areas. Many of these communities rely directly on the forest for their livelihoods. Local forest communities are the traditional and often de-facto managers of forest resources. Throughout South Asia, management for conservation and sustainable use is effective only to the extent that the communities' roles in forest resource management are recognized and incorporated into planning and activities on the ground. In seeking to protect the forest, the alliance also seeks to protect the poor.

Alliance activities in South Asia are referred to as the "Measures of Success Program." To initiate the dialogue on improved forest management in the region the Alliance is sponsoring a series of workshops and training programmes. The process allows all stakeholders to identify and mutually agree on a basic set of indicators to track performance against established management objectives.

1.1.5 Sustainable Forest Management in India

Sustainable forest management has been a prevailing theme in India in recent years. The 1988 National Forest Policy (NFP) has been instrumental in radically altering the aims of forest management. The NFP has shifted forestry from an exclusively industrial focus to one which aims to restore environmental forest functions and meet the basic needs of the people living in and near forests. The policy clearly directs that forests will be managed first as an ecological necessity, second as a source of goods and services for local populations, and third as a source of wood for industries and other non-local consumers.

Within this enabling policy environment, various approaches to implement the SFM strategies, including Joint Forest Management (JFM), in India have flourished.

India has also been involved in the global initiative on sustainable forestry. India is a signatory to the International Tropical Timber Organization, which among its multiple objectives, has a commitment to assist members to meet ITTOs unique Year 2000 objective to have all tropical timber products traded internationally originate from sustainably managed forests.

In consonance with other initiatives across the world the Indian Institute of Forest Management (IIFM) evolved the Criteria & Indicators under the well-known Bhopal-India Process in 1999. Bhopal-India process not only evolved the C&I it also 'provided a platform for sensitizing foresters, scientists, NGOs and other stakeholders about the need for evolving C&I for SFM in India' (Prasad et al. 2000). The Bhopal India Process resulted in formulation of 8 national level criteria and 51 related indicators for SFM in India (IIFM, 1999). The Government of India gave further momentum to the evolution of the C&I by appointing a National Task Force on SFM under the leadership of Dr. Ram Prasad, the chief architect of Bhopal-India Process. The Task Force provided 8 Criteria and 43 Indicators for the national level assessment of sustainable forest management. The evolved set of C&I has been submitted to the Govt. of India to be the guiding framework for assessing the sustainability of forest management in India.

Attempts on C&I in India have mainly concentrated on the designing of a robust set of Criteria & Indicators. For instance, in a field testing exercise conducted by IIFM among the communities in central India the C&I set of Bhopal-India process and ITTO were used as the base set for developing field level C&I. The output of one field workshop was used as the input to succeeding workshop along with the base set. Three such workshops were organised among the villagers and the outcomes of all the three workshops were then analyzed for commonalties and site specificity; and thus a reliable set of C&I was drafted (Prasad *et al.* 2000). This was an attempt 'to evolve FMU level C&I for SFM through community participation and involving the JFM institutions at different villages of the Central Indian State of Madhya Pradesh'. The methodology adopted for this exercise was community sensitization and field transacts followed by village level workshops to evolve Criteria & Indicators (Prasad *et al.* 2000). This study also provided the people's perceptions on the sustainability of forest management (Chandurkar *et al.* 2000)

1.1.6 Communities and Knowledge for Sustainable Forest Management

Knowledge resides at several levels of the society. Assessment of sustainability needs to take into account all the components of the system.

(See figure 3)

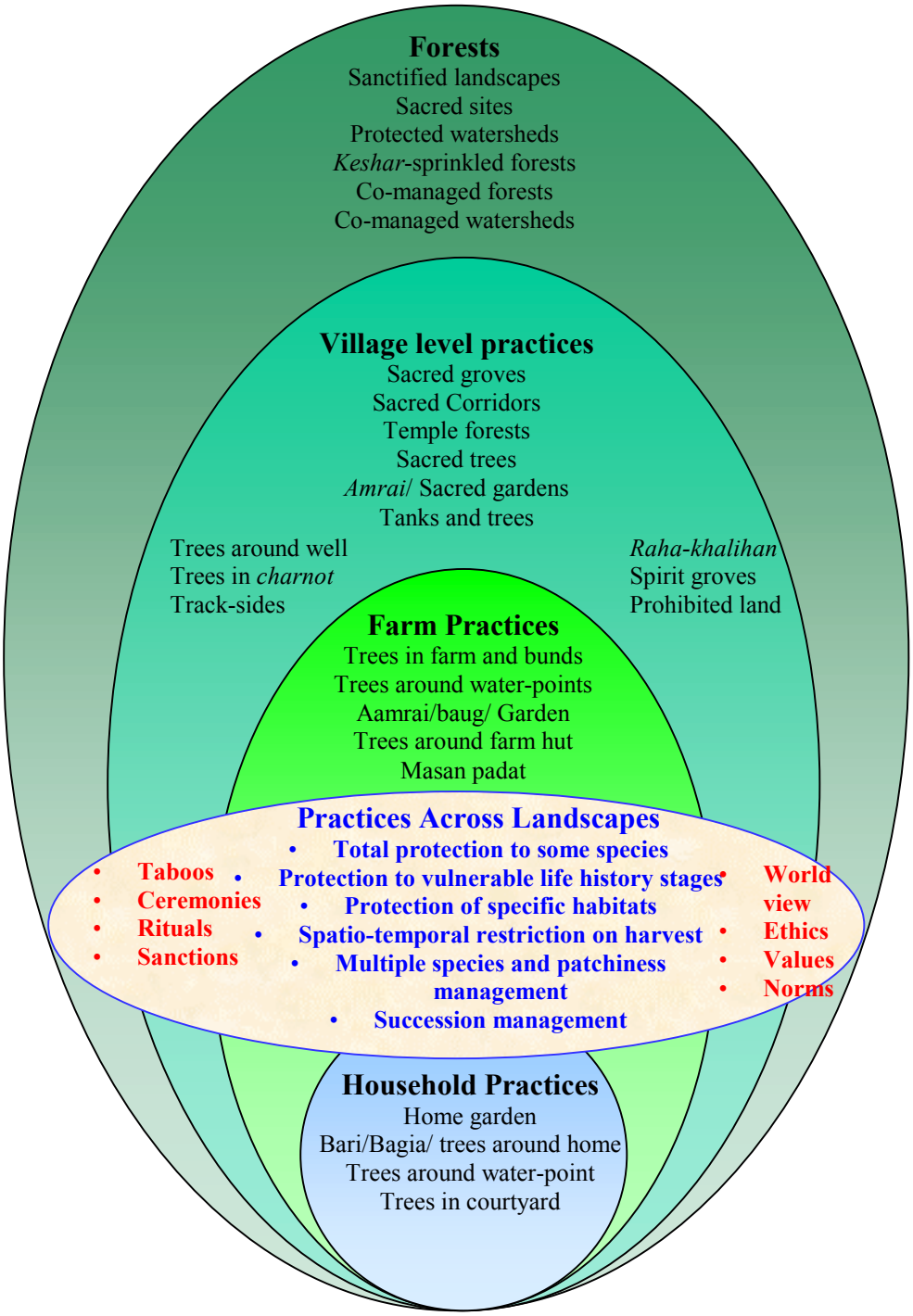


Figure 3: Communities and Knowledge on SFM
(Source: Pandey, thesis in progress)

?

Study/discussion questions

Q: Why is there a need for more integrated decision-making in forestry that takes into account the ecology, economy and society and the intrinsic relations among them?
A: _____
_____
_____
_____

Q: What are some good examples of the interconnectedness of ecological, societal and economic well-being?
A: _____
_____
_____
_____

Q: What is the role of assessment and strategic communication in sustainable development?
A: _____
_____
_____
_____

Q: Who will benefit most from the assessment of sustainability?
A: _____
_____
_____
_____

Q: How forest managers and NGOs can derive more benefits from the assessment of sustainability?
A: _____
_____
_____
_____

Presentation (30 minutes)

1.2 Setting the Agenda for the Training

Paraphrasing after Mahatma Gandhi we can argue that "it is unwise to be too sure of one's own wisdom. Even as knowledge and wisdom is acquired by indigenous people through trial and error, so does it come from the systematic research by formal scientists. The golden rule is to test everything in the light of reason and experience, no matter from where it comes".

Read also some more punch lines:

The first step to knowledge is the confession of ignorance.
----Weinberg, 1975

There is but one path to learning, and that is by doing.

No distance can be covered without the first step.

1.2.1 Why Measures of Success?

- Because we believe that people most qualified to manage the forests sustainably are those who have an interest in and are most familiar with local resources.

- Because people most qualified to set the objectives are those who have interest in sustainability of the resource.

- Because people who can set the objectives of forest management are also most qualified to design and execute strategies and actions to achieve these objectives.

- We, therefore, believe that stakeholders can help us to design, manage and measure the sustainability of forests in which they have an interest, which extends beyond the realm of simple conservation—it is a livelihood question.

1.2.3 Why measure the sustainability?

There are some fundamental reasons including:

- We can not adapt unless we learn from feedback. Criteria & Indicators are useful tools for assessment, learning, communication and adaptive strategies.

- We can not sustain forests unless we adapt to changing resource scenarios.

- We can not argue for sufficient allocation of resources to the natural resource sector unless we communicate in unequivocal words that a sustainably managed forest can attack poverty and contribute to livelihood security. In fact, this alone is the biggest justification for measuring and communicating the sustainability.

1.2.4 What are we going to achieve in this training?

The goal of the training programme is help achieve the sustainability of forests and livelihood security of the forest-dependent people.

Two main objectives:

- To develop an understanding of the Criteria & Indicators for sustainable forest management among ourselves.

- To equip ourselves with the skills of participatory designing and field application of a representative basic set of performance indicators in the context of SFM.

1.2.5 What are We Going to Learn in this training?

- Principles of sustainable forest management, basic concept and necessity for measuring the sustainability in forestry.

- Relevant and applicable knowledge for achieving and measuring sustainable forest management in practical terms.

- Criteria & Indicators for sustainable forest management; participatory designing and field implementation of representative basic set of indicators for sustainable forestry.

- Stakeholders and their participation for designing, implementation and local innovations for measures of success for sustainable forest management.

1.2.6 What skill are we going to acquire in this training?

This training will help you acquire skills to monitor SFM at the field level based on site-specific management objectives. In doing so it also provides you skill for:

- Identification of stakeholder

- Management objectives for a given scenario of sustainable forest management

- Recognizing implementable indicators.

- Turning Data and Information into Knowledge for SFM.

- Adaptation, learning, information dissemination and field application.

1.2.7 What is our expectation for the participants?

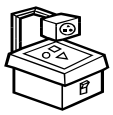
- Willing participation.
- Learning by doing.
- A firm resolve to follow-up.
- The commitment– not a promise!
- Your feedback– everyday –we value it.

1.2.8 Our cherished hope

Our cherished hope is that forests will be with us forever not only to serve the humanity but also for the sake of being with us.

1.3 Exercise (5 minutes)

Close your eyes and just imagine being in the most beautiful forest of your native village, lying under your favourite tree, let your spirit fly…and you will know why!



Presentation (30 minutes presentation + 15 minutes discussion)

1.4 Sustainable Forest Management: Challenges for New Millennium

(Refer slides by Dr. Ram Prasad)

1.5 Group Exercise (1.30 hours)

After the briefing, participants will form groups to discuss the following management questions in four groups. Groups will occupy 4 discussion spaces. Group discussion will conclude in 1.30 hrs. Groups will prepare transparencies / flip charts for their presentation, number them and write the names of the group members. You may like to draw from the reading material provided to you while you discuss in the groups. Best results from the group discussion can be achieved only if we provide opportunity to each other to share her or his experiences, data, information, knowledge and wisdom. We all benefit in a group if we listen carefully, respond with positive frame of mind with a willingness to modify our views if the situation so demands, and enrich the discussion with real life cases. Diversity of views provides opportunity to search for options and normative plurality.

As a group member we all benefit by the time-tested Principle of Indispensable Virtues:

- Self-restraint,
- Altruism and
- Compassion

A group discussion is teamwork. Therefore, we need to be a good team member. A good team member normally has the following qualities (Margoluis and Salafsky, 1998):

- *Patient*: Maintains his or her composure even when things are not going as planned.
- *Attentive*: Listens to a respondent without interrupting, judging, lecturing.
- *Humble*: Is not class conscious and doesn't put himself or herself above others.
- *Respectful*: Shows regard for the community members and fellow team member.
- *Friendly*: Is easy to work with and gets along with others.
- *Enthusiastic*: Is eager and animated
- *Thorough*: Completes tasks as instructed
- *Creative*: Is dynamic and shows flexibility in thinking.
- *Curious*: Remains genuinely interested in what others have to say
- *Strong*: Can handle difficult fieldwork schedules, long hikes and uncomfortable conditions
- *Self-Motivated:* Is eager to initiate the tasks.

Group 1: Do we know how to achieve sustainable forest management? If not, what more do we need to know?

Participants may examine several aspects. Sustainable Forest Management covers social and economic wellbeing of the stakeholders and ecological Well-being of the forests. It represents a holistic concept beyond the notions of sustained yield. It also promises to integrate indigenous knowledge with formal science of forestry technical inputs thereby enabling effective and efficient use of resources.
SFM denotes the full achievement of following:

a) Social Wellbeing:
- Opportunities for participation
- Equity of knowledge
- Livelihood security

b) Economic Wellbeing
- Cost effective technology
- Livelihood security

c) Ecological Wellbeing
- Healthy and vibrant forest ecosystem that provides multiple and goods and services to humanity.

- Effective use of indigenous knowledge systems
- Integration of Indigenous knowledge systems with modern inputs

Group may also like to discuss if there is a need to know more than what we know. For example:

- In order to capture the full range of sustainability do we need to consider ecological, social and economic wellbeing?

- What is the context in which we want to manage our forest?

- Who are the critical stakeholders capable of influencing the management decision?

- Who should set the objective for the management of forest?

- Who will design and measure the Criteria and Indicators for SFM?

- Who will decide if the management is pursuing progress towards sustainability?

- How can we know what we are doing is right or wrong for forests and communities?

- How can the forest managers improve the forest management practices in a cost effective manner?

We will encourage you to search for the possibilities to include in your presentation good diagram, flow-chart and tables that help in understanding the basic issue being discussed in the group.

Group 1: Do we know how to achieve sustainable forest management? If not, what more do we need to know?

Write the results of discussion here…

Group 2: Who matters most in achieving the sustainability of forests and why?
You may discuss a variety of stakeholders, based on your experience, who need to be involved in sustainable forest management. For each group you will also examine the question why they matter most? These may include:

- Local People
- Government Departments
- NGOs and other Civil Society Groups
- Industry
- Media
- Local Organization
- Research Organizations and Institutions
- Nature Clubs and Youth groups
- Politicians
- Citizens living in distant area cities, and
- Donors etc. etc.

Can you distinguish people who matter more than other? Why you think so? Can you quantify how much more they matter than others? Examine and bring out reasons why we need to involve them in SFM. You may also wish to examine the following questions:

- How involvement of stakeholders generates a sense of ownership for SFM?

- What leads to a sense of responsibility among stakeholders?

- What actions give stakeholders control to analyse their forest scenarios?

- Which interventions provide them an opportunity to set their management objectives for that scenario?

- How opportunities can be provided to stakeholders to manage the forests?

- What provides them an opportunity to design a monitoring strategy and implement it?

- What provides them an opportunity to learn and adapt and pursue progress towards sustainability?

- How stakeholders' involvement contributes to the adaptive policy development?

- How can stakeholders collectively develop an explicit vision of the natural resource systems that they are attempting to manage sustainably?

- Why is this necessary?

- Faced with uncertainty and risks in forest management how can assessment of sustainability help in developing sustainable adaptive management regimes?

We will encourage you to search for the possibilities to include in your presentation good diagram, flow-chart and tables that help in understanding the basic issue being discussed in the group.

Group 2: Who matters most in achieving the sustainability of forests and why?
Write the results of discussion here…

Group 3: What is currently being measured and why? What else might we need to measure to capture the full range of sustainability?

Assessments are generally input oriented reflecting, for example, number of check dams constructed and numbers of seedlings planted. This approach, however, is not a true reflection of progress towards sustainability. To harmonise assessments with the management objective it is necessary to examine the output approach.

For Example, by counting the numbers of check dams built we can't measure the enhanced water regime of an area. If enhancement of water regime of the area is the objective then measurement of water tables will provide better appreciation of progress towards achieving the objectives than mere counting of number of check dams made.

Another example: enhancement of productivity is one of the objectives of the Aravalli Afforestation Project and Forestry Development Project in Rajasthan. One of the corresponding strategies employed to achieve this is the enrichment planting of selected species in degraded forests. Measurement and reporting of the number of saplings planed per hectare was not considered enough; instead number of surviving saplings and their contribution to the general biomass reflected better picture of achievement of the objective.

The group may like to discuss the measurements that are being taken currently and why? Group may also like to discuss if they are measuring the issues related to ecology economy and society to capture the full range of sustainability. Examination of the following questions will also be helpful:

- What is being measured and why?

- Are we measuring what we need to measure?

- What is the need for measurement?

- What feedback can we take from the outcome of these measurements?

- Who is taking the feedback from these measurements?

- Are we analysing the results so that we can learn, adopt, incorporate changes in SFM strategies?

We will encourage you to search for the possibilities to include in your presentation good diagram, flow-chart and tables that help in understanding the basic issue being discussed in the group.

Group 3: What is currently being measured and why? What else might we need to measure to capture the full range of sustainability?
Write the results of discussion here…

Group 4: How are we currently communicating the success of SFM to all concerned? What, if anything, is lacking? How can we improve?

For the purpose of sustainable forest management communication has five facets:

a) Goal of communication

b) Contents to be communicated

c) Communicator

d) Recipient

e) Feedback, learning, adaptation and policy development

Mode of communication should change with the nature and need of the recipient. Critical stakeholders in SFM are generally shy and non-demanding. It becomes, therefore, imperative for the communicator to be effective and understanding. He/she should be able to know the requirement and the level of communication needed for this purpose. Communication should effectively be a two way process and should not be confined to filling of fixed information formats.

While answering the issue you may like to do the following (Margoluis and Salafsky, 1998):

a) Determine the audience
    - Foresters in general and
    - Stakeholder communities
    - Project team

b) Determine the information need of the audience

c) Develop the presentation formats and tools for the audience

- Oral presentation
- Informal contacts
- Reports
- Press and media release
- Brochures and pamphlets
- Research paper and books
- Visual presentations (poster, slides, films)
- Internet, e-mail, mailing lists

Do you think that the following strategies can help?

- Workshops
- Conferences
- Field meeting
- Staff meetings

- Sending E-mails, letters, information etc to those who are critical for the success of SFM in a particular context.

For designing an effective communication model, we need to ask the following questions to ourselves:

- Are we able to categorize information according to the needs of the stakeholders?

- Are we able to device a vehicle that is able to deliver right information, at right place and at the right time?

- Are we able to provide relevant information about what is happening to forest well-being, societal well-being and economic well-being?

- Are we able to seek feedback to address the undesirable output, situations and surprises?

- Are we able to analyse the feedback effectively?

- Are we able to predict what will happen in future and how to take measures to adjust the policy and action, if the need be?

We will encourage you to search for the possibilities to include in your presentation good diagram flow-chart and tables that help in understanding the basic issue being discussed in the group.

Group 4: How are we currently communicating the success of SFM to all concerned? What, if anything, is lacking? How can we improve?
Write the results of the discussion…

1.6 Group Presentation (1.45 hours)

Each group will get 15 minutes for presentation and 10 minutes for the discussion in the full house. After making the presentation incorporate all changes in your presentation suggested by the group and agreed by you. Deposit the presentation material (transparencies, flip charts etc.) with the facilitator. These will be compiled and mailed to you along with the proceedings for your use in the future.

1.7 Feedback and Wrap-up (15 minutes)

Please take few moments to reflect on today's training so that we can learn and adapt for tomorrow's programme. Give your feedback in sheet provided for the purpose. We thank you for your cooperation.

What would you like the facilitators to stop doing?

_____
_____
_____
_____
_____

What would you like the facilitators to start doing?

_____
_____
_____
_____
_____

What would you like the facilitators to continue doing?

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Other comments:

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Day Two:
Forest Management Scenarios, Stakeholders' Vision & Management Objectives, and Performance Indicators

Day Two at a Glance

No.	Time	Programme/Action/session etc.
1.	9.30-10.00 AM	Recapitulation of yesterday's learning by the participants and facilitator
2.	10.00-11.00 AM	Stakeholders, their management objectives for the forests and Criteria & Indicators: facilitated discussion on how to identify the stakeholders, examine the scenarios, set management objectives and how to design a set of indicators that will assess progress towards sustainability
	11.00-11.15	Tea
3.	11.15-1.30 PM	Group formation for exercise in participatory design of performance indicators. Participants shall group in such a way that they have a mix of stakeholders. Each group shall elaborate a forest scenario with which the group is familiar (or they shall be given a scenario) including forest type, stakeholders, and management objectives (taking into account, to the extent possible, the aspirations of stakeholders not represented by individual group members). Based on the chosen management objectives you will design the indicators that will evaluate progress toward achieving the objectives. "Filters" will be used to evaluate the chosen set of indicators. Filters include: simple and reliable, useful, cost-effective, agreed by stakeholders, and measurable. Each group will prepare a presentation/slides/flip charts during the same period. All resource persons will act as group facilitators.
	1.30-2.30 PM	**Lunch**
5.	2.30- 3.30	Role of Strategic Communication among the stakeholders
6.	3.30-4.00	Presentation by the first group
	4.00-4.15 PM	Tea
7.	4.15-6.00PM	Presentations and discussions continue for second, third and fourth group
8.	6.00-6.15 PM	Day's wrap-up. Feedback and lessons

2.1 Pursuing Progress Towards Sustainability

Before discussing the SFM let us consider the global vision on sustainability. Pertinent here are the Bellagio Principles—Guidelines for Practical Assessment of Progress Toward Sustainable Development (*Hardi, P. and T. Zdan, 1997. Assessing Sustainable Development: Principles in Practice. Winnipeg: IISD*). Bellagio Principles are as follows:

1. Guiding vision and goals
Assessment of progress toward sustainable development should:

- be guided by a clear vision of sustainable development and goals that define that vision.

2. Holistic perspective
Assessment of progress toward sustainable development should:

- include review of the whole system as well as its parts;
- consider the well-being of social, ecological and economic subsystems, their state as well as the direction and rate of change of the state, of their component parts, and the interaction between parts;
- consider both positive and negative consequences of human activity in a way that reflects the costs and benefits for human and ecological systems, both in monetary and nonmonetary terms.

3. Essential elements
Assessment of progress toward sustainable development should:

- consider equity and disparity within the current population and between present and future generations, dealing with such concerns as resource use, overconsumption and poverty, human rights, and access to services, as appropriate;
- consider the ecological conditions on which life depends;
- consider economic development and other non-market activities that contribute to human and social well-being.

4. Adequate scope
Assessment of progress toward sustainable development should:

- adopt a time horizon long enough to capture both human and ecosystem time scales, thus responding to current short-term decision-making needs as well as those of future generations;
- define the space of study large enough to include not only local but also long distance impacts on people and ecosystems;
- build on historic and current conditions to anticipate future conditions: where we want to go, where we could go.

5. Practical focus
Assessment of progress toward sustainable development should be based on:

- an explicit set of categories or an organizing framework that links vision and goals to indicators and assessment criteria;
- a limited number of key issues for analysis;
- a limited number of indicators or indicator combinations to provide a clearer signal of progress;
- standardizing measurement wherever possible to permit comparison;
- comparing indicator values to targets, reference values, ranges, thresh-olds or direction of trends, as appropriate.

6. Openness

Assessment of progress toward sustainable development should:

- make the methods and data that are used accessible to all;
- make explicit all judgments, assumptions and uncertainties in data and interpretations.

7. Effective communication

Assessment of progress toward sustainable development should:

- be designed to address the needs of the audience and set of users;
- draw from indicators and other tools that are stimulating and serve to engage decision-makers;
- aim, from the outset, for simplicity in structure and use of clear and plain language.

8. Broad participation

Assessment of progress toward sustainable development should:

- obtain broad representation of key grassroots, professional, technical and social groups, including youth, women and indigenous people to ensure recognition of diverse and changing values;
- ensure the participation of decision-makers to secure a firm link to adopted policies and resulting action.

9. Ongoing assessment

Assessment of progress toward sustainable development should:

- develop a capacity for repeated measurement to determine trends;
- be iterative, adaptive and responsive to change and uncertainty because systems are complex and change frequently;
- adjust goals, frameworks and indicators as new insights are gained;
- promote development of collective learning and feedback to decision-making.

10. Institutional capacity

Continuity of assessing progress toward sustainable development should be assured by:

- clearly assigning responsibility and providing ongoing support in the decision-making process;
- providing institutional capacity for data collection, maintenance and documentation;
- supporting development of local assessment capacity.

2.2 Designing and Filtering Indicators

2.2.1 Step 1: Organize a meeting of stakeholders: The group should consist of representatives who have the full range of knowledge of the resource and represent the vision of the local community, foresters and the civil society. This meeting may decide to nominate a sub-group of individuals who will work together cooperatively and devote more time than others. The sub-group members should be dedicated to meet as regularly as possible and be willing to provide time. This body could be the executive of village forest committee. Alternatively, the general body of the village forest committee can also. (See also 1.5, group 2).

2.2.2 Step 2: Discuss and agree on the purpose: Stakeholders must discuss why are they meeting and what is the intended outcome of the process. This will help in keeping the process focused.

2.2.3 Step 3: Analyze the forest and community scenario: A scenario is the context specific example of resource such as local forests, national parks, wildlife sanctuaries etc. Present scenario is the 'description of the forests as it is today'. Future scenarios are account of 'what might be'. As Wollenberg *et al.* (2000) suggest, unlike projections, scenarios do not portray what the future will look like. Scenarios instead stimulate creative ways of thinking that help people break out of established ways of looking at situations and planning their actions. Such creativity can help people get rid of no-longer useful habits of thinking and therefore better adapt to the future. Scenarios are useful tools in situations where complexity and uncertainty are high. If the management of tropical forests were more predictable, linear techniques of prediction would be sufficient for future planning. Where uncertainty exists, for instance where the interests and plans of multiple stakeholders are not fully known, creative processes for anticipating change such as scenarios are useful to pursue progress towards sustainability (see also 2.1).

2.2.4 Step 4: Decide the objectives of management: In order to achieve the overarching goal of "sustainability of forests and livelihood security of the communities" we need to develop the management objectives. Based on the forest scenario stakeholders should develop the management objectives (see also 1.5, group 1). An ideal set of objectives will contribute to ecological, social and economic wellbeing.

Objectives are the statement of desired accomplishments or outcomes of a project. A good objective meets the following criteria (see Margoluis and Salafsky, 1998: 64):

- *Impact oriented*. *R*epresents desired changes.
- *Measurable.* Definable in relation to some standard scale or bench-mark.
- *Time bound.* Achievable within a specific period of time.

- *Specific.* Clearly defined so that all stakeholders have the same understanding of what the term in the objective mean.

- *Practical.* Achievable and appropriate within the context.

- *Multiplicity.* Should synergically contribute to the goal of sustainable forest management. It should clearly address the multiple use options for the scenario.

2.2.5 Step 5: Design the draft indicators corresponding to each management objective: For each management objectives stakeholders will design the indicators that will help to track progress towards achieving the objective. Participants may like to use any of the existing set of indicators such as indicators designed for India under the Bhopal-India Process, ITTO Process, Asian Initiative for Dry Zone Asia, or any other set available to them. While designing the indicator sets we should also make use of information already being collected by the Forest Department, NGOs and researchers. But, we need to remember that the available data and information may not always be sufficient to measure the sustainability, therefore, indicators that may require new data collection should not be left out. There may be some indicators that are vital for pursuing progress towards sustainability, but FD or others may not be collecting the information on these aspects. We need to incorporate such indicators as well, if they are important.

2.2.6 Step 6: Apply 'Filters' to design the representative basic set of indicators: Stakeholders should apply the filters to bring out the representative basic set of performance indicators. Participants should get full opportunity to review a list of C&I relevant to the context in which they are designing the indicators to determine the reliability, feasibility and cost of collecting the required data to pursue the progress towards sustainability.

As discussed earlier most C&I sets fail to prioritize among the many parameters they contain. Most C&I sets include an impossibly large number of indicators, fail to consider costs of implementation, and offer no guidance on how frequently they need to be measured. The most important part of this step, therefore, is that participants should distil from the large body of potential indicators which should be members of the "representative basic" set and also determine how to minimize the cost of designing, measuring and communicating the results both in terms of money and time. For this purpose mutually agreed 'filters' are designed to help participants distinguish the currently implementable from the currently unimplementable. One has to remember, however, that these indicators may become implementable as the information, data, knowledge and wisdom progresses in the future (see also 2.3.4 and 2.3.5).

2.3 Criteria & Indicators? (1 hour)

2.3.1 Hierarchy

- Principle or Objective

- Criteria
- Indicator
- Verifier
- Norm

2.3.2 Designing and Filtering the Indicators

- Giving stakeholders a chance to design the indicators that helps pursue progress towards sustainability and gives management ownership to them.
- It helps them to examine their resource and set their objectives for management and decide the strategies and actions to achieve the objectives of sustainable forest management.
- It ensures equity of knowledge between scientific community and local community.
  - Equity of knowledge as empowerment
  - Equity of knowledge as security
  - Equity of knowledge as opportunity
  - Equity of knowledge as meeting of hearts
  - Equity of knowledge as shared vision

2.3.3 Common Objectives, Common Strategies and Common Actions

- Designing indicators by all stakeholders provides them an opportunity to discuss and decide on the common objectives, strategies and actions.
- It brings participatory tendencies into forefront.
- It gives them yardsticks to measure the success of SFM interventions.
- It helps in institution building.
- It helps them to examine the opportunities for adaptive management that arise as they pursue progress towards sustainability.
- Stakeholders have options to measure what they want to measure.
- It improves relationships among stakeholders.

2.3.4 How to Start?

- To be decided by the stakeholders
  - Selecting from the available set of indicators
    - Bhopal-India Process of IIFM
    - ITTO's Criteria and Indicators
    - CIFOR's Tool-box
    - FAO's indicators for Dry-zone Asia, evolved at IIFM
    - Any other set
  - Stakeholders design their set of indicators based on their:
    - Objectives of management
    - Indicators that will help them track and pursue progress towards sustainability
    - That reflect the aspirations of the stakeholders
    - Based on the considerations of resources available

2.3.5 Recognizing Implementable Indicators

- After stakeholders have selected the first set they may like to use the filters such as:

- Simplicity
- Reliability
- Usefulness
- Cost-effectiveness
- Agreed by stakeholders
- Measurable
- Should be able to capture full range of sustainability

2.3.6 An example of Designing Indicator

An Example:

- Suppose the **scenario** is a community managed forest in Udaipur (South) Forest Division
- **Stakeholders** decide that one of the **management objective** is to protect forest for multiple uses
- **Strategy** is to reduce runoff and conserve water
- Community takes **action** and stops felling and carry out soil & water conservation works
- They need to select **indicator(s)** that helps them pursue progress towards sustainability
- Following **indicators** are designed by the **stakeholders**
  - Ground Water Table in the vicinity of forest areas
  - Duration of the Stream Flow
  - Quantum of water yield in wells and streams
- Stakeholders decide to use the **filters** so that they have a manageable number of indicators and can start measuring immediately to **pursue progress towards sustainability**
  - Cost-effectiveness, simple and reliable, easily measurable, agreed by all stakeholders
  - They decide that indicator 'Duration of the Stream Flow' gets filtered through.
  - Duration of the Stream Flow becomes one of the indicators to be included in the **representative basic set**

2.3.7 Please Remember!!!

- That stakeholders can increase the number of indicators in their representative set in future if there is a need to do so.
- Representative set allows stakeholders to start measuring and pursue progress towards sustainability
- Stakeholders can refine indicators, as and when it is necessary, at any future date

2.4 Group Exercise for Designing the Indicators (2.15 hours)

2.4.1 Group Formation

(See also 1.5 for the general suggestions on group formation and preparation of presentation)

Group formation for an exercise is meant for participatory design of performance indicators. Participants shall group in such a way that they have a mix of stakeholders. Each group shall elaborate a forest scenario with which the group is familiar to (or they shall be given a scenario) including forest type, stakeholders and management objectives (taking into account, to the extent possible, the aspirations of stakeholders not represented by individual group members). Based on the chosen management objectives indicators would be designed to evaluate progress toward achieving the objectives while measuring the sustainability. "Filters" will be used to evaluate the chosen set of indicators. (see also 2.3.6). Filters are specific attributes through which indicators are judged. An indicator must be:

- simple and reliable,
- useful,
- cost-effective,
- agreed by stakeholders,
- Measurable.

Each group shall be given a case study that contains lot of scattered information. It will include information that can help in knowing the forest type, stakeholder identification, and deciding the management objectives etc. All four groups will simultaneously discuss and design the indicators for the particular scenario. Each group will prepare presentation/ slides/ flip charts during the same period. Indicators that we design today will be used for the measurements tomorrow.

2.4.2 Management Scenario

Each group shall be given a case study that contains lot of scattered information. It will include forest type, stakeholders, and management objectives (taking into account, to the extent possible, the aspirations of stakeholders not represented by individual group members). Scenario analysis is an important exercise that helps in clarification of vision about management. Therefore, this must be done with extra care (see also 2.2.3).

2.4.3 Management Objectives

Group shall decide the management objectives for the selected scenario (see also 2.2.4).

2.4.4 Designing Indicators

Based on the chosen management objectives you will design the indicators that will help evaluate progress toward achieving the objectives while measuring the sustainability (see also 2.2.5).

2.4.5 Filtering Indicators

"Filters" will be used to evaluate the chosen set of indicators. Filters include: simple and reliable, useful, cost-effective, agreed by stakeholders, and measurable (see also 2.2.6).

2.4.6 Preparing the Presentation

Each group will prepare a presentation/slides/flip charts during the same period.

2.5 Role of strategic communication (1 hour)

(Refer to slides by Dr. Niraj Kumar)

2.6 Group Presentation and Peer-Review (2.30 hours)

Each group will get 15 minutes for presentation and 15 minutes for the discussion in the full house. Additional time shall be available for concluding discussion. Discussion is not a 'fault-finding' exercise; it should be viewed as the peer-review of the group's work. Constructive suggestions alone can improve the applicability of the set of indicators in the field. After making the presentation incorporate all changes in your presentation suggested by the participants and agreed by you. Presentations containing the representative basic set of indicators shall be handed over to process documenters in the training room. These will be compiled and mailed to you along with the proceedings for your use in future.

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Study/discussion questions

Q: What is management scenario? What is the necessity to scenario analysis?
A: _____
_____
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Q: What are the management objectives? Why are they important to be decided before actual implementation of SFM strategies?
A: _____
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Q: Why indicators are effective tools for monitoring the forest management and forest policy?
A: _____
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Q: Why it is important to start assessment immediately with representative basic set of indicators? Can we increase the number of indicators in future?
A: _____
_____
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Q: Is it possible to find some relevant data from ongoing measurements in the field to assess sustainability? How?
A: _____
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Q: What are the most important benefits of assessment to us as forest managers?
A: _____
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2.7 Feedback and Wrap-up (15 minutes)

Please take few moments to reflect on today's training so that we can learn and adapt further for tomorrow's programme. Also, give your feedback in sheet provided for the purpose. We thank you for your cooperation.

What would you like the facilitators to stop doing?

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What would you like the facilitators to start doing?

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What would you like the facilitators to continue doing?

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Other comments:

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Day Three:
Assessment of Sustainability and Strategic Communication

Day Three at a Glance

No.	Time	Programme/Action/session etc.
1.	9.30-10.00 AM	Recapitulation of yesterday's learning by the participants and facilitator
2.	10.00-11.00 AM	Introduction to MoS Meter of Sustainability, Barometer of Sustainability and Sustainability Polygon. Exercise on interpolation: interpolation shall be used for scoring indicators in the MoS Meter.
	11.00-11.15	Tea
3.	11.15-1.30 PM	Case Study: Exercise with MoS Meter; participants will continue the beyond yesterday's group exercise (see section 2.4 of day 2). For the indicators that were designed yesterday search the data available in the case study and calculate the score to assess the sustainability.
	1.30.-2.30 PM	Lunch
4.	2.30- 4.00	Exercise with MoS Meter continues. While preparing the presentations draw briefly on the scenario, management objectives, indicators from the yesterday's exercise (section 2.4). Prepare detailed presentation on the calculation of score.
	4.00-4.15 PM	Tea
5.	4.15-5.30PM	Presentations
6.	5.30-6.00 PM	Briefing for the field
7.	6.00-6.15	Day's wrap-up. Feedback and lessons.

3.1 Assessment of Sustainability and MoS Meter

Various initiatives on designing the Criteria & Indicators through several processes across nations not withstanding, the major deadlock that remained, however, is that indicators have not been applied in the field to actually determine the sustainability of forests at any scale in India– local or regional or national. There are though examples of forest certification to assess sustainability elsewhere. This exercise, therefore, is of paramount importance. A simple MoS Meter (Measures of Success Scale of Sustainability) has been designed which can be used from local to global levels with ease. This approach also draws from the IUCN's approach for assessing progress towards sustainability; there are differences though. Main use of MoS Meter and Barometer of Sustainability is to combine indicators and communicate well. Unless the indicators are organised and combined in a coherent way, the signals they give will be highly confusing (Prrescott-Allen, 1997). For example, see the table 3.1 below. Can you draw some inferences?

Table 3.1: SFM Indicators and the results in India (see IIFM's Bhopal-India Process)

No	Criteria	Indicator	Results
1.	Increase in Extent of Forest and Tree Cover	Forest Area Diverted for Non-Forestry Use	0.025 million ha. per year
		Extent of Community Managed Forest Area	FPC in 41000 villages
2.	Maintenance, Conservation and Enhancement of Biodiversity	Level of species richness and diversity in selected area	
3.	Maintenance and Enhancement of Ecosystem Function and Vitality	Status of natural regeneration	47% forest area has good NR
4.	Conservation and Maintenance of Soil and Water Resources	Ground Water Table in the vicinity of forest areas	Decreasing
5.	Maintenance and Enhancement of Forest Resource Productivity	Level of investment in forestry sector	Rs. 16146.5 Crore per annum
6.	Optimization of Forest Resource Utilization	Contribution of forests to the forest-dependent people	Not available
7.	Maintenance and Enhancement of Social, Cultural and Spiritual Benefits	Use of Indigenous Technical knowledge: identification, documentation and application	Dismal
		Extent of cultural/sacred protected landscapes: forests, trees, ponds, streams	Not available
8.	Adequacy of Policy, Legal and Institutional Framework	Enabling conditions for participation of community, NGO, Civil Society; like JFM resolution, transit rules	Policy guidelines exist, 41000 villages have FPC

Since different indicators measure different things a clear picture from these indicators can only emerge if they are combined and brought to a common scale. Barometer of Sustainability and MoS Meter make a good tool to achieve this purpose. Barometer of

Sustainability was developed by Prescott-Allen (1997) for IUCN. MoS Meter is essentially a modified version, but retains same principles for calculating the indicator score.
The scoring system has been critiqued as being value-based and subjective. Prescott-Allen (1997: 5), however, argues that "it is in fact no more subjective or objective than attaching a monetary value or any other measurement method. Its advantage is that it is transparent. In Gross Domestic Product, we cannot tell what values are buried in those ranks of dollars and zeros. In performance measurement, we have to make explicit what we think are good levels…and what are unacceptably bad levels".

While multi-criteria analysis and computer-based calculations will remain useful one must understand that all science is not necessarily always as value-free as it is argued. Addressing uncertainty and risks in forestry make almost every undertaking as much value-based as it may be scientific.

The important consideration then will be whose values should be reflected in the scales? This is a valid issue and answer to this shall be the 'stakeholders' who know their resource better than outsiders. Stakeholders are the most qualified people to examine their forest, decide the management objective, and design the indicators that are capable of tracking the progress towards meeting these objectives (and therefore, to pursue progress towards sustainability). For this reason we need to have a transparent, easy but robust system of combining and communicating the sustainability among those who really matter. The systems that 'experts' and 'scientists' propose should not only be 'scientific' it must also ensure the equity of knowledge between scientists and the communities in general and stakeholders in particular. It is interesting to note that the management strategies that we now call 'adaptive management' are basically rediscovery of indigenous knowledge (Berkes *et al*. 2000). The only difference being that the models that a group of scientists put forth rely on computers and the models that indigenous communities make are in their brains. In fact, we can find all the ingredients of adaptive management in traditional forms of resource management.

It is in this context we must realize that while one cannot afford to neglect the power of mechanical computing we need to come up with a system that does not exclude the communities. One must constantly need to be reminded of the fact that the forests that continue to survive are not necessarily because of the "science" alone, but, one can always argue that it is because of those who have depended on them. Tools such as the computing software, therefore, are useful but what needs to be ensured is the equity of knowledge. Sustainability assessment tools must endeavour to empower those who need it most.

There are some other advantages of the MoS Meter:

1. Three dimensions of sustainability─ ecology, economy and society─ can be depicted easily and in an understandable manner for the communities and stakeholders. This also allows managers and stakeholders to examine the issues separately how and where they need to focus their attention.

2. The pillars of the MoS Meter depict the actual situation related to ecological, economic and societal criteria on the ground without offsetting each other. Also, unlike the Barometer of Sustainability (Prescott-Allen, 1997) that depicts the consequently decreasing area of

bands as the sustainability increases, the MoS meter gives a more balanced visual representation. This helps the communities grasp the situation without much effort.

3. Each pillar is divided in five bands, similar to the Barometer of Sustainability (Prescott-Allen, 1997) allowing the stakeholders to define and control the scale.

4. MoS Meter allows scope for inclusion and expanded depiction of issues further in to the criteria. For example, all the indicators that finally feed value to the 'society' can be depicted in as many pillars. This may not always be needed at the regional or national level but managers in the field may find it useful to know which indicator is showing what. In this case users may simply add desired number of pillars to the MoS Meter. This also allows combining of the Criteria & Indicators into forest ecosystem wellbeing and human wellbeing if the user so desires.

5. MoS Meter gives a picture of the condition and trends of forest ecosystem, socio-economic conditions of the communities, progress towards SFM, and sector where performance is weak or strong, etc.

Thus, MoS Meter provides good scope to develop an understanding of the Criteria & Indicators for sustainable forest management among the stakeholders, and equips them with the skills of participatory designing and field application of a representative basic set of performance indicators for sustainable forest management.

The case study and examples discussed here is to help you familiarise with process of assessment of sustainability to your context. From each of the 8 criteria evolved under the Bhopal-India Process we took at least one indicator to measures the sustainability in the field. In order to depict the final results visually we designed the MoS Meter showing the ecology, economy and society on the scaled-pillars.

We also used the Barometer of Sustainability (IUCN, 1997; Prescott-Allen, 1997) to depict the results of the assessment. Barometer of Sustainability depicts the forest ecosystem wellbeing and human wellbeing. Other communicating tools such as Sustainability Polygon (Herweg *et al.* 1998; Ritchie *et al.* 2000) are also useful. You may like to practice by putting conjectural values in the blank fields based on the experiences of your earlier work in the field. Participants must learn this thoroughly, as we shall require this knowledge when we collect the data and information in the field during the field visit.

For the purpose of this case study we used the combination of Criteria & Indicators of Bhopal India Process, MoS Meter and the IUCN's approach to assessing progress towards sustainability, and plotted the outcome on the MoS Meter, Barometer of Sustainability and sustainability polygon.. This measurement also combined the learning of the World Bank-WWF Global Alliance for Forest Conservation and Sustainable Use (World Bank, 1999; Pandey, 1999).

The exercise intends to serve the purpose of contributing to the methodological framework that will help the trainer and trainee in assessing the sustainability. Since from each of the 8 criteria we took mainly one indicator, this obviously has limitations in terms of more holistic

depiction of forest ecosystem wellbeing and human wellbeing (see 3.3 onwards for exercise explained through the case study).

3.2 Vision of Sustainability

Ideal situation will be achieved when ecological, economic and societal goals of sustainability score maximum in the MoS Meter and barometer of sustainability as represented in the figure 3 and 4 below. Stakeholders, however, can define there ideal vision of sustainability and strive to achieve these through improved management practices. This vision represents the collective aspirations and understanding of all the stakeholders.

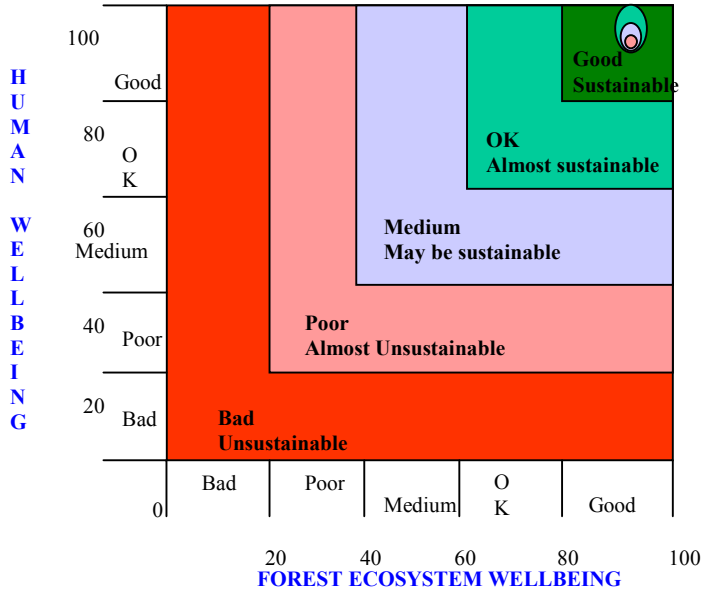


Figure 3. Full achievement of objectives of SFM depicted on the Barometer of Sustainability (Source: modified after Prescott-Alllen, 1997).

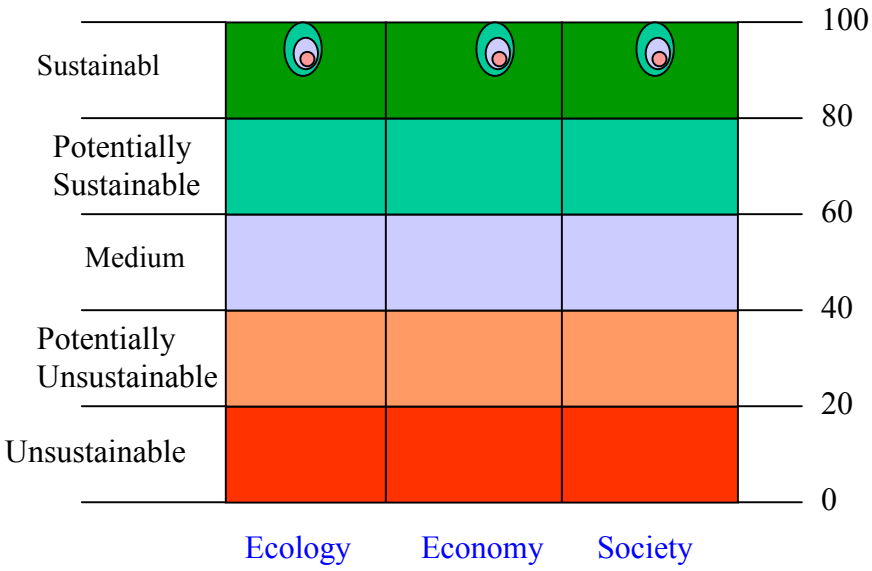


Figure 4. MoS Meter to communicate the sustainable forest management. Full achievement of objectives of SFM depicted in MoS Meter

3.3 Exercise on interpolation

3.4 Brief Case Study and Exercises on MoS Meter

3.4.1 Principles of sustainable forest management, basic concept and necessity for measuring the sustainability in forestry

This includes the relevant and applicable knowledge for achieving and measuring sustainable forest management in practical terms (participants will draw from the day 1, and day 2 of the learning cycle).

a. Vision of the stakeholders: In this case of Udaipur (south) forest division full achievement of the forest well-being and economic well-being and societal well-being is the vision of stakeholders who are managing the forests.

b. The forest where sustainability was assessed: Udaipur South Forest Division, Rajasthan, 22336.62 sq. km, 8 forest ranges namely Udaipur west, Parsad, Khairwara, Salumber, Devla, Ogna, Kotra, Jhadol.

c. Stakeholders: Forest Department, NGOs, Community, Traders, Donors. Also, within the community other issues related to gender, ethnicity, caste, that may be important for differing feelings about sustainability or human well being should be taken into account.

3.4.2 Recognizing Implementable Indicators

Sections on Criteria & Indicators for sustainable forest management followed the participatory methods as has been discussed in section 2.4 earlier. The information was collected to take measurement for basic set of indicators (See 2.4)

a. C&I: Criteria and indicators that were selected on forest well-being, economic well-being and societal well-being are given in the table 3.2. Final aggregation is shown at the end of these calculations. While selecting the indicators it was kept in mind that the basic set should be representative, reliable, and the data should be readily available.

b. Sources of information: Information was collected mostly from the published records; only in some cases field-investigation and pooling of information from stakeholders was done.

Figure 5. Filters for designing the representative set of Criteria & Indicators

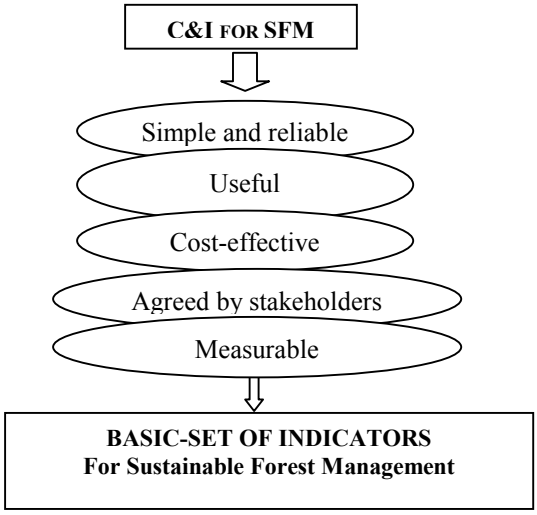


Table 3.2: Selected Representative Basic Set of Indicators for measures of success (see IIFM, 2000:21-22 for the complete list C&I)

No	Criteria as evolved under IIFM's Bhopal-India Process	Indicator Selected for examination	Top aggregation of indices
1.	1. Increase in Extent of Forest and Tree Cover	1. 4 Forest Area Diverted for Non-Forestry Use	Forest Ecosystem wellbeing
		1. 5. Extent of Community Managed Forest Area	
2.	2. Maintenance, Conservation and Enhancement of Biodiversity	2. 4 Level of species richness and diversity in selected area	Forest Ecosystem wellbeing
3.	3. Maintenance and Enhancement of Ecosystem Function and Vitality	3.1. Status of natural regeneration	Forest Ecosystem wellbeing
4.	4. Conservation and Maintenance of Soil and Water Resources	4. 4 Ground Water Table in the vicinity of forest areas	Forest Ecosystem wellbeing
5.	5. Maintenance and Enhancement of Forest Resource Productivity	5. 4 Level of investment in forestry sector	Forest Ecosystem wellbeing
6.	6. Optimization of Forest Resource Utilization	6.5 Contribution of forests to the forest-dependent people	Economic wellbeing
7.	7. Maintenance and Enhancement of Social, Cultural and Spiritual Benefits	7.2 Use of Indigenous Technical knowledge: identification, documentation and application	Social wellbeing
		7.5 Extent of cultural/sacred protected landscapes: forests, trees, ponds, streams	
8.	8. Adequacy of Policy, Legal and Institutional Framework	8. 2 Enabling conditions for participation of community, NGO, Civil Society; like JFM resolution, transit rules	Social wellbeing

It must be pointed out again that the process of identifying the indicators should be participatory and should attempt to meet stakeholders' requirements without undermining sustainability. Identification of a set of objectives and corresponding set of criteria and indicators, which are mutually agreeable to all stakeholders, provides basis for selecting Performance Indicators to be applied in the field. The basic set used to assess the sustainability is only a starting point. In order to capture the full range of sustainability stakeholders will need to increase the number and take measurements for the indicators where data is not available or information is not being collected by any agency.

3.4.3 Setting the Scale and Determining the Desired Mark (DM) for each Indicator

(Calculation method explained in this section draws from the IUCN's approach to assessment of sustainability; see *Barometer of Sustainability* by Prescott-Allen 1997)

a. MoS Meter Scale follows same scale as that of Barometer. It has a 100-0 scale. It is divided into five sectors of 20 points each, plus the base of zero:

Band or sector	Points on scale
Good	81-100
OK	61-80
Medium	41-60
Poor	21-40
Bad	1-20
Base	0

Dividing the scale into five sectors allows the user to control the scale by defining one or more of the sectors. If a good income is considered to be $20,000 or more and a bad income to be $1,000 or less, the scale can be set accordingly.

This feature makes the Barometer a more powerful performance scale than if only the end points were defined. When only the end points are defined, results can be odd or even absurd. For example, child mortality rates range from 5 deaths per 1,000 live births (Finland today) to 400 deaths per 1,000 (Mali in 1960). If best is defined as 0 deaths and worst as 400 deaths, then a country with 75 deaths per 1,000 would still fall in the top fifth of the scale (the good sector); and only a country with 320 or more deaths per 1,000 would fall in the bottom fifth (the bad sector).

b. Setting the Scale and Desired Mark The scale needs to be set for each indicator. This involves defining best and worst values for the indicator. Please note than the end points strongly influence where an indicator reading falls on the scale. For example, an income of $20,000 would be near the middle of a $50,000-$0 scale, near the top of a $25,000-$ 0 scale, and near the bottom of a $100,000-$10,000 scale.is the standard of achievement for each indicator. Desired mark is basically synonymous with 'performance criteria' of Prescott-Allen (1997). DM depicts the goals and objectives into measurable performance. They provide basis for putting indicator results on a performance scale, so that they can be combined to know the overall result (Prescott-Allen, 1999; Pandey, 1999). The examples provided here used performance scale, 0-100, divided into 5 bands each of which comprises a range of performance levels (Prescott-Allen, 1999, IUCN, 2000).

A fairly objective way of setting the end points of the scale is to choose best and worst values that encompass the range of performance that has been experienced in the recent past and could be experienced in the foreseeable future.

The scale can be either uncontrolled, partially controlled, or fully controlled. In an uncontrolled scale only the two end points are defined and the intervals between them are equal. Whether an indicator reading falls in the good, OK, medium, poor or bad sector is determined by the end points of the scale and not by whether the level of performance that would fall into a particular sector is appropriate for that sector. This feature of an uncontrolled scale must be taken into account or the results may prove to be wrong. When an uncontrolled scale is not appropriate, then a partially or fully controlled scale may be used. In a partially controlled scale, either the good sector or the bad sector (or sometimes both) is defined. In a fully controlled scale, all sectors are defined.

When the scale is partially or fully controlled, the bands do not have scale with equal intervals. In this case each band has its own end points and different intervals.

Deciding DM involves defining the top of each band and the base of the scale for each indicator (see table 2 and 3). This is a matter of pooling the experience and applying judgements (see section 3.1 for a detailed discussion). It is done on the basis of:

1. The range of current and expected performance based on the available information and bench marks.

2. Objectives of the indicator concerned.

3. The judgement of participants (all the stakeholders must agree on the desired mark-DM)

Table 2: What the Five bands mean?

Band	**Top point on scale**	**Definition**
Good	81-100	Desired Mark (desired performance), sustainable
OK	61-80	Acceptable Mark (acceptable performance), potentially sustainable
Medium	41-60	Neutral or transitional performance
Poor	21-40	Undesirable performance, potentially unsustainable
Bad	1-20	Unacceptable performance, unsustainable
Base	0	Base of scale

Table 3: Example of desired mark of performance for the indicator Forest Area Diverted for Non-Forestry Use

Band	**Top point on scale**	**Forest Area Diverted for Non-Forestry Use** (in 5 years) (Expressed as % of total forest area in ha.)
Good	81-100	0-0.09
OK	61-80	0.1-0.19
Medium	41-60	0.2-0.29
Poor	21-40	0.3-0.39
Bad	1-20	0.4 or more
Base	0	Base of scale

3.4.4 Measurement of Indicators

This involved collection of data and information and turning it into Knowledge for SFM. There is already a tremendous amount of effort invested in data collection by forest departments throughout the south Asian region. However, much of this effort seems to have been wasted because data is stored without being analysed or utilized to inform management decisions. MoS Meter incorporates simple participatory exercises to turn raw data into knowledge and coherently analysed inferences. Basic objective here was to turn data and information into knowledge that categorically informs about the success or failure of forest management.

a. Measure the indicators and calculate their scores: Data for the indicators can be collected either by field measurements, or by pooling the knowledge of stakeholders and published and other secondary sources including records of the forest division. Each indicator is given a score on the basis of the performance (see DM). The mark of performance defines the band a indicator-measurement will go into.

When the Scale is Uncontrolled--

In an uncontrolled scale only the two end points are defined and the intervals between them are equal. When the scale is uncontrolled, the indicator reading is plotted on the scale, using the standard formula:

If best is the maximum value and worst the minimum:

([actual minus minimum] divided by [maximum minus mini-mum])
multiplied by 100.

Or, if best is the minimum value and worst the maximum:
([actual minus minimum] divided by [maximum minus mini-mum]
subtracted from 1) multiplied by 100.

Example for the former:
Number of motorbikes per 100 forest range officers provides an example of the former. Best (maximum) is set at 80 motorbikes and worst (minimum) at 0 motorbikes. As you see here, there is no need to divide it into bands as the scale is uncontrolled and all values shall be uniformly distributed between 80 and 0.

Band or sector	Points on scale	Motorbikes per hundred range officers
Good	100	80
Base	0	0

Rajasthan has 75 motorbikes per 100 range officers. Its score and position on the scale is calculated as:

75 (actual) – 0 (minimum) = 75
80 (maximum) – 0 (minimum) = 80
75÷ 80 = 0.9375
0.9375 x 100 = 93.75= **94**

Another example:
Water is a scarce commodity. Availability of water in streams indicates the health of the uplands and watershed. It also indicates the condition upland vegetation that helps in recharge of ground water in the rainy season.

Band or sector	Points on scale	Duration of water flow in streams (in months)
Good	100	12
Base	0	0

6 (actual) – 0 (minimum) = 6
12 (maximum) – 0 (minimum) = 12
6 ÷ 12 = 0.5
0.5 x 100 = 50

Example for the latter:
Percent of forest guards that remain illegally absent from duty is the example of the latter. In a surprise checking by the DFO, forest guards that were found absent from the duty in Kota Forest Division Rajasthan were 16 percent of the total strength. In this case best is 0 (minimum) so it is set at 0% and worst (maximum) at 100%. Its score is calculated thus:

Band or sector	Points on scale	Motorbikes per hundred range officers
Good	100	0
Base	0	100

16 (actual) – 0 (minimum) = 16
100 (maximum) – 0 (minimum) = 100
16 ÷ 100 = 0.16
1 – 0.16 = 0.84
0.84 x 100 = 84 = **84**

When the Scale is Controlled--

In a partially controlled scale, either the good sector or the bad sector (or sometimes both) is defined. In a fully controlled scale, all sectors are defined.

When the scale is partially or fully controlled, the bands do not have scale with equal intervals. In this case each band has its own end points and different intervals. When the scale is controlled, each sector or group of sectors is calculated separately, but the method is the same as for the scale as a whole. In this case minimum and maximum of that particular band is taken for the calculation.

The exact position of the indicator measurement in the band is determined by calculating its scores in one of the two ways depending on if:

When Best performance is the maximum value and worst performance is the minimum value

When *best is maximum value and worst is minimum,* the indicator score is calculated by the formula:

> ([actual minus minimum] divided by [maximum minus minimum]) multiplied by 20, then added to the base of the band

For example, State Forestry Action Programme of Rajasthan aims to enhance the growing stock of forests from 12.89 million cubic metre (current) to 82.22 (say 82) million cubic metre in 20 years (SFAP-Rajasthan, 1996). The controlling of the scale is done as follows:

Band	**Point on scale**	**Enhancing the Productivity**
Good	81-100	71-82
OK	61-80	51-70
Medium	41-60	26-50
Poor	21-40	11-25
Bad	1-20	1-10
Base	0	Base of scale

A reading that equals any of the end points is simply given the corresponding score. For example, if growing stock measured was 51 million cubic metre it would be given a score of 61. Growing stock between 11 and 20 million cubic metre is calculated in the usual way, except that the minimum is 10 (instead of 0), and the multiplier is 20 (instead of 100). The result is added to 20, since that is the zero point of that part of the scale.

12.89 (actual) – 10 (minimum) = 2.89
25 (maximum) – 10 (minimum) = 15
2.89 ÷ 15 =0.192
0.192 x 20 = 3.84
3.84 + 20 = 23.84 =**24**

It should be noted here that the base of the band is top of the band below. Thus, when best is the maximum value and worst is the minimum, the maximum value corresponds to the top of the band, and the minimum value corresponds to the base of the band (i.e. top of the band below).

When Best performance is the minimum value and worst performance is the maximum value

When *best is the minimum value and worst is the maximum,* the indicator score is calculated again by using either of the following formulae:

([actual minus minimum] divided by [maximum minus minimum]) multiplied by 20, then subtracted from the top of the band.

Or

([actual minus minimum] divided by [maximum minus minimum] then subtracted from 1) multiplied by 20, then added to the base of the band.

For example, take the case of threatened animals in India (Prescott-Allen, 1997). The mean percentage of threatened animals in India is 8.8%. After controlling the scale it has be put in the poor band:

Band	**Points on scale**	**Threatened animals in India (% of all animal species)**
Good	81-100	0-1
OK	61-80	2-3
Medium	41-60	4-7
Poor	21-40	8-15
Bad	1-20	16-31
Base	0	Base

The calculation can be done in either of the following ways:

First option for calculation:

By using the formula:

([actual minus minimum] divided by [maximum minus minimum]) multiplied by 20, then subtracted from the top of the band.

8.8 (actual) - 8 (minimum) = 0.8
16 (maximum) - 8 (minimum) = 8
0.8 ÷ 8 = 0.1
0.1 x 20 = 2
40 - 2 = **38**

Second option for calculation:

By using the formula:

([actual minus minimum] divided by [maximum minus minimum] then subtracted from 1) multiplied by 20, then added to the base of the band.

8.8 (actual) - 8 (minimum) = 0.8
16 (maximum) - 8 (minimum) = 8
0.8 ÷ 8 = 0.1
1-0.1 = 0.9
0.9 x 20 =18
20 + 18 = **38**

Another example: Take the case of Forest Area Diverted for Non-Forestry Use in Udaipur. In last 5 years the total area diverted for non-forestry use in the division was 0.18 sq. km. DFO, local NGOs and community members decided to control the scale as follows:

Band	**Top point on scale**	**Forest Area Diverted for Non-Forestry Use (ha.)**
Good	81-100	0-2.5
OK	61-80	2.6-5.26
Medium	41-60	5.27-7.89
Poor	21-40	7.90-10.53
Bad	1-20	10.54 and above
Base	0	Base of scale

Note that actual area diverted is 0.18 sq. km. and thus falls in good band. Since this is case when best is minimum, therefore, we can calculate in either of the following ways:

First option for calculation:
By using the formula:

([actual minus minimum] divided by [maximum minus minimum]) multiplied by 20, then subtracted from the top of the band.

0.18 (actual) - 0.0 (minimum) = 0.18
2.6 (maximum) - 0.0 minimum) = 2.6
0.18 ÷ 2.6 =0.6
0.6 x 20 = 12
100 - 12 = **88**

Second option for calculation:
By using the formula:

([actual minus minimum] divided by [maximum minus minimum] then subtracted from 1) multiplied by 20, then added to the base of the band.

0.18 (actual) - 0.0 (minimum) = 0.18
2.6 (maximum) - 0.0 minimum) = 2.6
0.18 ÷ 2.6 = 0.6
1 - 0.6 = 0.4
0.4 x 20 = 8
80 + 8 = **88**

It should be noted when best is the minimum value and worst is the maximum, the minimum value corresponds to the top of the band and the *maximum* value corresponds to the base of the band.

3.5 Calculations of the Score for the indicators Udaipur (South) Forest Division, Rajasthan

This is based on the small case study of a forest division. These are the interim results of an ongoing assessment. The final results shall be published after the study is complete.

Indicator 1.4: Forest Area Diverted for Non-Forestry Use

Take the case of Forest Area Diverted for Non-Forestry Use in Udaipur. In last 5 years the total area diverted for non-forestry use in the division was 0.18 sq. km. DFO, local NGOs and community members decided to control the scale as follows:

Band	Top point on scale	Forest Area Diverted for Non-Forestry Use (ha.)
Good	81-100	0-2.5
OK	61-80	2.6-5.26
Medium	41-60	5.27-7.89
Poor	21-40	7.90-10.53
Bad	1-20	10.54 and above
Base	0	Base of scale

Note that actual area diverted is 0.18 sq. km. and thus falls in good band. Since this is case when best is minimum, therefore, we can calculate in either of the following ways:

First option for calculation:
By using the formula:

([actual minus minimum] divided by [maximum minus minimum]) multiplied by 20, then subtracted from the top of the band.

0.18 (actual) - 0.0 (minimum) = 0.18
2.6 (maximum) - 0.0 minimum) = 2.6
0.18 ÷ 2.6 =0.6
0.6 x 20 = 12
100 - 12 = **88**

Second option for calculation:
By using the formula:
([actual minus minimum] divided by [maximum minus minimum] then subtracted from 1) multiplied by 20, then added to the base of the band.

0.18 (actual) - 0.0 (minimum) = 0.18 2.6 (maximum) - 0.0 minimum) = 2.6 0.18 ÷ 2.6 = 0.6 1 - 0.6 = 0.4 0.4 x 20 = 8 80 + 8 = **88**

It should be noted when best is the minimum value and worst is the maximum, the minimum value corresponds to the top of the band and the *maximum* value corresponds to the base of the band.

Issues for adaptive management and progress towards sustainability: With each indicator assessment it is necessary to learn, take feedback and adapt. This will help us in making adaptive policies and take actions that will help us pursue progress towards sustainability. Take a few moments to discuss the following:

- What does this assessment reflect to stakeholders? What is the feedback?

- What adjustments will you make to policy and practice?

- What would you like to achieve in future? Can you envision and set a goal for the future?

- What are the available options for next management cycle?

- Which option you think is the best one? Why?

- How will you implement the best policy and practice option that you agreed to apply?

Indicator 1. 5: Extent of Community Managed Forest Area

This is recorded here as percentage of new areas being taken for regeneration annually that are managed under participatory forestry. The average area being taken for participatory forestry between 1992-2000 was 1000 ha. per annum. Out of this 95% was directly being managed under community forestry (JFM regime). Since actual is 95 % so it falls in the top band.

Band	**point on scale**	**Extent of Community Managed Forest Area** (Percentage of new areas being taken for regeneration)
Good	81-100	81-100 (actual value 95 falls in this band)
OK	61-80	71-80
Medium	41-60	61-70
Poor	21-40	51-60
Bad	1-20	1-50
Base	0	Base of scale

95 (actual) - 80 (minimum) = 15
100 (maximum) - 80 (minimum) = 20
15/20 = 0.75
0.75 x 20 = 15
15 + 80= 95 = **95**

Issues for adaptive management and progress towards sustainability: With each indicator assessment it is necessary to learn, take feedback and adapt. This will help us in making adaptive policies and take actions that will help us pursue progress towards sustainability. Take a few moments to discuss the following:

- What does this assessment reflect to stakeholders? What is the feedback?

- What adjustments will you make to policy and practice?

- What would you like to achieve in future? Can you envision and set a goal for the future?

- What are the available options for next management cycle?

- Which option you think is the best one? Why?

- How will you implement the best policy and practice option that you agreed to apply?

Indicator 2.4: Level of species richness and diversity in selected areas

Band	**Point on scale**	**Level of species richness and diversity in selected areas** (% of all the recorded species in the zone occur in division)
Good	81-100	81-100 (actual value 92 falls in this band)
OK	61-80	61-80
Medium	41-60	41-60
Poor	21-40	21-40
Bad	1-20	1-20
Base	0	0

92 (actual) - 80 (minimum) = 12
100 (maximum) - 80 (minimum) = 20
12/20 = 0.6
0.6 x 20 = 12
12 + 80= 92 = **92**

Please note: here the scale is not controlled; therefore, we can also calculate the score by the standard formula:

([actual minus minimum] divided by [maximum minus mini-mum])
multiplied by 100.

In this case actual shall be 92, minimum shall be 0 (because the scale runs only in a sole band from 0 to 100), and, therefore, maximum shall be 100.

92 (actual) - 0 (minimum) = 92
100 (maximum) - 0 (minimum) = 100
92/100 = 0.92
0.92 x 100 = **92**

Issues for adaptive management and progress towards sustainability: With each indicator assessment it is necessary to learn, take feedback and adapt. This will help us in making adaptive policies and take actions that will help us pursue progress towards sustainability. Take a few moments to discuss the following:

- What does this assessment reflect to stakeholders? What is the feedback?

- What adjustments will you make to policy and practice?

- What would you like to achieve in future? Can you envision and set a goal for the future?

- What are the available options for next management cycle?

- Which option you think is the best one? Why?

- How will you implement the best policy and practice option that you agreed to apply?

Indicator 3.1: Status of Natural Regeneration

Total area of the forest division is 2636.62 sq. km. Out of this, only 1000 sq. km. area has good natural regeneration.

Band	**Points on scale**	**Status of Natural Regeneration** (total area that has good natural regeneration, sq. km.)
Good	81-100	2110-2636.62
OK	61-80	1581-2109
Medium	41-60	1056-1580
Poor	21-40	531-1055 (actual value 1000 ha. falls in this band)
Bad	1-20	1-530
Base	0	Base of scale

1000 (actual) - 530 (minimum) = 470
1055 (maximum) - 530 minimum) = 525
470/525 = 0.89
0.89 x 20 = 17.8
17.8 + 20 = 37.8 = **38**

Issues for adaptive management and progress towards sustainability: With each indicator assessment it is necessary to learn, take feedback and adapt. This will help us in making adaptive policies and take actions that will help us pursue progress towards sustainability. Take a few moments to discuss the following:

- What does this assessment reflect to stakeholders? What is the feedback?

- What adjustments will you make to policy and practice?

- What would you like to achieve in future? Can you envision and set a goal for the future?

- What are the available options for next management cycle?

- Which option you think is the best one? Why?

- How will you implement the best policy and practice option that you agreed to apply?

Indicator 4.4: Ground Water Table in the vicinity of the forest areas

Number of villages showing either stable or rise in water table out of total 904 villages in Udaipur is an important indicator. This reflects on the health of the forests in watershed.

Band	**Points on scale**	**Ground Water Table in the vicinity of the forest areas** (Number of villages showing either stable or rise in water table out of total 904 villages)
Good	81-100	801-904
OK	61-80	601-800
Medium	41-60	401-600 (actual value 410 falls in this band)
Poor	21-40	201-400
Bad	1-20	1-200
Base	0	Base of scale

410 (actual) - 400 (minimum) = 10
600 (maximum) - 400 minimum) = 200
10/200 = 0.05
0.05 x 20 = 1
1 + 40 = 41 **= 41**

Issues for adaptive management and progress towards sustainability: With each indicator assessment it is necessary to learn, take feedback and adapt. This will help us in making adaptive policies and take actions that will help us pursue progress towards sustainability. Take a few moments to discuss the following:

- What does this assessment reflect to stakeholders? What is the feedback?

- What adjustments will you make to policy and practice?

- What would you like to achieve in future? Can you envision and set a goal for the future?

- What are the available options for next management cycle?

- Which option you think is the best one? Why?

- How will you implement the best policy and practice option that you agreed to apply?

Indicator 5.4: Level of financial investment in forestry sector

Level of financial investment decides the possibility of the implementation of policy and plans. The scale has been controlled based on the available information. Putting Rs. 7.5 Crore in Good band shows that this money will be required annually to implement all the policies and actions as proposed in SFAP. Actual availability of budget today is Rs 3 Crore annually; therefore, it falls in Medium band.

Band	**Point on scale**	**Level of financial investment in forestry sector** (Rs. In Crore)
Good	81-100	5.7-7.5
OK	61-80	4.3-5.6
Medium	41-60	2.9-4.2 (actual availability today is Rs 3 Crore annually)
Poor	21-40	1.5-2.8
Bad	1-20	1-1.4
Base	0	Base of scale

3 (actual) - 2.8 (minimum) = 0.2
4.2 (maximum) - 2.8 (minimum) = 1.4
0.2/1.4 = 0.14
0.14 x 20 = 2.8
2.8 + 40 = 42.8 = **43**

Issues for adaptive management and progress towards sustainability: With each indicator assessment it is necessary to learn, take feedback and adapt. This will help us in making adaptive policies and take actions that will help us pursue progress towards sustainability. Take a few moments to discuss the following:

- What does this assessment reflect to stakeholders? What is the feedback?

- What adjustments will you make to policy and practice?

- What would you like to achieve in future? Can you envision and set a goal for the future?

- What are the available options for next management cycle?

- Which option you think is the best one? Why?

- How will you implement the best policy and practice option that you agreed to apply?

Indicator 6.6: Level of processing and value addition in NWFP (data from Rajas Sangh)

Band	**Point on scale**	**Level of processing and value addition in NWFP** (% of collected items subjected to value addition)
Good	81-100	41-50
OK	61-80	31-40
Medium	41-60	21-30 (actual value 24 falls in this band)
Poor	21-40	11-20
Bad	1-20	1-10
Base	0	Base of scale

24 (actual) - 20 (minimum) = 4
30 (maximum) - 20 (minimum) = 10
4/10 = 0.4
0.4 x 20 = 8
8 + 40 = 48 = **48**

Issues for adaptive management and progress towards sustainability: With each indicator assessment it is necessary to learn, take feedback and adapt. This will help us in making adaptive policies and take actions that will help us pursue progress towards sustainability. Take a few moments to discuss the following:

- What does this assessment reflect to stakeholders? What is the feedback?

- What adjustments will you make to policy and practice?

- What would you like to achieve in future? Can you envision and set a goal for the future?

- What are the available options for next management cycle?

- Which option you think is the best one? Why?

- How will you implement the best policy and practice option that you agreed to apply?

Indicator 7. 2: Use of Indigenous Technical Knowledge: Identification, Documentation & Application

There are several ways to know if indigenous knowledge is put to use for sustainable forest or not. One of these is 'knowledge pooling workshops'. If KPWs are organised in all the 78 forest protection committees in the division it will the best. The actual number is 53, therefore, it is placed in OK band as follows:

Band	Point on scale	Use of Indigenous Technical Knowledge: Identification, Documentation & Application
Good	81-100	61-78
OK	61-80	51-60 (actual value 53 falls in this band)
Medium	41-60	41-50
Poor	21-40	21-40
Bad	1-20	1-20
Base	0	Base of scale

53 (actual) - 50 (minimum) = 3
60 (maximum) - 50 minimum) = 10
3/10 = 0.3
0.3 x 20 = 6
6 + 60 = 66 = **66**

Issues for adaptive management and progress towards sustainability: With each indicator assessment it is necessary to learn, take feedback and adapt. This will help us in making adaptive policies and take actions that will help us pursue progress towards sustainability. Take a few moments to discuss the following:

- What does this assessment reflect to stakeholders? What is the feedback?

- What adjustments will you make to policy and practice?

- What would you like to achieve in future? Can you envision and set a goal for the future?

- What are the available options for next management cycle?

- Which option you think is the best one? Why?

- How will you implement the best policy and practice option that you agreed to apply?

Indicator 7. 5: Extent of Cultural /sacred protected landscapes: forests, trees, ponds, streams, etc.

Indigenous practices such as sacred groves play a vital role in conservation and sustainability. The scale is controlled here based on the logic that a sample survey of 3 villages found at least 0.5 land under the sacred groves. This means, 13.18 sq. km out of total 2636.62 sq. km forest area of the division should be under cultural protection to qualify for the Good.

Band	**Top point on scale**	**Extent of cultural/sacred protected landscapes: forests, trees, ponds, streams etc** (% of the total forest area)
Good	81-100	0.26-0.5 (actual value 0.26 falls in this band)
OK	61-80	0.13-0.25
Medium	41-60	0.07-0.12
Poor	21-40	0.01-0.06
Bad	1-20	0.005-0.01
Base	0	Base of scale

0.26 (actual) - 0.25 (minimum) = 0.01
0.5 (maximum) - 0. 25 minimum) = 0.25
0.01/0.25 =0.04
0.04 x 20 = 0.8
0.8 + 80 = 80.8 = **81**

Issues for adaptive management and progress towards sustainability: With each indicator assessment it is necessary to learn, take feedback and adapt. This will help us in making adaptive policies and take actions that will help us pursue progress towards sustainability. Take a few moments to discuss the following:

- What does this assessment reflect to stakeholders? What is the feedback?

- What adjustments will you make to policy and practice?

- What would you like to achieve in future? Can you envision and set a goal for the future?

- What are the available options for next management cycle?

- Which option you think is the best one? Why?

- How will you implement the best policy and practice option that you agreed to apply?

Indicator 8. 2: Enabling Conditions for Participation of Community, NGOs, Civil Society: like JFM resolution, transit rules etc.

The ideal condition would be when JFM resolution is issued, amended time to time, and also implemented by stakeholders in majority of village close to forest area. No problems reported by people/NGOs in terms of implementation, benefit sharing is equitable. This is, therefore, given 100 points. The worst situation could be that JFM resolution is issued, amended time to time, but implemented by FD in paper. 'The Paper Forests / Paper Protected Areas (PPAs) abound. This is assumed to be bad. The scale is accordingly controlled. For the convenience note is inserted in all the bands:

Band	**Top point on scale**	**8. 2 Enabling Conditions for Participation of Community, NGOs, Civil Society: like JFM resolution, transit rules etc.**
Good	81-100	**81-100** (JFM resolution issued, amended time to time, implemented by stakeholders in majority of village close to forest area. No problems reported by people/NGOs in terms of implementation, benefit sharing is equitable.
OK	61-80	**61-80** (JFM resolution issued, amended time to time, implemented by FD in majority of village close to forest area. But, problems reported by people/NGOs in terms of implementation. Corrective measures are taken and benefit sharing is more or less equitable)
Medium	41-60	**41-60** (JFM resolution issued, amended time to time, implemented by FD in only few village close to forest area. But, problems reported by people/NGOs in terms of implementation and only in some cases corrective measures are taken to redress the situation)
Poor	21-40	**21-40** (JFM resolution issued, amended time to time, implemented by FD in only few village close to forest area. But, problems reported by people/NGOs in terms of implementation and no corrective measures are taken to redress the situation).
Bad	1-20	**1-20** (JFM resolution issued, amended time to time, implemented by FD in paper. 'The Paper Forests / Paper Protected Areas (PPAs) abound.')
Base	0	Base of scale

Since the value corresponds with one of the end points in scale we can directly put a corresponding score as 80. Or, we can calculate it as follows:

80 (actual) - 60 (minimum) = 20
80 (maximum) - 60 (minimum) = 20
20/20 = 1
1 x 20 = 20
60 + 20 = **80**

Issues for adaptive management and progress towards sustainability: With each indicator assessment it is necessary to learn, take feedback and adapt. This will help us in making adaptive policies and take actions that will help us pursue progress towards sustainability. Take a few moments to discuss the following:

- What does this assessment reflect to stakeholders? What is the feedback?

- What adjustments will you make to policy and practice?

- What would you like to achieve in future? Can you envision and set a goal for the future?

- What are the available options for next management cycle?

- Which option you think is the best one? Why?

- How will you implement the best policy and practice option that you agreed to apply?

Combine the Indicators

Ecosystem wellbeing		**Human wellbeing**	
Indicators	**Score**	**Indicators**	**Score**
1.4	88	1.5	95
2.4	92	6.6	48
3.1	38	7.2	66
4.4	41	7.5	81
5.4	43	8.2	80
Total	**302**	**Total**	**370**
Average	**60.4**	**Average**	**74**

Issues for adaptive management and progress towards sustainability: With combined indicator score of assessment it is necessary to learn, take feedback and adapt holistically as well. This will help us in making adaptive policies and take actions that will help stakeholders pursue progress towards sustainability. Take a few moments to discuss the following:

- What does this assessment reflect to stakeholders? What is the feedback?

- What adjustments will you make to policy and practice in the next management cycle?

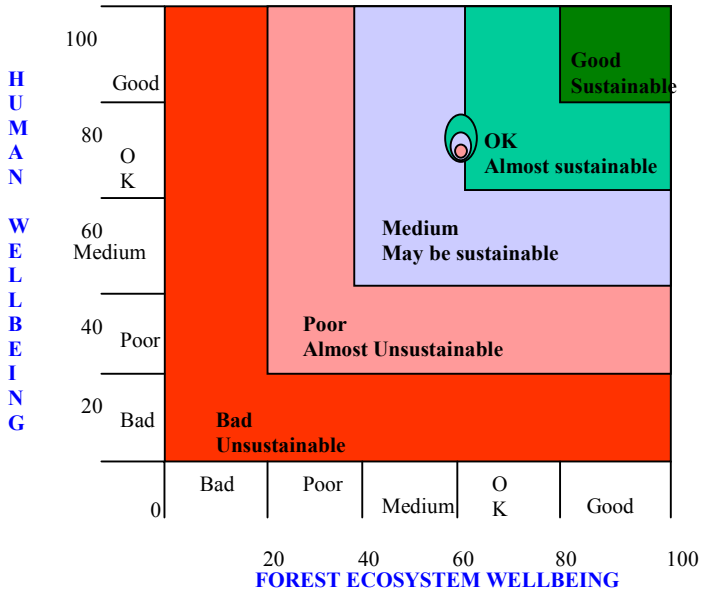
- What would you like to achieve in future? Can you envision and set a goal for the future?

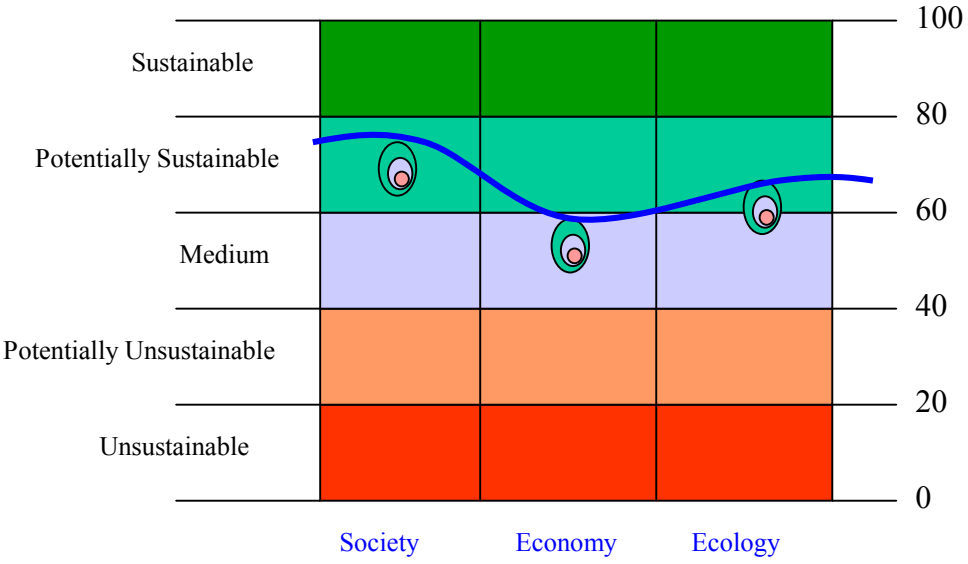
- What are the available options for next management cycle?

- Which option you think is the best one? Why?

- How will you implement the best policy and practice option that you agreed to apply?

Stage 6. Map Indices and Plot on the Barometer of Sustainability





MoS Meter

3.6. Case of India

This section provides a direction on how in the absence of primary sources the NFAP and other such literature can yield good data for depicting the sustainability on the MoS Meter at the national level.

It is not easy to get the proper values for the verifiers of the indicator at the national level. This requires systematic data collection and analysis, designing of the scoring scale and feeding the values that truly verify the indicators.

However, as we discussed, a lot of data has already been collected by various agencies that is available in the National Forestry Action Programme-NFAP (GOI, 1999) document. As a starting point this data can be used to get the fair portrayal of sustainability at the national level. We selected only a few representative set of Indicators for which the verifying data is available in the NFAP. The scales that we used here for calculations are controlled.

3.6 Calculations

Indicator 1. 1: Areas and Types of Forest Cover

National Forest Policy has a goal to bring 33% geographical area under forest cover. Therefore, this is treated as the best value.

Band	**Points on scale**	**Areas and types of Forest Cover (source of data GOI, 1999: NFAP part 1: 18)** (% of total geographical area is covered under forests)
Good	81-100	26-33
OK	61-80	16-25 (actual value 19.27 falls in this band)
Medium	41-60	11-15
Poor	21-40	6-10
Bad	1-20	1-5
Base	0	Base of scale

19.27-15 = 4.27
25-15 = 10
4.27/10 = 0.427
0.427 x 20 = 8.54
8.54 + 60 = 68.54 = **69**

Indicator 1. 4: Forest Area Diverted for Non-Forestry Use

The best situation will be that no area is diverted. But, need of land for developmental projects must also be kept in mind. Rate of diversion has decreased drastically after the enactment of Forest (Conservation) Act. It may be extremely difficult to bring the rate of diversion further down from the current rate (0.025 million ha. per annum). Therefore, the scale was controlled in the following way:

Band	Point on scale	Forest Area Diverted for Non-Forestry Use (source GOI, 1999, NFAP, part 1: 14) (million ha. per annum)
Good	81-100	0-0.057 (actual 0.025)
OK	61-80	0.058-0.085
Medium	41-60	0.086-0.114
Poor	21-40	0.115-0.142
Bad	1-20	0.143-0.200
Base	0	Base of scale

0.025 - 0 = 0.025
0. 058 - 0 = 0.058
0.025/0.058 = 0.43
1-0.43 = 0.57
0.57 x 20 = 11.4
80 + 11.4 = 91.4 = **91**

Second formula also be applied for calculation:

0.025 - 0 = 0.025
0. 058 - 0 = 0.058
0.025/0.058 = 0.43
0.43 x 20 = 8.6
100-8.6 = 91.4 = **91**

Indicator 2.1: Protected Area Systems

NFAP has the target of establishment of total 651 protected areas in India. This is the maximum that the country can afford in terms of number. This is treated as 100 mark and the scale is controlled as follows:

Band	Top point on scale	2.1 Protected Area Systems (source GOI, 1999, NFAP, part 1: 42, part II: 15)
Good	81-100	521-651 (current number of Pas is 521)
OK	61-80	391-520
Medium	41-60	261-390
Poor	21-40	131-260
Bad	1-20	1-130
Base	0	Base of scale

521 - 520 = 1
651 - 520 = 131
1/131 = 0.007633
0.007633 x 20 =1.5267 or 1.52
80 + 1.52 =81.52 = **81**

3.1 Status of Natural Regeneration

NFAP denotes that only 47% forest area in India has adequate natural regeneration. Ideally, 100 percent area should regenerate naturally. Scale was set as follows:

Band	**Points on scale**	**Status of Natural Regeneration (source of data GOI, 1999: NFAP part 1: 25)** (% natural forests have adequate natural regeneration)
Good	81-100	81-100
OK	61-80	61-80
Medium	41-60	41-60 (actual value 47 falls in this band)
Poor	21-40	21-40
Bad	1-20	1-20
Base	0	Base of scale

47 (actual) - 40 (minimum) = 7
60 (maximum) - 40 (minimum) = 20
7/20 = 0.35
0.35 x 20 = 7
7 + 40 = **47**

You may notice that scale is uncontrolled; therefore, standard formula will also apply. In this case maximum will be 100 and minimum will be 0. The calculation is:

Band	**Points on scale**	**Status of Natural Regeneration (source of data GOI, 1999: NFAP part 1: 25)** (% natural forests have adequate natural regeneration)
Good	100	100
Base	0	0

47 (actual) - 0 (minimum) = 47
100 (maximum) - 0 (minimum) = 100
47/100 = 0.47
0.47 x 100 = **47**

5.4 Level of financial investment in forestry sector

NFAP estimates an annual investment of Rs. 52850 million per annum will be required to implement all the plans to achieve the goal of forest policy. This is, therefore, equated with 100 points. Enumerable number of reports and other literature concludes that present rate of availability of resources are poor, indeed (Rs. 16146.5 million per annum). Thus, the scale is set as follows:

Band	**Points on scale**	**Level of financial investment in forestry sector (source of data GOI, 1999: NFAP part I1: 92-93)** (Rs in million per annum)
Good	81-100	42281-52850
OK	61-80	31711-42280
Medium	41-60	21141-31710
Poor	21-40	10571-21140 (actual value of 16146.5 falls in this band)
Bad	1-20	10000-10570
Base	0	Base of scale

16146.5 (actual) - 10570 (minimum) = 5576.5
21140 (maximum) - 10570 (minimum) = 10570
5576.5/10570 = 0.527
0.527 x 20 = 10.54
10.54 + 20 = 30.54 **= 31**

7.1 Degree of people's participation: number of FPCs/area protected by them

There are several options to assess the participation. The easiest is to consider the number of potential villages where forest protection committees can be established and compare this with the achievement. There are 2 lacs villages situated in and around forests. It is logically assumed that all these villages have potential to form forest protection committees. Indeed, this should be the India's endeavour. Thus, the scale is set as follows:

Band	**Points on scale**	**Degree of people's participation: number of FPCs (source of data GOI, 1999: NFAP part I1: 95 and Pandey, 2000)** (number of villages in and around forest areas having FPCs)
Good	81-100	161000-200000
OK	61-80	121000-160000
Medium	41-60	81000-120000
Poor	21-40	41000-80000 (actual value 41000 falls in this band)
Bad	1-20	20000-40000
Base	0	Base of scale

41000 (actual) - 40000 (minimum) = 1000
80000 (maximum) - 40000 (minimum) = 40000
1000/40000 = 0.025
0.025 x 20 = 0.5
0.5 + 20 = **20.5 =20**

8. 2 Enabling Conditions for Participation of Community, NGOs, Civil Society: like JFM resolution, transit rules etc.

There are several ways to assess this indicator; indeed, different verifiers may be used to arrive at the clear picture. We consider, however, one of these--the JFM resolution. It would be ideal if all the States in India issue enabling resolutions to promote joint forest management; this has been, therefore, equated with 100 points. Scale is not controlled.

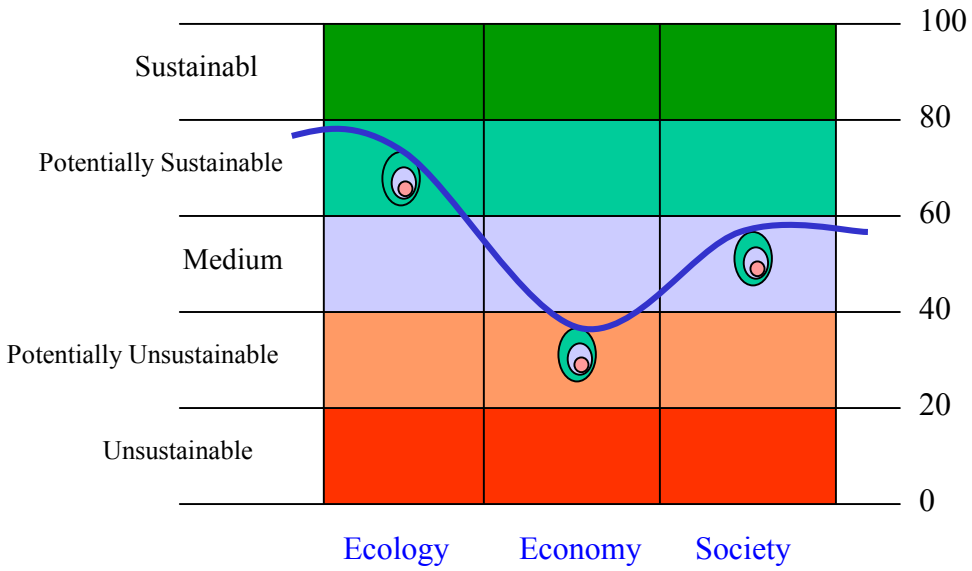
Band	**Top point on scale**	**Enabling Conditions for Participation of Community, NGOs, Civil Society: like JFM resolution, transit rules etc.** (number of States that have issued JFM resolution)
Good	81-100	21-28 (actual value 22 falls in this band)
OK	61-80	16-20
Medium	41-60	11-15
Poor	21-40	6-10
Bad	1-20	1-5
Base	0	Base of scale

22 (actual) - 20 (minimum) = 2
28 (maximum) - 20 minimum) = 8
2/8 = 0.25
0.25 x 20 = 5
80 + 5 = 85 = **85**

Please note that there can be more than one verifier for each indicator. In that case you will have to calculate score for each and then take average to get the score for that indicator to plot in the MoS Meter. For the purpose of this exercise we have taken only one type of verifier for each indicator.

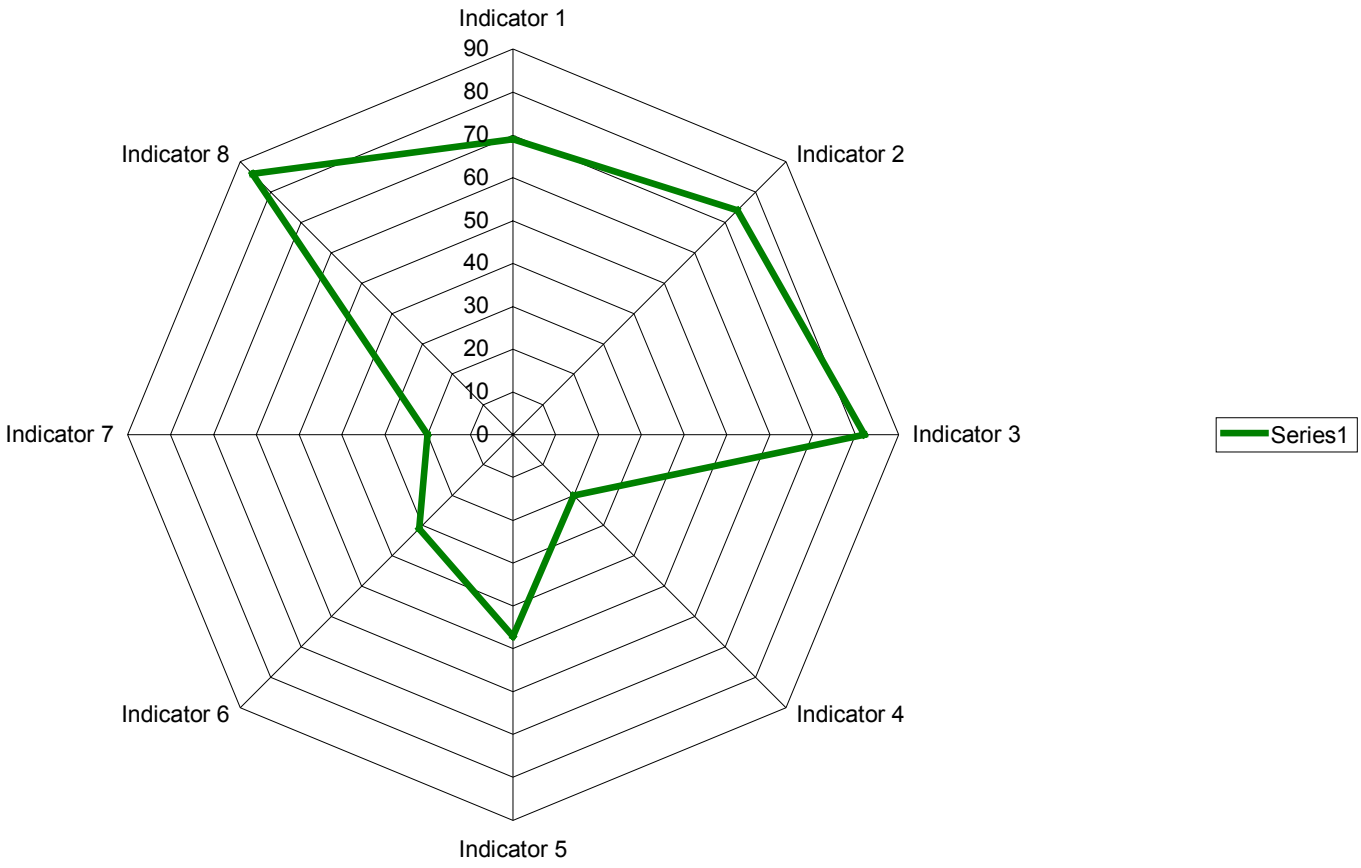
Ecology		**Economy**		**Society**	
Indicator	**Score**	**Indicator**	**Score**	**Indicator**	**Score**
1.1	**69**	**5.4**	**31**	**7.1**	**20**
1.4	**91**			**8.2**	**85**
2.1	**81**				
3.1	**47**				
Average	**72**		**31**		**52.5**

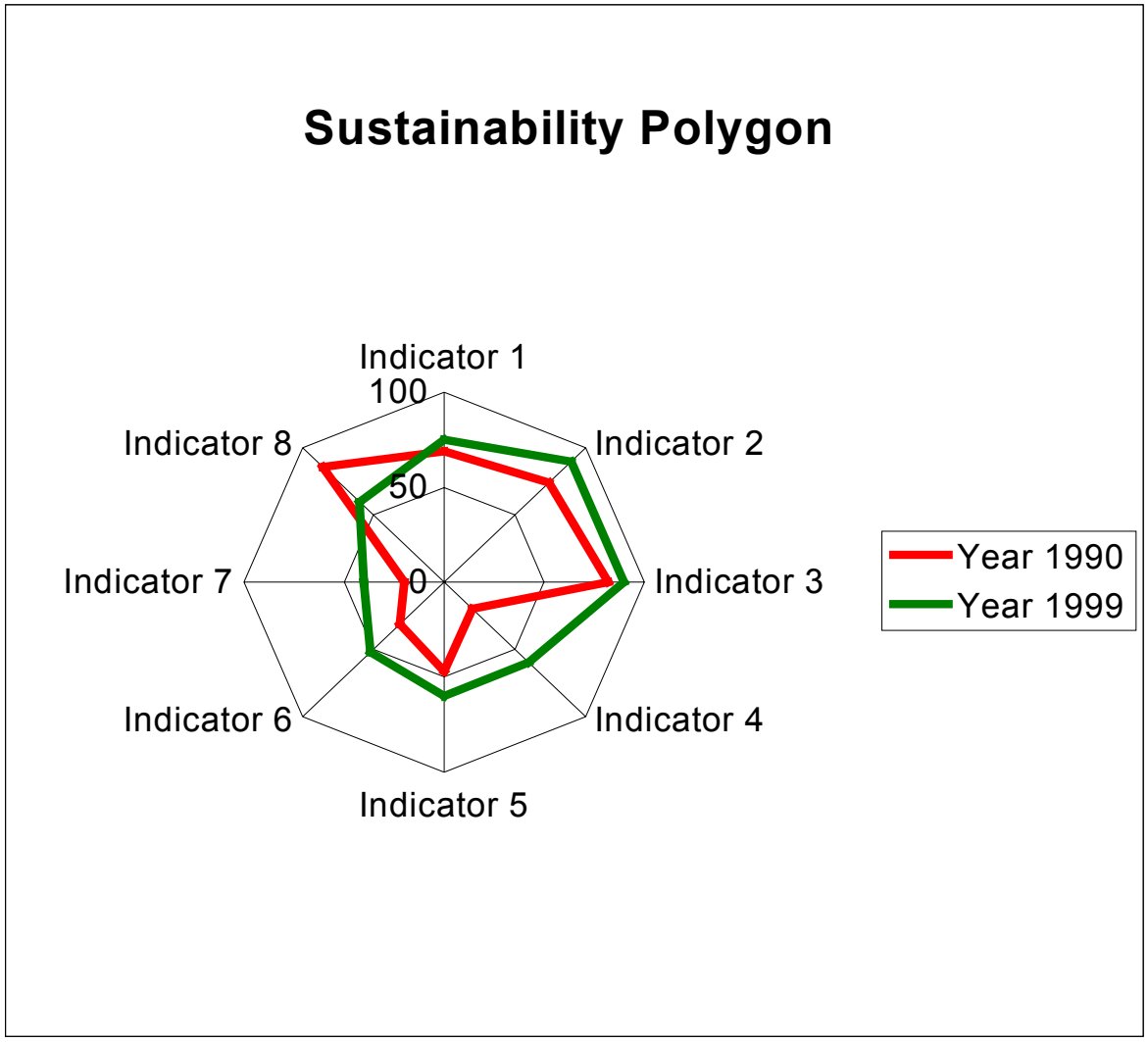
See figure in next page.



MoS Meter

Sustainability Polygon




Sustainability Polygon
Indicator 1
100
Indicator 2
50
Indicator 3
0
Indicator 4
Indicator 5
Indicator 6
Indicator 7
Indicator 8
Year 1990
Year 1999

Issues for adaptive management and progress towards sustainability: With combined indicator score of assessment it is necessary to learn, take feedback and adapt. This will help us in making adaptive policies and take actions that will help stakeholders pursue progress towards sustainability. Take a few moments to discuss the following:

- What does this assessment reflect to stakeholders? What is the feedback?

- What adjustments will you make to policy and practice in the next management cycle?

- What would you like to achieve in future? Can you envision and set a goal for the future?

- What are the available options for next management cycle?

- Which option you think is the best one? Why?

- How will you implement the best policy and practice option that you agreed to apply?

?

Study/discussion questions

Q: Do you think the number of indicators in case study is sufficient? If not, what care would you take in the field when you assess the sustainability in your work area?
A: _____
_____
_____
_____

Q: What are the sources of data for assessment of sustainability in your area?
A: _____
_____
_____
_____

Q: There are cases for which the sustainable levels are fairly well known; for example 100 percent forest area should have adequate natural regeneration. Give some other examples.
A: _____
_____
_____
_____

Q: There are cases for which the sustainability remains fuzzy; for example, case of ground water table. In such cases trends alone help in pursuing progress towards sustainability. Give some other similar examples?
A: _____
_____
_____
_____

Q: What precaution is required during the subsequent assessment in controlling the scale?
A: _____
_____
_____
_____

Q: What will happen if we change the controlling in the subsequent assessment?
A: _____
_____
_____
_____

2.7 Feedback and Wrap-up (15 minutes)

Please take few moments to reflect on today's training so that we can learn and adapt further for tomorrow's programme. Also, give your feedback in sheet provided for the purpose. We thank you for your cooperation.

What would you like the facilitators to stop doing?

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What would you like the facilitators to start doing?

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What would you like the facilitators to continue doing?

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Other comments:

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Please detach and hand in the page after finishing. Thank you.

Day Four: Field Study
Assessment of Sustainability with Community

Day Four at a Glance

No. Time	Programme/Action/session etc.
7.00-8.00 AM	Breakfast
8.00 AM	Departure for the field; reach the village and start the field work in the following sequence:
	Pooling of Minds and Hearts: Introduction with villagers, exchange of pleasantries, establishing rapport (village community and participants remain in one group): **30 minutes**
	Sharing of Knowledge: Participants and community members will form four groups. The groups will be of Foresters + villagers (3 groups) and NGOs + villagers (1 group) to discus the objectives of the forest management in the village; what strategy was adopted and what actions were taken to fulfil the objectives; how community knows that the objectives are being fulfilled; and what indicators they use and measure?: **1 hour**
	Search for Knowledge: Participants will then request the community members in their group to take them to their households to search that part of knowledge which resides in other community members, including aged and women, children etc., who may not have been able to share their knowledge simply because they were not present. **45 minutes**
1.30 PM	Community Lunch
2.30 PM onwards	Field visit in community managed forest to collect data on indicators. Participants will remain with the same groups they were in during the morning.
4.30 PM	Departure from the field

4.1 Day Four objectives

Based on your classroom discussions you will collect data related to ecological, economic, social, physical and other related criteria indicators in the village. The participants will ensure that they are able to collect information related to the indicators that they and other stakeholders in the village decide to be important. The participants will use the methodologies, which are appropriate for data collection in the field situation in which they are. The participants will take care while collecting the information in order to facilitate the inputs for the analysis. Each field group will comprise of six to seven participants.

The participants will start early.

4.1 Pooling of Minds and Hearts

Familiarity with the local people is always helpful. Participant should be able to identify themselves. You may like to follow the following steps:

- Introduction with villagers,
- Exchange of pleasantries,
- Establishing rapport (village community and participants remain in one group)

4.2 Search for Knowledge

A process needs to be developed facilitating participation from all the critical stakeholders. This process should ultimately create an enabling environment for the villagers to share their enriched source of knowledge. Thereby giving them equal opportunity to express themselves. The process suggested for this purpose is:

- Participants will request the community members in their group to take them to their households to search that part of knowledge which resides in other community members, including aged and women, children etc., who may not have been able to share their knowledge simply because they were not present

4.3 Field visit

We will take measurements in community-managed forest to collect data on indicators. Participants will remain with the same groups they were in during the morning.

Essentially we will follow these steps:

Step 1: Organize a meeting of stakeholders: The group should consist of representatives who have the full range of knowledge of the resource and represent the vision of the local community, foresters and the civil society. This meeting may decide to nominate a sub-group of individuals who will work together cooperatively and devote more time than others. The sub-group members should be dedicated to meet as regularly as possible and be willing to provide time. This body could be the executive of village forest committee. Alternatively, the general body of the village forest committee can also. (See also 1.5, group 2).

Step 2: Discuss and agree on the purpose: Stakeholders must discuss why are they meeting and what is the intended outcome of the process. This will help in keeping the process focused.

Step 3: Analyze the forest and community scenario: A scenario is the context specific example of resource such as local forests, national parks, wildlife sanctuaries etc. Present scenario is the 'description of the forests as it is today'. Future scenarios are account of 'what might be'. As Wollenberg *et al.* (2000) suggest, unlike projections, scenarios do not portray what the future will look like. Scenarios instead stimulate creative ways of thinking that help people break out of established ways of looking at situations and planning their actions. Such creativity can help people get rid of no-longer useful habits of thinking and therefore better adapt to the future. Scenarios are useful tools in situations where complexity and uncertainty are high. If the management of tropical forests were more predictable, linear techniques of prediction would be sufficient for future planning. Where uncertainty exists, for instance where the interests and plans of multiple stakeholders are not fully known, creative processes for anticipating change such as scenarios are useful to pursue progress towards sustainability (see also 2.1).

Step 4: Decide the objectives of management: In order to achieve the overarching goal of "sustainability of forests and livelihood security of the communities" we need to develop the management objectives. Based on the forest scenario stakeholders should develop the management objectives (see also 1.5, group 1). An ideal set of objectives will contribute to ecological, social and economic wellbeing.

Objectives are the statement of desired accomplishments or outcomes of a project. A good objective meets the following criteria (see Margoluis and Salafsky, 1998: 64):

- *Impact oriented*. *R*epresents desired changes.
- *Measurable.* Definable in relation to some standard scale or bench-mark.
- *Time bound.* Achievable within a specific period of time.
- *Specific.* Clearly defined so that all stakeholders have the same understanding of what the term in the objective mean.
- *Practical.* Achievable and appropriate within the context.
- *Multiplicity.* Should synergically contribute to the goal of sustainable forest management. It should clearly address the multiple use options for the scenario.

Step 5: Design the draft indicators corresponding to each management objective: For each management objectives stakeholders will design the indicators that will help to track progress towards achieving the objective. Participants may like to use any of the existing set of indicators such as indicators designed for India under the Bhopal-India Process, ITTO Process, Asian Initiative for Dry Zone Asia, or any other set available to them. While designing the indicator sets we should also make use of information already being collected by the Forest Department, NGOs and researchers. But, we need to remember that the

available data and information may not always be sufficient to measure the sustainability, therefore, indicators that may require new data collection should not be left out. There may be some indicators that are vital for pursuing progress towards sustainability, but FD or others may not be collecting the information on these aspects. We need to incorporate such indicators as well, if they are important.

Step 6: Apply 'Filters' to design the representative basic set of indicators: Stakeholders should apply the filters to bring out the representative basic set of performance indicators. Participants should get full opportunity to review a list of C&I relevant to the context in which they are designing the indicators to determine the reliability, feasibility and cost of collecting the required data to pursue the progress towards sustainability.

As discussed earlier most C&I sets fail to prioritize among the many parameters they contain. Most C&I sets include an impossibly large number of indicators, fail to consider costs of implementation, and offer no guidance on how frequently they need to be measured. The most important part of this step, therefore, is that participants should distil from the large body of potential indicators which should be members of the "representative basic" set and also determine how to minimize the cost of designing, measuring and communicating the results both in terms of money and time. For this purpose mutually agreed 'filters' are designed to help participants distinguish the currently implementable from the currently unimplementable. One has to remember, however, that these indicators may become implementable as the information, data, knowledge and wisdom progresses in the future (see also 2.3.4 and 2.3.5).

Step 7: Collect the data in the field: We will take measurements in community-managed forest to collect data on indicators. Participants will remain with the same groups they were in during the morning sessions.

2.7 Feedback and Wrap-up (15 minutes)

Please take few moments to reflect on today's training so that we can learn and adapt further for tomorrow's programme. Also, give your feedback in sheet provided for the purpose. We thank you for your cooperation.

What would you like the facilitators to stop doing?

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What would you like the facilitators to start doing?

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What would you like the facilitators to continue doing?

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Other comments:

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Day Five:
Assessment of Sustainability: MoS Meter

Day Five at a Glance

No.	Time	Programme/Action/session etc.
1.	9.30-10.00 AM	Recapitulation of yesterday's learning by the participants and facilitator
2.	10.00-11.00 AM	Time for preparation of the presentations. While preparing the presentations groups will also include discussion on which indicators were dropped and why to make the set of indicators representative.
	11.00-11.15	Tea
3.	11.15-12.00 PM	Brief presentations by each group on their set of indicators. Facilitated discussion on comparison of indicators evolved by the different groups. Differences and similarities among the groups?
	12.00-1.30	Calculation of scores for MoS meter. Full set of information on all the evolved indicators will be available to every participant irrespective of their group. They can access this information to make their set more representative and calculate the score for all the indicators that they are adopting as representative set. Plotting on the MoS Meter, Barometer of Sustainability, Sustainability polygon
	1.30.-2.30 PM	**Lunch**
4.	2.30- 3.30	Presentations and discussion
	4.00-4.15 PM	Tea
5.	4.15-5.00PM	Presentation and discussion
6.	5.00-6.00 PM	IMOSS software
7.	6.00-6.15	Day's wrap-up. Feedback and lessons.

5.1 Group exercise in class

The participants will use the data collected in the field for ascertaining the sustainability of the forest area that they examined in the field. This exercise will include analysis of the data and information to get the values for the indicators by applying various approaches. Participants will be given the community indicators that were evolved under the ITTO pre-project of IIFM to compare and contrast the representative set that they evolved in the filed. This is also important to help participants realize that one can attempt to use the vast amount of information already being collected by the participants in their work scenarios.

We will follow the schedule as given above.

2.7 Feedback and Wrap-up (15 minutes)

Please take few moments to reflect on today's training so that we can learn and adapt further for tomorrow's programme. Also, give your feedback in sheet provided for the purpose. We thank you for your cooperation.

What would you like the facilitators to stop doing?

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What would you like the facilitators to start doing?

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What would you like the facilitators to continue doing?

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Other comments:

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Please detach and hand in the page after finishing. Thank you.

Day Six:
Recapitulation, Planning follow-up and Training Feedback

Day six at a Glance

No.	Time	Programme/Action/session etc.
1.	9.30-11.00 AM	Recapitulation of the learning during the training by the participants, resource persons and facilitator
	11.00-11.15 AM	Tea
	11.15-12.00 PM	Discussion on how participants will apply the inputs in the field that they had in the training; discussions and decision for the process of follow-up to sustain the process make the learning in training more meaningful. Preparation of plans of follow-up by the participants in two copies, one of this they will carry and one copy they will hand over to facilitator.
	12.00-1.30	Brief presentations of the plans by each participants (5 minutes each)
	1.30.-2.30 PM	**Lunch**
	2.30- 3.30	Success and Beyond: feedback
	3.30-4.15 PM	Parting Resolve Speech by Dr. Ram Prasad; Facilitator's remarks Distribution of certificates
	4.15 PM	Tea and departure

6.1 Planning for follow-up

Participants may find the following table helpful in writing the plan for follow-up.

Name of the participant:

State: **Organisation:**

Proposed activities and most probable dates

No.	Follow-up Activity	Probable dates	Place/Division/ Community managed areas	Category and number Participants (if applicable)	Intended Output
1	**Field Training** 1. 2. 3.				
2	**Training at Head-quarters** 1. 2. 3.				
3	**Application of MoS for SFM** 1. 2. 3.				
4	**Workshops** 1. 2. 3.				
5	**Incorporation of SFM in Planning**				
6	**Writing of the case study**				
7	**Any other activities (please name the activities)** 1. 2. 3.				

6.2 Assessing the Follow-up

The follow-up of the programme; participants shall be assessed in the following steps:

Step 1. Participants will send the dates when they intend to organise the follow-up activities such as the training to field staff, exercise for measures of success etc. to the Course Coordinator.

Step 2. Course Coordinator may visit a sample of States to attend the programmes in the field.

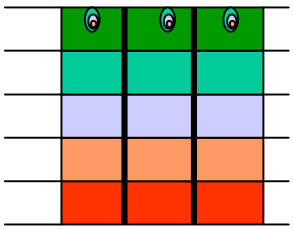
Step 3. Participants will send a copy of the material that is generated out of the training and activities in the States to the Course Coordinator.

Step 4. Course Coordinator will initiate and facilitate the mailing list/list-serve and request the network members to pool in concrete terms what action they have taken, what was the result, who benefited, and what is planned next.

Step 5. The Course Co-ordinator will prepare a consolidated report and distribute to all the participants periodically.

2.7 Feedback and Wrap-up (30 minutes)

Please take time off to reflect on the training so that we can learn and adapt further for the next training programme. Give your feedback in sheet provided separately for the purpose. We thank you for your cooperation.



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Indian Institute of Forest Management, Bhopal, India

Indian Institute of Forest management (IIFM), Bhopal, with excellent teaching, training, education and consulting facilities, is situated in the heartland of India. It is a unique national institution of international repute. IIFM was established in 1982 as an autonomous Institute under the Government of India with an objective of providing leadership in the field of forest management by developing professional excellence through research, education, training, extension and advisory activities. During its past one and a half decades of being in existence, IIFM has gained significant experience working with policy makers and international donor agencies on one hand, and a wide range of professionals like foresters, development workers, academicians, NGOs, and local people on the other. In this process, it has contributed to the conceptual shift in the field of forest management, towards the community participation in the management of forests.

IIFM has taken the lead in the field of C & I for sustainable forest management in India. The **Bhopal-India Process** of identification and implementation of Criteria & Indicators for sustainable forest management is known and recognized world-wide.

The first, and so far the only one of its kind in the South Asian Region, IIFM is all set to provide the leadership in the field of Sustainable Forest management (SFM). Realizing the global importance of the subject, IIFM has already initiated the Bhopal-India Process to evolve a set of 'Criteria and indicators' for SFM in India and look forward to extend the same, with appropriate modifications to other countries in the region. In this process, the multi-disciplinary faculty team of IIFM - a unique combination of technical forestry, management, social and behavioral sciences - adds strength through its educational, training, research and consulting activities.

Being the apex institute of Ministry of Environment and Forests, Government of India, IIFM had started working in the field of participatory forest management and community forestry since beginning. Promulgation of 1988 national forest policy and formally Govt. of India resolution on JFM on June 01, 1990 paved the way for community participation in forest management. Over a decade since then, IIFM has accumulated considerable experience and expertise in this field through faculty and participants research and training to various partners.

IIFM also functions as nodal institution for promoting 'institutional support for JFM' under National Support Group (NSG) for JFM and through this process it has gained experience in working with various field level functionaries and organizations, State Forest Departments and NGOs.

The FAO-FTPP Program in collaboration with Regional Community Forestry Center (RECOFTC) at Bangkok provides IIFM the scope to generate case studies in community forestry and offer international courses in the same subject. With FAO-FTPP, IIFM collaborates with leading national level organizations like Society for Promotion of Wasteland Development (SPWD), Institute of Bio-social Research and Development (IBRAD), Indian Institute of Technology, Kharagpur, Indian Institute of Management, Ahmedabad, Ford Foundation (India), Indian Institute of Science, Indian Statistical Institute and State Forest departments.

IIFM is recognized as a very reputed training center in the field of forestry. The issues addressed include Sustainable Forest Management, Participatory Forest Management, Ethnoforestry and Indigenous Knowledge on Forest Management, Joint Forest Management, and Community Forestry. Forest managers, community forestry professionals, grassroots functionaries, researchers and trainers attend training courses from government and non-government organizations across the region.

IIFM has come to be recognized as a neutral and impartial organization involved in policy analysis extending expertise to the State Forest Departments and Govt. of India on key issues of participatory forest management. The Institute has been able to act as a moderator between State Forest Departments and NGOs, on such contentious issues as participation and equity in benefit sharing. Several trainings for NGOs, foresters and community representatives have been organized. These efforts have been remarkably successful to bridge the gap between managers and activists.

IIFM offers two educational programs viz. PG Diploma in Forest Management (PGDFM) for fresh graduates of different streams and M.Phil course on Resource Management (MRM) for serving professionals. The participants of PGDFM under go organizational training in which they produce study reports and the MRM participants, as a part of the curriculum carry out dissertation work and submit a thesis. As Participatory Forest Management/community forestry is one of the focus areas of research at IIFM, substantial work has been carried out in this area though above student's research, guided by the faculty. Since both the courses consist of participants FDM SAARC countries and these participants are encouraged to carry out studies in their respective country situations, IIFM stands benefited of accumulated research experience across the countries in the subcontinent.

Recently, IIFM launched the International Center for Community Forestry. It is a categorical manifestation of collaboration already going on between IIFM and other national and international bodies like RECOFTC, CIFOR, FAO, IUFRO, ITTO, NIES (Japan), Ford foundation, Asia Forest Network, SIDA, IDRC, ADB, World Bank etc.

Course Coordinator

Deep Narayan Pandey joined the **Indian Forest Service** in 1988 after a five-year stint in State Forest Service in Madhya Pradesh, India. Currently he is working as Associate Professor in Indian Institute of Forest Management, Bhopal. He has devoted himself to the cause of the sustainability of forests and livelihood security of indigenous communities. Initiating the participatory forestry in Rajasthan, India, between 1992 and 1999 he mobilized people in 104 villages to form Village Forest Committees. To enhance the capacity of stakeholders he organized 291 village trainings and workshops in which 21,000 men, women, school children NGOs, foresters participated. This resulted in local and State action towards protection of forests, afforestation, people's entitlements to biomass, and environmental protection in ecologically threatened areas. Through participatory forestry Pandey carried out 20162 ha. plantations of indigenous multiple-use species and also distributed 8.55 million seedlings. His other field works include integration of indigenous knowledge with scientific forestry, eco-restoration of mined areas, Village Common Fund, Sacred Grove Conservation, Low-cost regeneration,

Operation Million Neem, and Microplanning. He is also playing a key role in policy and advocacy for participatory forestry in India through National Network on Joint Forest Management, Asia Forest Network and International Network on Ethnoforestry. Apart from several research papers, he wrote 8 books with 26000 copies sold in India and elsewhere. He received the highest national honour in forestry in India, **Indira Priyadarshini Vrikshamitra Award,** given by the Government of India for the year 1994 for outstanding field work. He also won the Hewetson Gold Medal for the Best Forester in 1984, Government Silver Medal for Forest Management in 1987, and Environment award in 1995, given by a leading Indian NGO.

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