



# **FIELD METHODS MANUAL**

## **RANGE PROFILING, BOUNDARY DEMARCATION AND MICROPLANNING FOR JOINT FOREST MANAGEMENT**

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(Top) Sarangi Range field staff from the Orissa Forest Department prepare and discuss profile maps in a village school house. (Lower right) A forest resource sketch map from Limbi, Gujarat Indicates where fuelwood is collected, the location of mahu trees, bamboo groves, and other forest products. (Lower left) A ranger and his section officers discuss management issues during a range profile in Orissa. (Cover photos by M. Poffenberger.)

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## Foreword

For territorial forest officers, transitions to joint or collaborative systems of forest management present challenges. In some ranges or divisions, much of the reserve and protected forest areas may be already under some form of community control or protection. In other regions community forest use may be uncontrolled. In either case, the forester should be in a meaningful dialogue with the forest user communities. The challenge to the forester in moving towards joint management is to establish agreements with user communities regarding mutually acceptable management objectives for state forest lands, specifying management mechanisms to achieve them. In this process, the forester must consider a complex set of issues including existing usufruct rights, economic dependence, knowledge of the forest, institutional capacity, and motivation. Ultimately, the forester is moving towards identifying and formalizing long-term management contracts that link user communities and specific forest tracts. The process involves negotiations between stakeholder groups, ensuring that the allocation of rights and responsibilities are acceptable to those parties dependent on the resource.

Because JFM is not a project but a whole new system of management partnerships, the division and field office staff must reorganize their time and resource allocation procedures to this new set of priorities. But how? This methods manual provides a framework and process to address this question. The manual has evolved over seven years from discussions with divisional forest officers, rangers, block officers, foresters, beat officers, and guards, as well as from the contributions of NGO staff and academics. Early work on JFM range profiling began in the Shivalik Hills in late 1989, lead by the late J.R. Gupta of the Haryana Forest Department. Range profiling methods assisted Guptaji to allocate management responsibilities for microwatersheds and bhabbar grass compartments. Throughout India thousands of community forest protection groups existed, yet few were identified on a map, let alone registered. In 1994, a DFO Design Team was formed to develop a manual for participatory mapping tools for JFM planning specially to meet the needs of territorial staff. While the design team was primarily comprised of DFOs, it also included several conservators, rangers, and outside resource persons. A series of workshops and field trials were held in New Delhi and in forest areas outside Kharagpur, Jhamshepur, Bhubaneswar, and Udaipur. The design team's mission was two-fold. First, to develop an easy-to-use mapping method for JFM planning. And second, to create a process that would bring division and range staff together with communities to share their knowledge and create a common strategy for forest protection and sustainable use. While we hope the foresters who use this manual will find it helpful, the team views it as a work in progress that requires continuing input from field practitioners. The manual provides a source of ideas to build upon.

## Introduction

Much of India's reserve and protected forests are under mounting pressure from unsustainably managed commercial timber extraction, illegal felling, fires, land clearing and over grazing. In many areas forest ecosystems are being over exploited and degraded. Existing regulatory mechanisms are often ineffective in moderating use. Establishing improved access controls is an important step in resuscitating and stabilizing natural forest ecosystems. Access controls are often best imposed by neighboring forest user communities, given forest departments (FDs) with limited field staff.

During the 1970's and 1980's, Indian foresters attempted to collaborate with local forest user communities in initiating joint protection and management of public forest lands. In June 1990, the National Government passed a resolution supporting Joint Forest Management (JFM). Since then sixteen Indian states have passed supportive guidelines for JFM, soliciting people's participation in forest management and honoring community rights to fuelwood (FW), timber, fodder and non-wood forest produce (NWFP) collection from small public areas they undertake to protect. In forging FD-community collaboration, JFM attempts to reverse traditional hostility and conflicting motives that characterize FD-local community relationships.

### **States That Have Issued JFM Facilitating Orders**

Andhra Pradesh, Bihar, Gujarat Haryana, Himachal Pradesh, Jammu & Kashmir, Karnataka, Madhya Pradesh, Maharashtra, Orissa, Punjab, Rajasthan, Tamil Nadu, Tripura, Uttar Pradesh and West Bengal.

Indian Forest Service and state cadre officers, NGOs and local community organizations are developing methods for implementing JFM strategies. JFM necessitates a shift from "output" and "project" orientation to one premised on sustainability and committed to process. JFM emphasizes the participation of local communities in an equitable partnership. In making a transition to this new management system, new participatory planning methods are required to place state forests under collaborative custody.

# **Planning Methods For JFM**

The methods presented in this manual are designed specially to meet the needs of DFOs and their field staff as they attempt to initiate and augment JFM processes. Manual geographic information systems and participatory rural appraisal techniques are used to complement existing inventorying, monitoring and planning methods as FDs begin the transition to participatory management systems.

## **Manual Geographic Information Systems (MGIS)**

While there are numerous mapping methods that can be used in the transition to JFM, MGIS is attractive due to its adaptability and simplicity. The main purpose of MGIS is to create a multidimensional, visual representation of the resource system that can be easily understood by both community members and foresters. MGIS focuses on a process approach to information collection, analysis and updating through the progressive and recurring stages of inventorying, planning and monitoring. MGIS is an effective communication tool that allows FD staff and FPCs to develop a shared understanding of the area being mapped.

## **Participatory Rural Appraisal (PRA)**

Participatory Rural Appraisal tools facilitate collection and analysis of information by and for community members. PRA emphasizes local knowledge and involves communities in the inventorying, monitoring and planning of local forest management. PRA actively empowers marginalized communities, de-emphasizes hierarchies, and helps to identify resource needs and sustainable use systems. Each of the tools provided in this manual is based on PRA.

PRA encourages partnerships within the FD, between the FD and the community, and among community groups. The PRA approach allows for greater dialogue between the FD staff, and facilitates equitable learning and sharing of information among the different levels of the FD-DFO, RO and BO levels. PRA also presents a local picture of resource use by encouraging the community to speak. This is indispensable in understanding community needs and forging alliances between the FD and community. PRA can help create a forum for communities to pursue discussions among themselves concerning their own goals and objectives for the protection and management of forests and other natural resources. The following sections describe how PRA can be applied to range profiling, boundary demarcation and microplanning.

# Participatory Planning Tools for JFM

This manual describes participatory JFM planning tools for range profiling, FPC boundary demarcation and microplanning. It provides tools designed to assist FD field staff in collaborating with Forest Protection Committees (FPCs) and supporting their efforts to protect and manage local forests.

Range profiling involves inventorying forest vegetation conditions and forest use patterns to enable the creation and prioritization of JFM objectives for the range. Range profiling is undertaken primarily by the FD through the use of participatory rural appraisal methods and manual GIS techniques based on 1:50,000 Survey of India topographic maps. The final range profile includes visual representation of the four categories of information at the range level; administrative and ecological, social, management, and ultimately the JFM action plan in an easy-to-use format.

Boundary demarcation is conducted after range profiling and involves the allocation of forest patches within the range to particular community forest user and protection groups who have agreed to manage an identified forest area. Boundary demarcation is undertaken collaboratively by the FD and FPCs at the forest patch and individual FPC levels through the use of participatory rural appraisal methods. The final output of boundary demarcation includes two maps, one that demarcates forest areas protected by FPC at a scale of 1:25,000, and a survey map that shows detailed boundary markers for the forest area under custody of specific FPCs at a scale of approximately 1:5,000.

Microplanning is performed after boundary demarcation and outlines the FPC's plan for forest regeneration, management and equitable use based on community identified priorities. Microplanning is undertaken collaboratively by the FD and the community. The final output of microplanning includes a map that inventories existing forest conditions and uses as well as a microplan that delineates future management possibilities, priorities and agendas.




Range profiling, boundary demarcation and microplanning are levels of a progressive and process-oriented approach to JFM. The suggested sequence is Level I - range profiling, Level II - FPC boundary demarcation and Level III, microplanning. Each level is designed to produce specific outputs necessary for the establishment of effective JFM systems. Each provides continuity and support to the other, creating a progressively detailed management action plan for JFM.

## KEY to Sheet 1 Administrative Boundaries & Forest Condition





### Administrative Boundaries

|          |   |
|----------|---|
| Division |  |
| Range    |  |
| Section  |  |
| Beat     |  |







### Forest Condition

|                     |   |
|---------------------|---|
| Regenerating Forest |  |
| Degrading Forest    |  |
| Barren Forest Land  |  |

## KEY to Sheet 2 Forest User and Protection Groups

|                          |  |
|--------------------------|--|
| Active Registered FPCs   |  |
| Inactive Registered FPCs |  |
| Active Unregistered FPCs |  |
| Potential FPCs           |  |

## KEY to Sheet 3 Management Issues

|   |   |
|---|---|
| Illicit wood extraction<br>(Indicate source areas, routes, and destination) |    |
| a. Heavy felling (Organized Smuggling)                                      | A   |
| b. Moderate felling (Commercial Headloading)                                | B   |
| c. Light felling (Subsistence Headloading)                                  | C   |
| Grazing<br>(Indicate source areas, routes, and destination)                 |  |
| Fire  |  |
| Encroachment  |  |
| FD leased extraction areas  |  |
| Intervillage Conflicts over forest use                                      |  |

## KEY to Sheet 4 JFM Action Plan

### Identifying Management Areas

#### FPC Boundary Demarcation

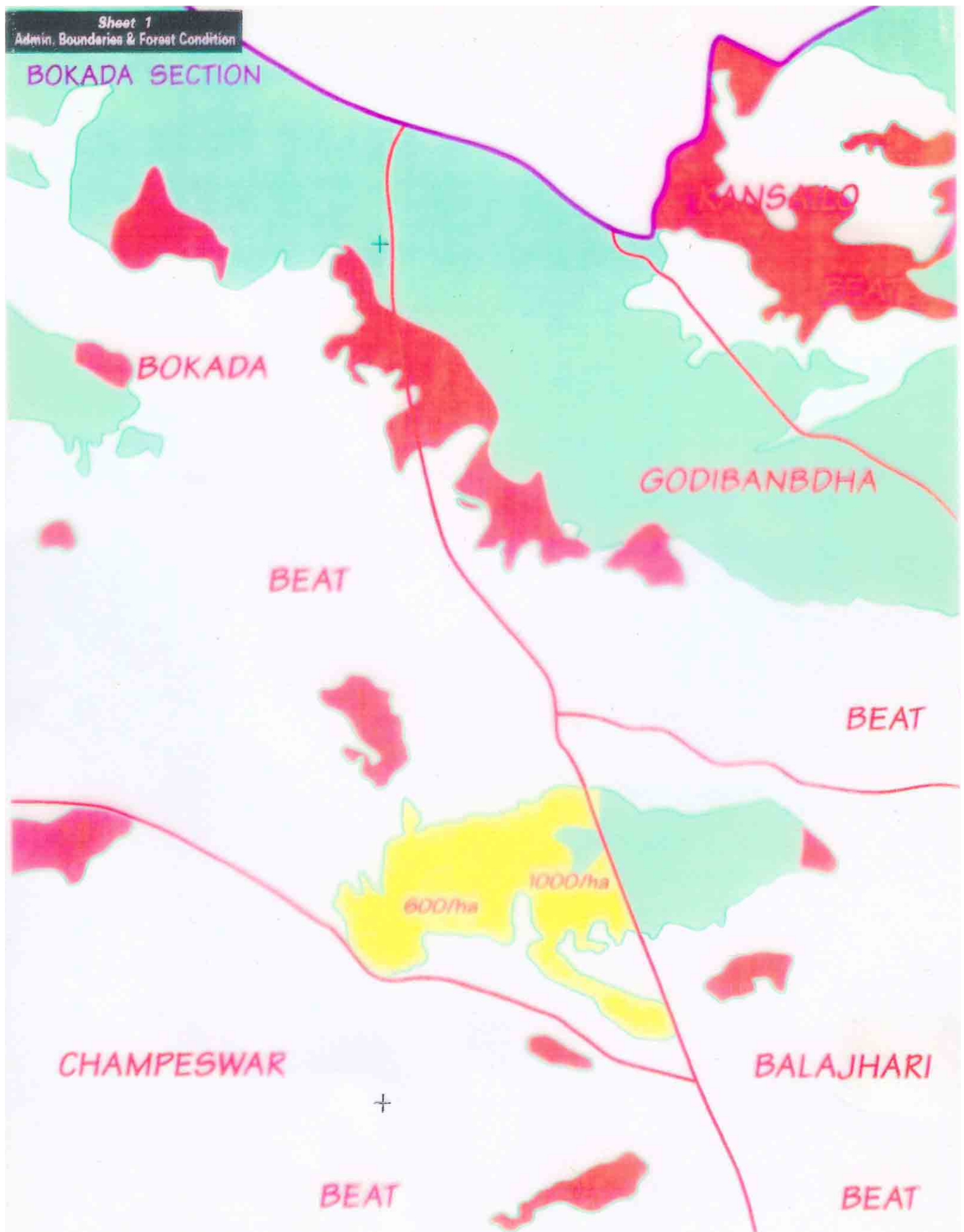
- Step 1: Dialogue with FPC Members 51
- Step 2: Committee Formalization 52
- Step 3: Meet with Neighboring FPCs-  
Prepare Management Area FPC Identification Map 53
- a. Protection P  
        [areas where FD protection support is required]
- b. Mediation M  
        [where mediation is required & proposed date of meeting]
- Step 4: Conduct Ground Survey-  
Prepare FPC Area Identification Map 54

#### Microplanning

- Step 5: Prepare Resource Map 55
- Step 6: Identify and Prioritize Resource Needs 56
- Step 7: Gathering Information, Assessing Capacity,  
and Setting Priority Action 57
- Step 8: Prepare a Microplan and Map 58
- Step 9: FPC Registration 59
- Step 10: Implementation of Microplan 60



BOKADA SECTION



Sheet 2  
Forest User & Protection Groups







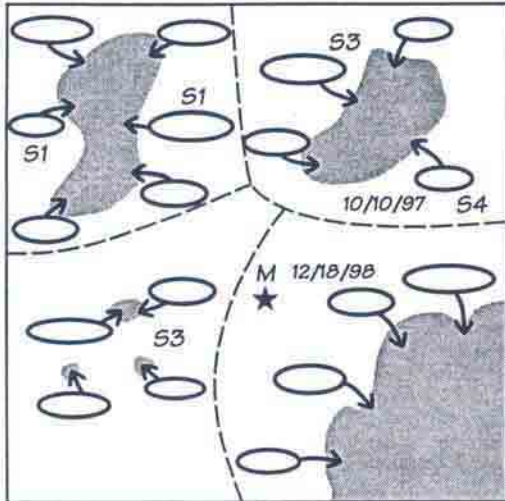




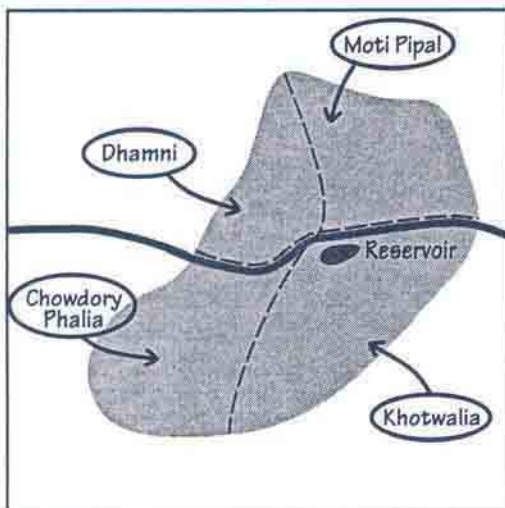
# LEVELS OF PLANNING TOOLS AND MAPS

Level I – Range Profiling

1:50,000

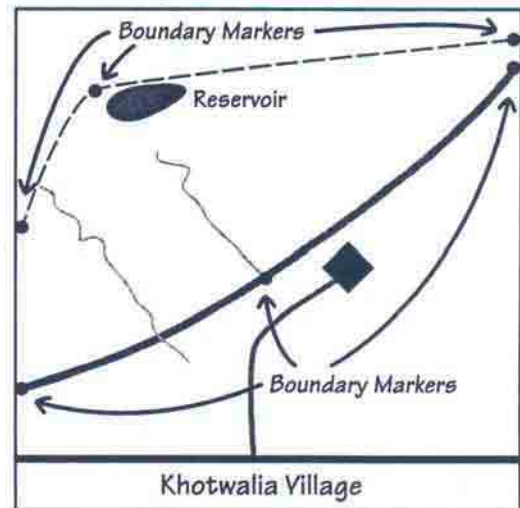


Level II – Patch Boundary Demarcation 1:25,000



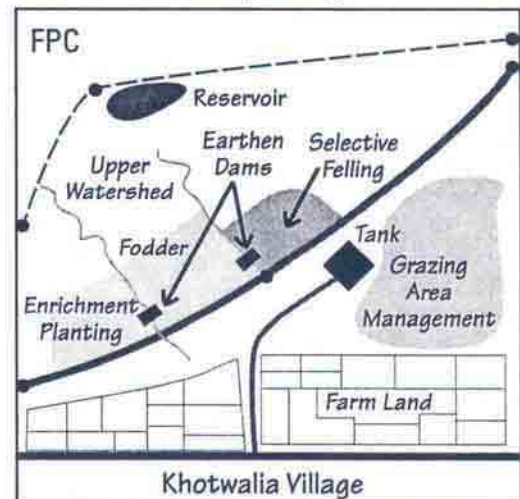
FPC Boundary Demarcation

1:5,000



Level III – FPC Microplanning

1:5,000



# **Level I - Range Profile**

## **What Is a Range Profile?**

A range profile is a creative and adaptive information system developed to provide territorial staff with an action strategy for JFM. Conventional working plans are increasingly recognized to be inadequate for JFM planning and operations. Working plans are often found to be out-of-date, lack detailed social information, and possess inaccurate vegetation data. A range profile is a visual inventory of administrative, ecological, social, and management information of a particular forest range. It is also a tool designed to be used by field staff and their senior officers to identify and record strategic actions needed to accelerate a transition to joint forest management.

The process of creating a range profile facilitates communication between DFOs and their field staff while enabling them to develop a common understanding of the forest conditions, forest user communities, and management issues existing in a particular range. It is an effective tool for communicating information to other forest department staff and maintaining continuity in monitoring and planning procedures, particularly when officers are transferred.

## **Benefits**

Extensive information can be spatially illustrated by using the range profile tool. By recording particular data onto separate acetate sheets the different types of information can be analyzed independently as well as together. As changes occur range profile information can easily be updated either on the existing acetate sheet or by replacing it with an updated version.

## **Output**

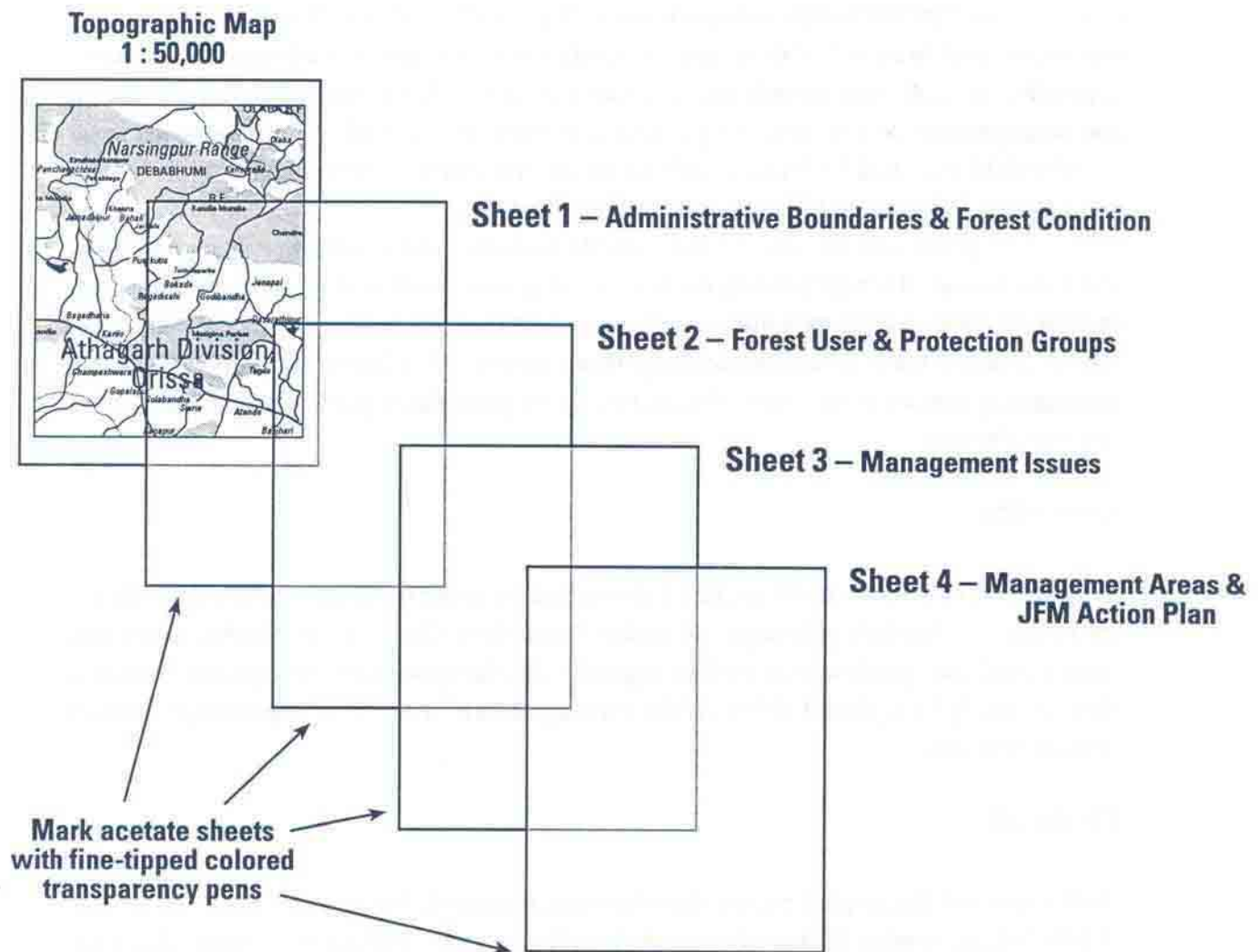
With a manual geographic information system framework, topographic maps, on a scale of 1:50,000, are used as the base for a spatial analysis for joint forest management planning. Four plastic acetate sheets, each containing distinct categories of information, are then overlaid on the topographic map. Together they illustrate administrative, ecological, social and management information and ultimately the JFM action plan for the range.

## **Tools**

Survey of India topographic sheets at 1:50,000 provide the base maps for the manual geographic information system. Topographic maps are easily available from Survey of India centers in all state capitals. We recommend that topographic base maps be laminated to protect them from water and dirt, and to reduce the chances of tearing in the field.

# LEVEL I – CREATING A RANGE PROFILE

## MANUAL GIS MAPPING TOOLS



### ***Benefits***

- Low cost
- Easy updates
- Facilitates common understanding of field reality
- Provides a framework for ongoing planning
- Portable
- Fun to work with
- Convenient format for data collection
- Process oriented



## Sheet 1: FD Administrative Boundaries and Forest Condition

Delineates range, section and beat boundaries along with three general categories of forest vegetation conditions: regenerating, degrading and barren.

## Sheet 2: Forest User and Protection Groups

Inventories and identifies the location of community forest user groups, potential and registered FPCs.

## Sheet 3: Management Issues

Identifies pressures and conflicts on the forests such as overgrazing, illicit timber smuggling, and other disturbances.

## Sheet 4: JFM Action Plan

Shows what steps and activities of the JFM action plan are planned for each particular FPC.

## Materials

Clear plastic transparency sheets at .003-.005mm are best for map overlays. If sheets are not locally available the WWFN in Delhi can be contacted for clear transparency materials. Fine-tipped transparency pens in eight colors (green, red, yellow, blue, black, orange, purple and pink) are needed to indicate codes on transparency sheets. Pens should be non-water soluble to prevent smearing. Clear cellotape is used to attach the transparency sheets to each other and to the topographic base map. Plywood board (1cm x 70 cm x 70 cm) can provide a useful mobile writing surface. Writing boards can be equipped with clamps and string handles to make it easier to secure the maps and carry in the field.

## **Activity 1: Orientation to Range Profile Method**

Creating a range profile requires time and careful planning. The process involves all levels of field staff and eventually community members and possibly local NGOs working on community forestry. Before developing a range profile we suggest that DFOs carefully read through this manual to understand how a range profile facilitates implementation of the JFM action plan. After reading the manual the DFO can use the activities in Level I as a guide for training field staff in the range profile method.

The DFO might begin by briefing his range officers about the range profiling tools during the monthly staff meeting. He can start by asking his staff to describe the types of maps they are currently using for their work and the information they have on them. Then he gives them a description of the Range Profile methodology explaining objectives, materials used, data to be collected, recording process, and analysis and planning procedures. Then summarize how decisions will be made using this information.

After explaining the range profile method and objectives the DFO can ask his staff to spend the next month observing conditions in their territories, and he requests them to be prepared to record the information in the range profile framework at the next meeting. It is often helpful to ask one range officer to volunteer to work with the DFO to prepare maps for his or her range to demonstrate the methods to other ROs. The officer may collect information for and prepare Sheets 1 and 2 and present them at the second staff meeting (see Activity 2).

## **Activity 2: Creating A Range Profile**

At the next staff meeting, the RO can present the maps of his range describing vegetation conditions (Sheet 1) and forest user groups (Sheet 2). Based on analysis discussions by the ROs and DFOs, management issue maps (Sheet 3) and a JFM action plan (Sheet 4) may be prepared. The other ROs may then begin preparing maps of their own ranges. The description below explains in detail the base map and the types of data and analysis illustrated on each of the four sheets that compile the range profile. Categories and the corresponding color codes have been indicated. The methods and categories used are flexible and can be adapted for specific requirements.

### **Base Map: Survey of India Topographic Sheet 1:50,000**

The Survey of India topographic maps at 1:50,000 are useful as a base map for range profiling as they provide the names and locations of most settlements, roads, hills, railways, canals and rivers as well as public and community forest boundaries - all information necessary for developing a detailed range profile. In some cases a range will cover

two or more topographic sheets. Forestry field staff may find it helpful to fold the sheets to show the boundary of a section or even a beat. At these smaller sizes the maps are much more manageable and allow officers at the section and beat levels to focus on their areas. Once they have completed a profile of their area the beats and/ or sections can be laid next to each other to delineate the entire range profile.

## Sheet 1: FD Administrative Boundaries and Forest Condition

Sheet 1 is used to indicate administrative boundaries and forest conditions. Administrative boundaries, range, section and beat, are important because they indicate who has formal responsibilities for forest management. These can be copied from existing forest department and revenue maps. However, it is important that division, range, section, and beat boundaries accurately indicate all forest areas and user communities within them. Division boundaries are indicated in yellow, range boundaries in black, sections in blue and beats in red. The name of each territorial unit should also be indicated (see example of range profile).

| <b>Key to Sheet 1: Administrative Boundaries and Forest Condition</b> |                    |
|---|--------------------|
| <b>Administrative Boundaries</b>                                      | <b>Color Codes</b> |
| 1. Range  | Black line         |
| 2. Section  | Blue line          |
| 3. Beat   | Red line           |
| 4. Division   | Yellow line        |
| <b>Vegetation Condition</b>   | <b>Color Codes</b> |
| 1. Regenerating Forests   | Green shading      |
| 2. Degrading Forests  | Yellow shading     |
| 3. Barren Forest Land   | Red shading        |

The objective of forest condition information is to identify *regenerating*, *degrading*, and *barren* forest areas and the level of exploitation taking place within them, providing field staff with a visual picture of the location of these types of forest. In eastern India, DFOs and rangers find the following categories useful:

Regenerating forests (shaded in green) - typically have controlled access and visual evidence of regeneration occurring. Regeneration may be identified by the appearance of healthy coppice growth, new seedlings, good grass production, and an absence of signs of hacking and cutting.

Degrading forests (shaded in yellow) - generally have good root stock, top soil, and/ or mother trees. Though degrading forests may have some access controls, they are classified as degrading because it is determined that the level of exploitation is unsustainable. However, the yellow shading indicates that the forests will recover with protection alone. In Bengal, foresters considered areas that had more than 500 healthy coppicing stools of *Shorea robusta* per hectare to have good natural regeneration potential.

Barren forests (shaded with red) - areas that have suffered severe degradation. This is often characterized by loss of top soil and the removal of root stock. Severely degraded forests typically require capital investments in the form of intensive planting and soil water conservation measures.

Since each forest ecosystem differs, the mapping team should agree on the characteristics that classify a forest as one of the above three types. The team may want to do a preliminary classification of forest conditions based on prior knowledge of site conditions. The team should conduct field visits to all forest patches identified to cross-check their classification against the actual characteristics and levels of exploitation. Additional data can be recorded in written notes on Sheet 1 or separately. This may include the age of the regenerating forests, the number of coppicing tree stools per hectare in degraded forest tracts, or the dominant species present.

Forest condition data should be updated every 1 to 2 years. This allows the forest officers to monitor whether the amount of regenerating forest is increasing. It also assists the forester in prioritizing certain degraded forests with high regenerative potential for better protection.

## Sheet 2: Forest User and Protection Groups

Sheet 2 is used to identify the location and forest use activities of communities that are stake-holders in forest management. While mapping this type of social information is not a common practice within the forest department, it is a very important tool that aids field staff in identifying all forest user communities and the potential they may have for participating in JFM. In some cases, these may be communities that have protected forests for years; others may be communities that have no organized protection system but are using the forest. All user communities are part of the larger picture and need to be identified on the range profile map. It may be necessary to write in the names of new hamlets and villages, or migratory communities that are not indicated on the toposheet.

Villages with active forest protection committees (FPC) are circled in blue. A broken line blue circle may be used to indicate FPCs that are protecting, but have not been registered with the PD. In villages where protection has been going on for some time, note the year protection began. Inactive registered FPCs are circled in red. Villages that do not have organized FPCs, but whose members use the forest, are identified as potential FPCs and circled with a broken purple circle.

Identifying the protection status of each forest user community provides a clear picture of the relationship between community protection and *forest* degradation and *re*-generation. Regenerating forests, identified by green shaded areas on Sheet 1, are often bordered by communities active in forest protection, indicated by blue circles on Sheet 2.

### Key to Sheet 2: Forest User and Protection Groups

#### Forest User Groups

1. Active FPC

2. Inactive Registered FPCs

3. Potential FPCs

#### Color Code

Broken Blue Circle

(solid blue circle indicates registered)

Red Circle

Broken Purple Circle

## Sheet 3: Management Issues

Mapping management issues provides DFOs, range officers and their field staff with a point of reference on which to build a shared understanding of the pressures and conflicts over forest use in their jurisdictions. Identifying on the map the location of pressures on the forests, including intervillage conflicts over forest use, provides field staff with a spatial tool to monitor these situations and prioritize where to intervene.

While field staff may have a good idea of management issues in their area it is important that they consult with forest user communities. This will give a more complete and accurate picture of existing conflicts and pressures impacting the forest. Sheet 3 should be updated as further information is gathered and new management issues emerge. Information documented on Sheets 1 through 4 can be complemented with written notes.

Indicate forest pressures on Sheet 3 including legal and illicit timber extraction, NWFP collection, and livestock grazing with the symbols provided below, or create your own symbols to represent important local management problems.

Illicit Timber Extraction (red arrow) - this is one of the most serious pressures on the forests. The three major types of illicit wood extraction are delineated below. A red arrow indicates the source of the pressure and the area affected; letters designate the nature of the problem.

Heavy Illicit Felling (“A”) - use a red “A” to indicate illicit felling by organized timber smugglers. These operations often use trucks and generally target well-stocked forests with commercially valuable species. Unable to protect against organized smugglers, particularly when they are armed, community forest protection groups often require forest department assistance.

Moderate Illicit Felling: Commercial Headloading (“B”) - use a red “B” to indicate illicit wood extraction carried out in areas where small diameter trees and branches are cut for fuelwood by local people. Where this type of operation occurs it may involve large numbers of people taking 20 to 30 kgs of wood per day per person. Working with commercial headloading communities to stabilize forest use requires not only education, but also exploring alternative sources of forest-based income. Since women are usually the collectors, field staff and community organizers need to be able to communicate effectively with them.

Light Illicit Felling: Subsistence Headloading (“C”) - use a red “C” to identify areas where illicit felling for subsistence use involves cutting of green trees. Depending on extraction levels, some adjustments in use may be necessary. Community organizers and forest department field staff may need to establish a dialogue with other community members to assess extraction levels in relation to yield. If harvesting guidelines are not already in place, they may need to be established to ensure a sustainable flow of fuelwood. Enrichment planting may also be necessary or temporary closure to allow regeneration to occur.

Grazing (purple arrow) - map grazing routes and heavily grazed areas with a purple arrow including those forests used by both distant seasonal pastoralists and local communities. Where local communities are over-grazing forest lands, hold discussions

### Key to Sheet 3: Management Issues

#### Forest Pressures and Conflicts

|   | Code         |
|---|--------------|
| 1. Illicit wood extraction<br>(Indicate source areas, routes and destination) | Red arrow    |
| Heavy felling (organized smuggling)   | A            |
| Moderate felling (commercial headloading)                                     | B            |
| Light felling (subsistence headloading)                                       | C            |
| 2. Grazing<br>(Indicate source areas, routes and destination)                 | Purple Arrow |
| 3. Fire (frequently affected areas)   | Red dots     |
| 4. Encroachment   | Blue dots    |
| 5. FD leased extraction areas   | Purple dots  |
| 6. Intervillage conflicts over forest use                                     | Red star     |

with user groups regarding possible shifts to stall feeding, rotational grazing, or other sustainable management systems.

Fire (red dots) - identify areas prone to fire, especially areas with repeated burning that retard regeneration and are destroying forest. Note information regarding the causes of fires on the map or a separate note sheet. Discuss with communities ways to reduce the incidence of fires and methods to control burns when they do occur. Communities can also apply social pressure on individuals who are involved in causing fires and they can impose fire prevention regulations and set fines.

Encroachment (blue dots) - indicate areas that are being encroached for agricultural purposes. The reasons for encroachment should be noted and solutions developed with community forest user groups to halt further encroachment in forested areas.

FD Leased Extraction Areas (purple dots) - map areas that have been leased out by the forest department for timber extraction or NTFP use. Identify these areas and monitor them closely to see that proper use practices are being followed. Where outside contractors are involved, communities may have opinions about the appropriateness of current use and how it may be improved. When possible, keeping contracts within the local community can help curb illicit timber extraction.

Conflicts (red star) - use a red star to indicate communities with intervillage conflicts over forest use and carefully monitor them. Supplementary notes on each conflict situation should be kept to identify the nature of the conflict and who the key actors are, and to design a mediation strategy. Often it is appropriate to schedule meetings between affected parties to discuss ways of resolving the conflict.

After demonstrating how Range Profile Sheets 1-3 can be prepared and analyzed for one sample range, the DFO can assign all ROs to begin preparing Range Profiles. Give each range and section officer a set of pens, note pads, topographic maps of their area, and plastic overlay sheets. Staff should begin recording range profile information on Sheets 1-3 over the next 1 or 2 months. This includes the existence of informal or registered FPCs, or groups that have expressed interest in forming FPCs, as well as current forest cover for each forest patch. The DFO may want to visit the range office to meet with field staff during this time to answer questions regarding data collection and to meet with communities. The DFO sets the time for the next meeting.

### **Activity 3: Determining JFM Action Plan**

During Activity 3 each participating RO or forester presents their maps to the DFO. Each range and section officer is asked to describe the information they collected on Sheets 1-3. The data collected is analyzed by the entire group, and management areas and JFM action plan activities are identified and recorded on Sheet 4 for each range. It is important to make it clear that range profiling is an ongoing process. Once the process has been started the range profiling maps are used for ongoing monitoring and planning among DFOs, their field staff and local forest user communities. Sheet 4 should be referred to at subsequent staff meetings to discuss actions taken, ongoing problems, and future actions. This sheet should be updated periodically.

### **Sheet 4: JFM Action Plan**

The JFM action plan involves identification of management areas, boundary demarcation [see Level II], and microplanning [see Level III]. Each of these activities and the 10 steps involved in them are planned and recorded on Sheet 4. Implementing the JFM action plan may require a number of years of organizational development. Field staff must carry out a range of activities to facilitate the formalization of FPCs and to support their efforts as functional managers of the forest. Specific activities depend on which step of the action plan the FPC is in. The step number should be written in blue on Sheet 4 with the date of the activity indicated. When FD mediation and protection support is required, these are also indicated in the appropriate place on Sheet 4.

At each subsequent monthly Range Office meeting, the foresters can bring their range profile maps and report on recent management issues emerging and the progress they have made in taking planned actions. Discussions should be held regarding changing priorities and strategic needs.



## Key to Sheet 4: JFM Action Plan

|   |                          |
|---|--------------------------|
| <b>Identifying Management Areas</b>                                     | <b>Green broken line</b> |
| <b>FPC Boundary demarcation</b>   |                          |
| Step 1: Dialogue with FPC members                                       | S1                       |
| Step 2: Committee formalization   | S2                       |
| Step 3: Meet with neighboring FPCs                                      | S3                       |
| - prepare management area FPC identification map                        |                          |
| a) Protection (areas where FD protection support is required)           | Red P                    |
| b) Mediation (where mediation is required and proposed date of meeting) | Blue M                   |
| Step 4: Conduct ground survey   | S4                       |
| - prepare FPC boundary demarcation map                                  |                          |
| <b>Microplanning</b>  |                          |
| Step 5: Prepare resource map  | S5                       |
| Step 6: Identify and prioritize resource needs                          | S6                       |
| Step 7: Gathering Information, Assessing Capacity and Setting Actions   | S7                       |
| Step 8: Prepare a microplan and map                                     | S8                       |
| Step 9: FPC registration  | S9                       |
| Step 10: Implementation of microplan                                    | S10                      |

### **Range Profiling: A DFO's Experience**

The Orissa Forest Department staff of Atgarh Division have done pioneering work in developing range profiling methods. Under the leadership of DFO Sanjeev Chadha, rangers, section officers, and beat officers began developing section maps using these tools in 1995. Chadha called his staff together for a series of meetings, orienting them to the program, and then opened the discussion to obtain their Ideas. Over the coming months, the entire Division office mobilized and began collecting social and vegetation data, Identifying where FPCs were or could be protecting forests. The staff mapped all ranges in the division using Survey of India base maps on a scale of 1:50,000. Through this process the staff created a new JFM Information system and support strategy for forest dependent communities living throughout Atgarh Division.

According to the DFO, “The JFM planning process really helped to Identify action priorities. It allowed us to better identify the villages to be involved as FPCs. The methods are so simple that even forest guards can understand them. The planning process brings the knowledge of the field staff together. We use the maps to open discussions of problems and issues. This facilitates two-way communication and overcomes constraints due to Forest Department hierarchy. The range profiling process allows us to build a JFM action plan together, so that we have a consensus and uniform understanding regarding the JFM program strategy among all field staff. Having range profile maps indicating the locations of FPCs, protected areas, regenerating forests, and FD activities also provides a record of our work that can be passed on during staff rotations.”

After the Atgarh DFO had successfully created profiles of all the ranges within his jurisdiction he found it useful to put all the range profiles together creating a detailed picture of the entire Division. With this larger spatial depiction of his Division the DFO and his field staff are able to easily identify the management issues that cross range, section, and beat boundaries. When developing management plans they are able to see how a project in one area may effect the neighboring range, section, or beat. Based in part on the impressive work of the staff of Atgarh Division, the Orissa Forest Department is extending range profiling activities throughout the state.

## Activity 4: Identifying Management Areas

Before proceeding to Level II and III of the manual, DFOs and field staff should analyze the range profile information on Sheets 1-3 to determine preliminary management areas. Once identified, management areas should be illustrated on Sheet 4. If dialogue with FPCs reveals that management areas identified by FD staff do not conform to field realities the groupings should be changed.

### Management Area Identification Criteria

Forest lands often exist as isolated patches varying in size from several hundred to several thousand hectares. Around each forest patch 5 to 30 or more villages are typically settled. To assist the field staff in identifying community management areas, an attempt should be made to group user communities that interact around common patches of forest. Management area identification should be cross-checked with forest user communities in the area to ensure that all stake-holding communities are included. Management areas may cross range, section and beat boundaries.

If properly identified, the management area may become a useful unit for holding meetings regarding management issues impacting the entire patch of forest. FPC representatives from the management area may meet together to resolve disputes, discuss boundary demarcation issues, and may eventually formalize as a federation organization.

#### **Priority Ranking for Management Areas Based on JFM Potential**

- 1) Areas with regenerating forests that have several active FPCs or communities that want to form an FPC
- 2) Areas with mostly degenerating forests and communities that want to protect with protection support from FD
- 3) Areas with degenerating or barren forests and communities that are not protecting due to disinterest or conflict

### **Agreements on Territorial Rights and Responsibilities**

Forests have often been the victims of intervillage conflicts that sometimes result in mass looting of ten or even hundreds of hectares of forests. Recently, in Dhenkanal Forest Division in Orissa, a dispute arose between two neighboring villages, Atinda and Kendupada. Atinda had allocated the labor and organization to protect a forest area and over a 20-year period successfully brought it back from degraded to productive forest. Once the forest regenerated the Kendupada villagers complained that they had traditional rights along with several other villages to these forests. Atinda countered that the rights were to forest products and that by the 1970's those products were completely exhausted, therefore Atinda should have exclusive rights to the newly regenerated forest area. To avoid conflict Atinda promised it would only protect and not exploit the forest. This type of conflict is not uncommon. As long as FPCs do not harvest forest products commercially, there is less friction. However, if felling is initiated, there is considerable potential for disputes over previously shared usufructs. It is therefore important for all forest user communities to reach an agreement on territorial rights and responsibilities as early as possible, preferably from the time protection is initiated.

## **Level II - Boundary Demarcation**

### **What is FPC Boundary Demarcation?**

FPC boundary demarcation is an important part of the formalization of FPCs as functional managers of forests. The goals are to define and legitimize forest boundaries that are appropriate in size and location and that FPCs and other forest user groups agree to and respect. To meet these goals, neighboring FPCs and other forest user groups must first come to a joint agreement on forest area boundaries, and, with the facilitation of FD staff, create a Patch Boundary Demarcation Map at a scale of 1:25,000. This map is then used to guide a team of FPC members and FD staff in conducting a ground survey to map each individual FPC area to a scale of 1:5,000. Easily recognizable reference points should be drawn on the map so that it is understandable to both the FD and FPC members.

Boundary demarcation is a pivotal part of the entire JFM action plan because it is the first collaborative activity between the FD field staff and community members; it encourages FPCs and other forest user groups within an identified management area to work together, cooperate with one another and to respect each other's forest area boundaries; and it defines and legitimates the area of forest that an FPC Will be responsible for protecting and managing, giving FPCs a sense of ownership and responsibility. Success with boundary demarcation will set the tone for further JFM collaboration.

### **Benefits**

Boundary demarcation encourages cooperation between FPCs within a management area and involves them in defining the forest area under their management. By formally mapping and legitimizing FPC areas, boundary demarcation builds trust between FPCs and the forest department.

### **Outputs**

The final outputs of boundary demarcation include two maps: (1) a Patch Boundary Demarcation Map at 1:25,000 that shows the general boundaries agreed upon by FPCs accessing a common patch of forest; (2) an FPC Boundary Demarcation Map at a scale of 1:5,000 that combines community identified reference points with a ground survey to finalize boundary markers and map them to scale, creating a boundary map that is useful to both FPC members and Forest Department staff. The FPC Boundary Demarcation Map is then used as a base map for developing a microplan map in Level III.

### **Tools**

Meetings with forest user and protection groups allow all stake-holders, FD field staff and FPC members from neighboring villages to share information, identify problems, negoti-

ate conflicts and reach a shared agreement on preliminary FPC boundaries. Ground surveys finalize boundary markers and map the protected forest area to scale, producing the FPC Boundary Demarcation Map.

## Materials

Survey of India toposheets blown up to approximately 1:25,000 provide a visual depiction of major land marks and the location of FPCs surrounding the forest patch. This map shows the broad division of forest management responsibilities. Pens and paper are used to map the individual FPC boundaries as a ground survey is conducted. Red paint is used to clearly identify boundary markers so they are recognizable to FPC members and neighboring forest user groups.

### **Boundary Demarcation in Bokada Village**

Bokada is a heterogeneous village of 724 harijan and other caste residents in Bokada Section. Bokada Beat in Narasinghpur Range. Bokada communities began organizing to protect the Tulsibania Keshra Forest with FD facilitation around 1987. The JFM action plan, including boundary demarcation and microplanning, was completed in 1995. The official demarcation area is 200 hectares, according to the Orissa JFM Resolution. However, traditional community boundaries extend beyond the JFM area allocated to Bokada and community members continue to informally protect the high forest up to the Kundia Mundia ridge. (See FPC Boundary Demarcation Map.)

Bokada was the first village in the southern Tulsibania Khesra Forest patch to begin organizing and protecting. Other villages around the patch followed their example and began protecting neighboring forests. The process of boundary demarcation was instrumental in resolving conflicts among neighboring villages and initiating agreements whereby FPCs limit their activities to their own area. In 1995 the FD and communities formed a federation of 11 neighboring FPCs, helping to unite and strengthen protection and management.

## **Step 1: Dialogue with Village Members**

Step 1 of boundary demarcation involves meeting with community members to determine whether forest protection has begun and to discuss JFM objectives. The following guidelines will assist field staff in this task.

## When Forest Protection Is Already Taking Place

- Identify the *area* and *legal* status (keshra, protected, or reserved forest lands) of the area being protected.
- Clarify the membership and structure of the existing committee which supervises the protection efforts. Who is the Chairperson, Secretary, Treasurer, etc.?
- Who is included and who is excluded from forest protection efforts? Why? How do women contribute?
- Determine if any conflicts exist including intervillage and intravillage, and the nature of the conflict (i.e., politics, boundary dispute, restriction of access, theft, encroachments, court cases, harassment). How are village members dealing with existing conflicts?
- What if any rules and regulations have been established by the village members to regulate access, meeting forest-based needs, benefit distribution?
- Explain JFM and the action plan. Including JFM State Resolution's criteria for FPC and EC formation. Discuss whether the village members would like to continue with the old committee or if they would like to reconstitute the committee to comply with the State JFM Resolution criteria. Explain how this would change the existing committee.
- If village members choose to retain their existing committee, discuss with them how you can support their efforts to protect and manage the forests.
- Discuss the area of forest the FPC will manage. Determine the existing area under protection. Is it appropriate given the size and location of the village? Can the village effectively protect and manage the area? Do they need more or less area? Is the area they are claiming used or protected by a neighboring village? Are neighboring villages involved in protection?

### **When Forest Protection Is Absent**

- Discuss JFM with leaders and other members of the village to determine whether they are interested in organizing a forest protection committee.
- Explain the JFM action plan to village members including committee formation criteria, boundary demarcation, and development of a micro plan and registration. Discuss with village members the objectives of JFM and their rights and responsibilities. It may be useful to coordinate a visit for village members to a community that has an active FPC.
- Identify the *area* and *legal status* (keshra, protected, or reserved forest lands) of the forest area village members now access. Be sure to speak with both women and men, as well as with different caste and tribal groups.
- Discuss the area of forest the village will be responsible for. Determine the appropriate size and location. Can the village effectively protect and manage the area? Determine if the area is used or protected by a neighboring village.

## **Step 2: Committee Formalization**

When village members express an interest in either forming an FPC or reconstituting an existing one to meet State JFM Resolution criteria, field staff can assist them in this process. It is essential that village members clearly understand the State JFM Resolution criteria. Field staff should impress upon village members the importance of having broad community participation within the FPC and on the executive committee (EC), including lower castes, adivasis and women.

Once the committee chairperson, secretary and treasurer are chosen, field staff should identify an appropriate period of time for newly formed FPCs to demonstrate an ability to control forest access effectively. One DFO in Orissa has suggested at least 6 months to observe protection efforts before proceeding with boundary demarcation and microplanning. This allows time for the village as a whole to work together and to resolve any intravillage conflicts that may arise as a result of forming an FPC. It also allows time for communication with neighboring villages.



## **Step 3: Meet With Neighboring FPCs**

### **- Prepare Patch Level Boundary Demarcation Map**

When one FPC has formed an EC according to the JFM State Resolution criteria and has demonstrated an ability to control forest access, field staff should organize a meeting with neighboring villages in an effort to reach a preliminary agreement regarding FPC boundaries. It may be necessary to include other user groups such as members of villages that have traditionally accessed the same forest area, but do not border it, or migratory communities that are seasonally dependent on the forest. It is best to involve all forest user groups at this stage so that forest use agreements can be negotiated in an effort to minimize conflicts in the future. When field staff plan a meeting among neighboring villages and other forest user groups, the location and proposed date should be indicated on Sheet 4.

This meeting also provides an opportunity to conduct Step 1 discussions with other villages within the management area and to determine their interest in formalizing their *own* FPC. Field staff should inform other villages of the intention to formally demarcate FPC areas. This will provide incentive for them to cooperate and attempt to reach a compromise on FPC boundaries.

## **Mediation**

When conflicts exist within the community, between user communities, or with some outside group whether it is a contractor, local government office, or the Forest Department, mediation may be required. Conflicts identified on Sheet 3 of the Range Profile indicate where mediation is necessary. Field staff should indicate on Sheet 4 where mediation meetings should be held by identifying them with a blue “M”. The dates for the mediation meeting should also be given on the map. When conflicts occur within an FPC or between villages, or with the FD, a field staff person trained in mediation should visit the affected communities to discuss and attempt to resolve the problem. He should report the findings of the discussions to his superior officer for follow-up actions where necessary.

## **Protection**

In areas where organized illegal logging is present, protection support should be provided by the Forest Department in consultation with the relevant forest protection committees. Forest protection committees alone may not have the resources or experience to guard against organized gangs of loggers, especially if they are armed. In some cases, police assistance may also be required. Protection strategies should be discussed with FPC members. Dates for meetings to discuss protection with the FPC should also be indicated on Sheet 4 of the range profile. Areas requiring protection should be identified on the map with a red “P.”

### **Traditional Forest Area vs. JFM Area**

State JFM Resolutions often set a ceiling on the amount of forest land that can be allocated to anyone FPC. In some areas fixed amounts are necessary so that each FPC bordering the forest is allocated a forest area. However, there are many cases where JFM forest areas are smaller than the area traditionally protected and managed by the FPC, leaving large plots of forest without any formal agreement for protection and management. Bokada village, for example, protects all forest land up to the top of Kandia Mundia Mountain, extending beyond the area allocated to them through JFM agreements. In such cases, the FD should encourage the community to continue its protection work or share it if neighboring villages are ready to protect and do not have an allocated forest area.

There are also cases where small villages are unable to effectively protect the entire area they have been allocated through JFM agreements. Often this results in further degradation leading to barren forests that require high capital inputs to regenerate. Flexible guidelines for the allocation of forest lands through JFM agreements are therefore suggested so that each FPC is allocated an appropriate forest area which they can effectively protect and manage.

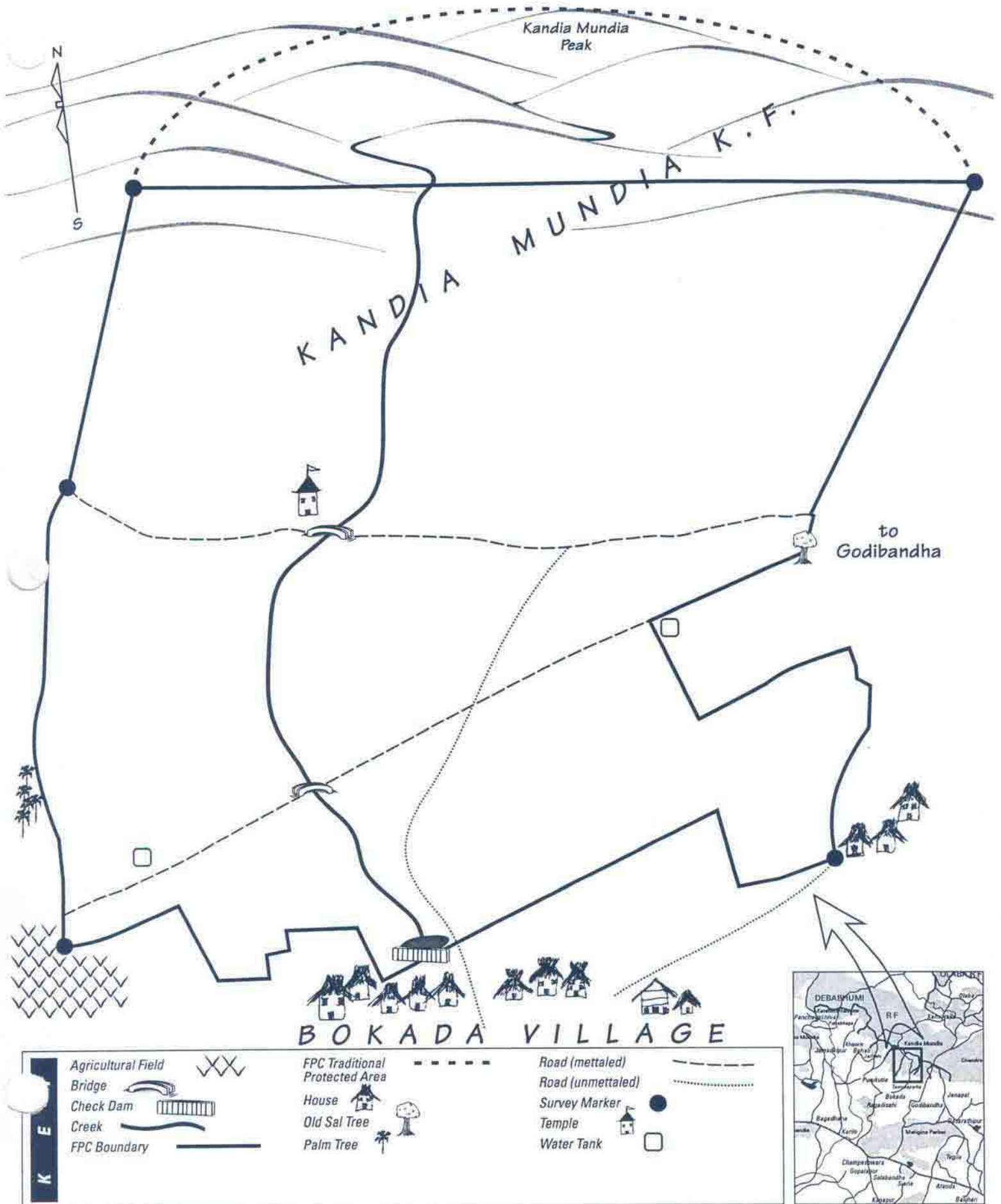
## **Patch Level Boundary Demarcation Map**

If there are no conflicts, or when a compromise has been reached, neighboring FPCs and field staff can prepare a Patch Level Boundary Demarcation Map delineating general boundary agreements (see example). Using a xerox copy of the toposheet illustrating the management area blown up to approximately 1:25,000, members from each of the neighboring FPCs should identify and agree upon landmarks such as creeks, hills, mountain ridges, large trees, roads, etc. that distinguish areas. Using these landmarks as a guide a general boundary line can be drawn on the toposheet. The Patch Level Boundary Demarcation Map provides a macro view of the management area allowing each FPC and other user groups to gain a broad perspective on the management issues impacting their forest area.

While rough agreements over boundaries may be sufficient for dividing each community's forest area, a formally defined division will be necessary to avoid conflict between neighboring FPCs if valuable timber and NTFPs are harvested or if other legal issues arise. Once a preliminary boundary agreement is reached between neighboring villages, field staff should begin formally mapping each FPC's area. The Patch Level Boundary Demarcation Map is used as a guide for specific FPC boundary demarcations.

# FPC BOUNDARY DEMARCATION MAP (scale – 1:5,000)

## Bokada FPC (Area : 200 hectares)



## **Level III - Microplanning**

### **What Is Microplanning?**

Microplanning generates a resource management strategy for a small area. Villagers and foresters work together to improve management through institutional and technical innovations. The method recognizes local knowledge, emphasizes local agendas and relies on community participation. The concept has emerged out of the failure of large scale, centrally planned development schemes and projects. Microplanning questions the validity of planning based on data collected from a large area, processed at non-local levels, and often structured to suit the purpose of the planner rather than the local communities' needs and priorities. The output that emerges from such centralized planning is often inappropriate to existing micro field situations and constrained by a target-oriented approach, budget limitations and project completion deadlines dictated by the institutions making the capital investments. Under these types of constraints the microplanning process is often hurried and perceived as a process that generates physical structures such as tube wells, dams, buildings and roads, rather than providing guidelines and continual support for community forest management efforts.

Unlike centralized planning, the goal of JFM microplanning is to prepare a forest management plan of action in collaboration with FPC members, or a cluster of FPCs within a management area, based on a realistic assessment of local needs, resources and constraints. Microplanning involves identifying the various community perspectives on resource needs, prioritizing these needs through group discussion and compromise, determining appropriate actions and mapping and scheduling them. JFM micromanagement plans will identify areas for controlled forest use, complete closure, plantations, gap planting, etc. Microplans outline harvesting systems and produce sharing mechanisms. Participatory mapping tools are used to construct visual representations of the resource area and the activities planned.

Management options generated through participatory microplanning methods may be in conflict with management prescriptions dictated under the existing working plan. Asia Forest Network is making an effort to integrate these two vital planning processes, though at present there is no formalized mechanism or procedure. We suggest that DFOs work with their supervising officers to revise working plans so that they can incorporate the microplans that are generated through collaborative efforts with FPCs.

### **Benefits**

Microplanning produces an action plan appropriate to the specific resource needs and constraints of a particular FPC. It involves FPC members in the preparation and implementation of an action plan and facilitates collaboration and trust between FPCs and the FD.

## Outputs

The final outputs of microplanning include a resource use map based on community perspectives, a list of community identified and prioritized resource needs, and a microplan map that illustrates the location and type of projects planned.

## Tools

A forest resource map is a tool for locating and inventorying existing vegetation and forest production systems from the communities' point of view. Relevant information is recorded by FPC members using locally available materials that community members are comfortable using. The final version is copied onto an acetate sheet, using the FPC boundary demarcation map as a base map. We recommend that the resource mapping exercise be repeated with different social groups, including lower caste, adivasis and women. As women are generally the fuelwood collectors it is essential to get their point of view on fuelwood availability and sources.

Creating a microplan map is done in collaboration with FPC members through village level and focus group meetings. Resource needs are determined and management priorities discussed. Resource Sheet 1 illustrates the existing characteristics of land use. Microplan Sheet 2 identifies what activities will be taken up and where.

## Materials

Locally available materials can be used to create the resource and microplan maps.

Ground or floor: Chalk, sticks, stones, leaves, etc.

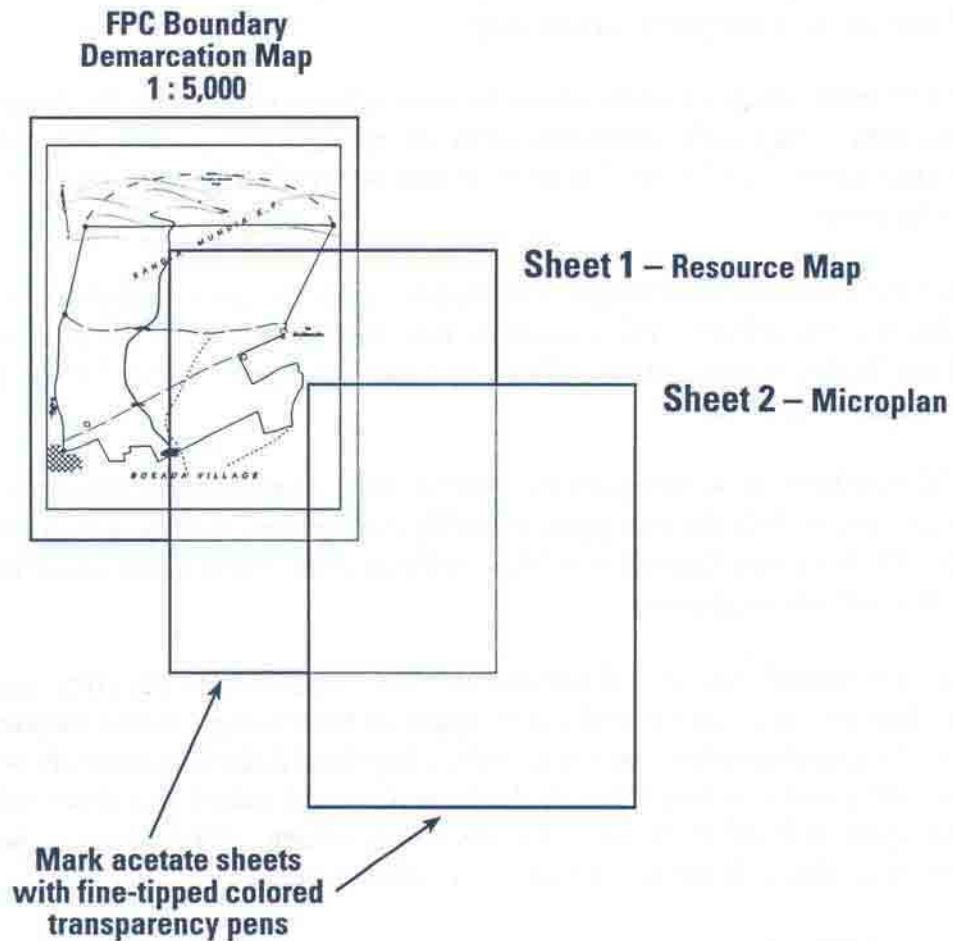
Paper: Pencil, pens, etc.

## Step 5: Participatory Resource Mapping

Participatory resource mapping involves FPC members in creating a visual representation of the resources that they use. Using the FPC Boundary Demarcation Map as a base, village members identify land use patterns in the JFM area on a sheet of clear acetate [see example]. Mapping can be done first on the ground with sticks, stones and leaves, or on paper using colored pens or pencils. Maps made on the ground should be transferred to poster paper or to clear acetate after the exercise is completed. This exercise may be conducted with small groups first and finally at the village level to arrive at a synthesis of the various community perspectives. The following guidelines will assist FD field staff in facilitating this exercise.

# LEVEL III – FPC MICROPLANNING

## MANUAL GIS MAPPING TOOLS



### ***Benefits***

- Facilitates Forest Department–Community collaborative planning
- Provides inventory of existing resource base
- Provides a framework for ongoing resource protection and management
- Process oriented

## Community Resource Mapping

- Field staff can begin by calling a meeting of FPC members. Explain to the community that the purpose of the mapping exercise is to facilitate discussion of the existing resource situation within the JFM area.
- Help the group get started by introducing the FPC Boundary Demarcation Map and helping them orient to it. It may be necessary to show them the location of well-known reference points on the map.
- Ask FPC members to identify other common reference points on the Boundary Demarcation Map such as streams, roads, temples, and mountain ridges to be sure they understand them. Let them orient the map in the direction which is clear for them.
- Once FPC members are familiar with the base map, choose a suitable place and medium with which FPC members feel comfortable working. Ground or floor: Sticks, stones, leaves, colored powder, earth, etc. Paper: Pencil, pens, etc. Acetate sheet: Pens
- If FPC members are working on the ground, floor, or on paper without the base map as a guide, help the group get started by asking them to draw a map similar to the FPC Boundary Demarcation Map on the ground. It may be necessary to provide the first reference point.
- Once the boundaries are identified ask FPC members to identify general characteristics such as forested areas, types of forests (e.g., mixed deciduous, sal, etc.), agricultural fields, grazing lands. They should also illustrate where livestock are grazed, what types of fuelwood are collected and from where, what types of NWFP are collected and from where, where there is barren forest land, where shared water sources are located, etc.
- Encourage corrections and additions.
- Watch for who is involved and who is not. Encourage the participation of those who are silent. This can be done by simply asking them if they are satisfied with the information being illustrated.
- The process should proceed with as little intervention as possible by the field staff.
- If the resource map has been done on the ground or on paper it should be redrawn on an acetate sheet using the FPC Boundary Demarcation Map as the base.

## **Step 6: Identify and Prioritize Resource Needs**

Community resource needs such as fuelwood, fodder and NTFP should be identified and prioritized by a wide spectrum of FPC members. Broader participation often results in a more effective microplan. When a cross-section of community members are involved in setting the action agenda there may be greater accountability among FPC members. Field staff play an important role in facilitating this process. Field staff should try to encourage marginalized community members to offer their opinions. Women, particularly women from lower caste and adivasi groups, often identify drinking water, fuelwood, fruit trees and fodder as important resources whereas men may see timber species and cashew as most needed. Because differences in perspectives are likely to exist, focus group discussions are essential to this priority need exercise. The community may be divided on what is most needed. Some individuals may openly oppose a project if they feel it will not benefit them directly. Discussion of differences in priorities may bring up sensitive issues that do not have to be resolved. They need only be recognized so that planning and negotiations take them into consideration.

## **Step 7: Gathering Information, Assessing Capacity, and Setting Priority Action**

Field staff and FPC members should collect and record relevant information that will function as the basis for determining measurable goals for microplan activities. For example, if fruit trees are identified as a high priority it is necessary to collect information on how many fruit trees are needed to supply the community. Is there sufficient community labor for planting? Does a nursery need to be established? Who will manage it? At village level meetings field staff can facilitate a discussion to determine microplan activities based on the relevant information gathered. It may be necessary to reprioritize microplan actions according to a realistic assessment of the FPC's capacity to carry out proposed activities. When priorities differ compromises should be made that enable all FPC members to feel committed to the microplan. Target groups for specific microplan projects should be identified to assure that benefits flow to all forest user groups. FD field staff should openly discuss what they can offer the community in the way of material or technical support. However, FPC members should be clear that they can accept, modify or reject what the FD offers. It is important that FPCs are not dissuaded from their own agenda and that the microplan represents the communities' forest management strategy, rather than only FD projects.



## **Community Forest Management Production Systems: A Case from West Bengal**

In West Midnapore Division, DFO Alankar Jha and his staff have been working with Forest Protection Committees (FPC) to design microplans for managing reserve and protected forests. The case of Simli FPC in Chandri Beat of Jhargram Range provides an example of emerging management issues. Simli village has been effectively protecting 250 hectares of sal (*Shorea robusta*) since the early 1980's. The trees have already reached the end of the normal 10- to 15-year felling rotation. With an average of 1,200 trees per hectare, the FPC has approximately 300,000 trees. Timber pole market prices, however, have fallen 30 to 50 percent in recent years due to the hundreds of social forestry plantations and thousands of hectares of regenerating sal protected by over 2,000 FPCs operating in southwest Bengali alone.

FPC members in Simli wanted and needed income, but did not feel their 25 percent share of the current market price was a good return on over 15 years of patrolling. Nor did the community believe cash income alone was their primary need from the forest. The forest department was also reluctant to sell at these low prices, fearing they would drive pole prices even lower. The foresters and community members held discussions and a number of management ideas emerged. Community members had the following recommendations. First they were interested in maintaining plots of young coppice trees of 1 to 5 years of age to supply the leaf plate cottage industry in the community. It was suggested that 10 percent of the forest area be heavily thinned each year to ensure a patch of regenerating sal for leaves, and to produce poles for domestic consumption with the remaining poles sold in local markets. The healthiest and older trees would be retained to act as seed sources for seedling regeneration and to produce oil seed. In existing gaps, or gaps created during thinning, the community requested that other valuable species be introduced into the forest including mahua, tendu, and other fruit fodder and timber trees. The community had already allocated individual household rights to 400 mature mahua trees already present in the forest and were ready to manage a nursery to produce seedlings and saplings for enrichment planting. The community would determine use rights for valuable species, while proceeds from sal pole sales would be used by the FPC to support community projects. Simli village, a community of 150 Mahato and Santhal adivasis, already operates a mushroom marketing cooperative. Most of the mushrooms are collected in the forest and the community has sought help from a local university to find ways to inoculate the forest with spore to increase production. All of the forest management activities needed to be incorporated into the FPC microplan.

## **Step 8: Prepare Microplan Map**

When FPC resource needs have been identified and prioritized by a cross-section of community members, a list of microplan activities such as enrichment planting, watershed development and fruit tree plantation should be drawn up indicating a timeline for each one. To provide a visual representation of the planned activities a microplan map should be drawn at a village meeting or by EC members and Forest Department field staff. The microplan Sheet 2 should describe the planned activities and the date proposed for project implementation. Together with the resource map on Sheet 1, the microplan sheet provides a picture of the formalized area of protection, existing land use, and planned activities to help meet the communities' resource needs.

The process of developing the FPC microplan facilitates communication between FPC members themselves and with FD staff enabling them to develop a common understanding of the area under protection, existing land use, and planned activities. Once the three categories of information are mapped the microplan can be used to communicate community forest management plans to new FD staff and other rural development extension workers. By documenting and mapping specific information the microplan helps maintain continuity and avoid conflict.

## **Step 9: FPC Registration**

A memorandum of understanding (MOU) in the local language and based on the State JFM Resolution should be drawn up and signed by the FPC executive committee members and the appropriate FD staff. FD field staff should be sure that each of the signatories clearly understands the MOU before they sign. Once signed, a copy of the MOU, the FPC Forest Area Map and a composite of the FPC Boundary Demarcation, Resource and Microplan Map and proposed timeline should all be given to the FPC executive committee.

## **Step 10: Implementation and Monitoring of the Microplan**

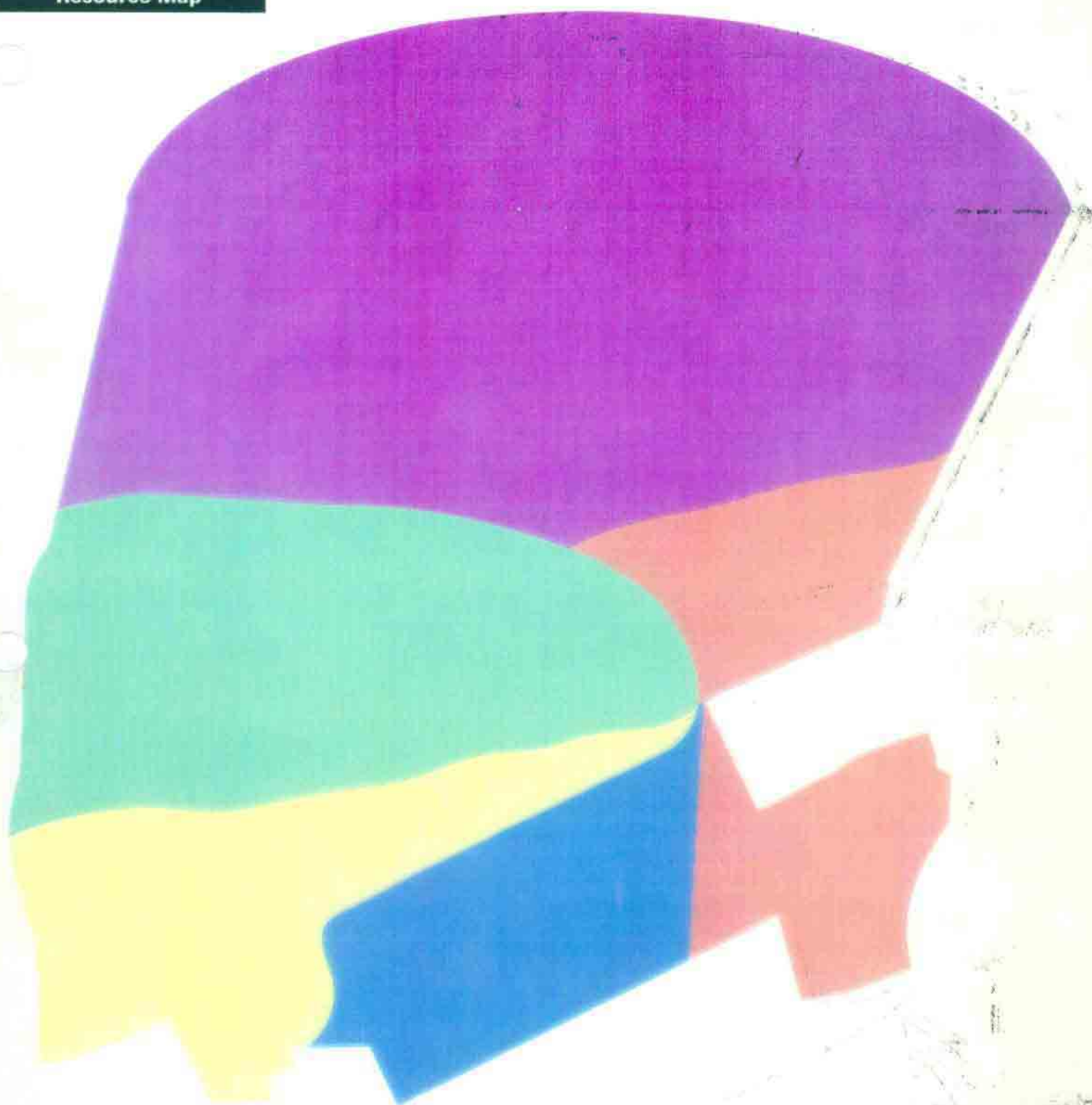
Implementation of the microplan should follow the timeline agreed upon. Progress reports on microplan implementation should be made by the Executive Committee members to the FPC at each meeting. Changes or delays in the microplan should be discussed with FPC members.

## **Participatory Ecological Microplanning: The Case of Advanced Closure**

In South Udaipur Division in Rajasthan, D.N. Pandey, the District Forest Officer, began experimenting with a new approach to participatory microplanning. The purpose of his methodology was to assess with community members and field staff how best to regenerate degraded natural forests. The DFO and his rangers and beat officers worked with community leaders and resource persons to combine local environmental management and biological knowledge with their own scientific understanding of modern ecology. The strategy requires community closure of the microwatershed to initiate regeneration processes. Under Pandey's concept of Advance Closure, no planting is undertaken for a year or more to observe vegetation regrowth and determine how the community's management systems are performing. During this initial closure year, a joint team of foresters and community members begin identifying and mapping micro-environments with relatively greater fertility due to better soil and moisture conditions. Local knowledge suggests seed planting of *butea monosperma* and other native species resulted in acceptably high rates of establishment especially near fence lines and/or in moisture pockets created by rolling over stones. Fifty saplings per hectare were planted in the most Ideal sites, with better moisture and soil conditions. D.N. Pandey's commitment to using ethno-forestry knowledge and integration of the southern Aravali hills' native regenerative powers were key elements in the success of this program.

In South Udaipur Division, Forest Department staff developed a method to identify existing resources by preparing 4 maps of the local microwatershed. The base map used was approximately 1:7,000 and showed topographic lines, plot boundary points, roads, rivers and drainage patterns. Map 1 identified existing vegetation, including the location of trees, shrubs, and grasses. Map 2 indicated areas with poor, moderate, or good soil conditions. By examining the Information of Maps 1 and 2, foresters and villagers identified sites for direct seeding and enrichment planting of saplings which they presented in Map 3. The sites for soil and water conservation actions such as check dams, contour bunds, and percolation and soil catchment pits to support regeneration seeding and planting were shown in Map 4. Map 1 can be redrawn every 5 years to assess progress towards regeneration.

**Sheet 1**  
**Resource Map**



Barren Land  
Kendu Plantation

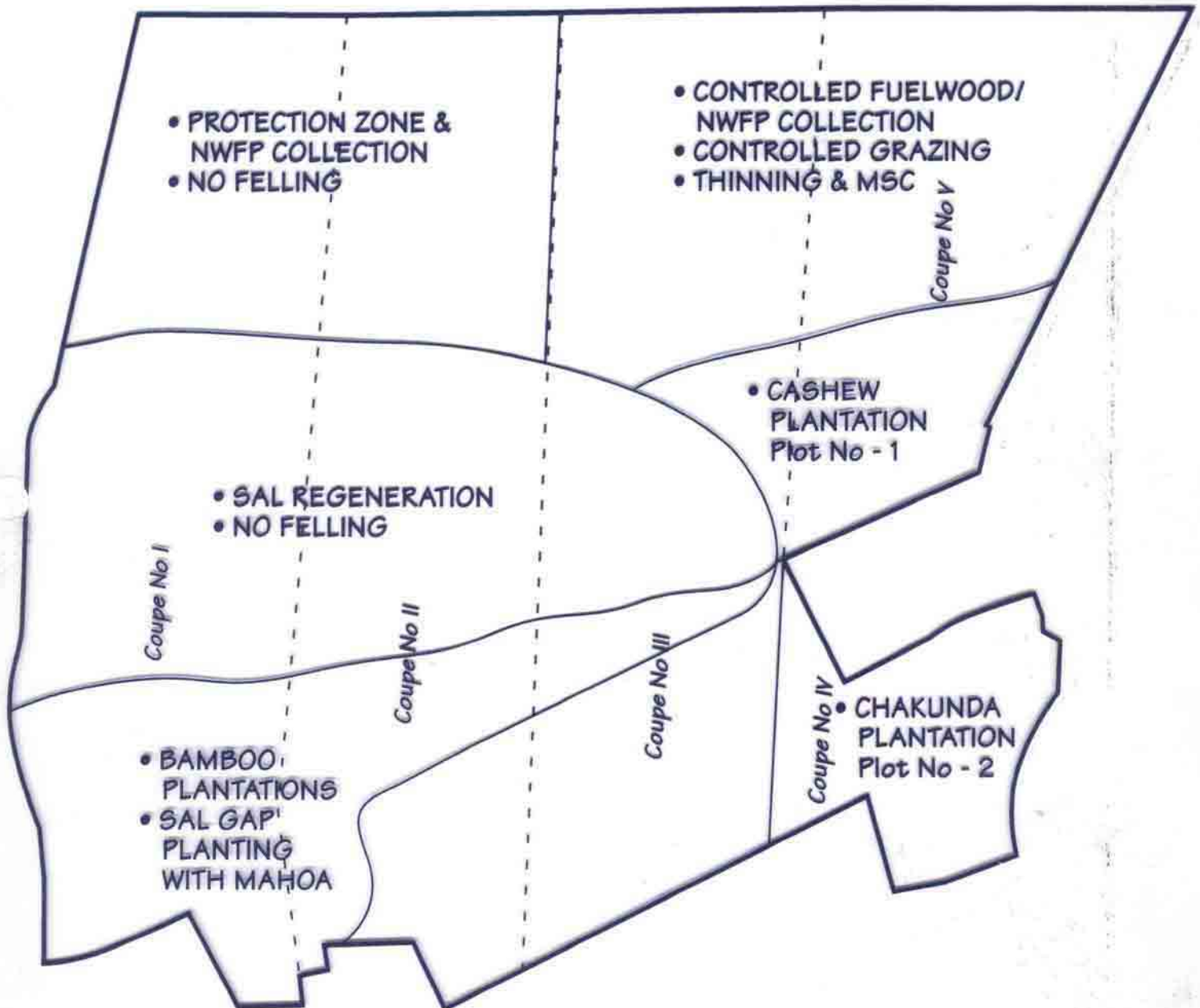


Degraded Sal Forest  
Mixed Deciduous Forest

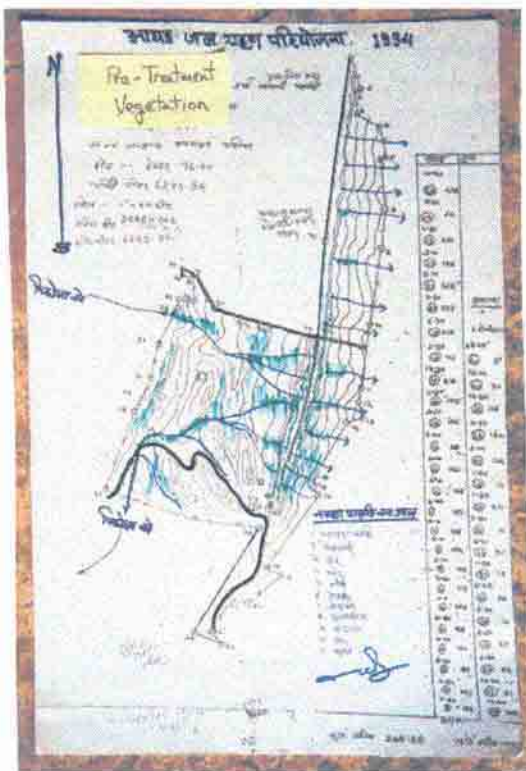


Regenerating Sal Forest

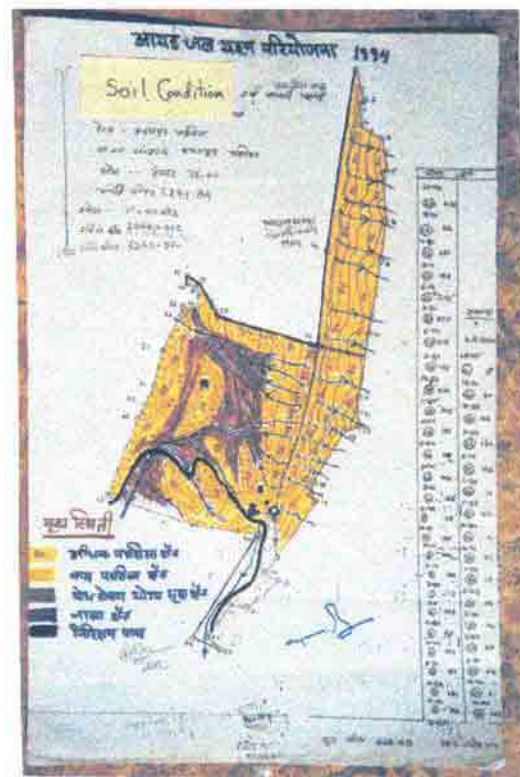




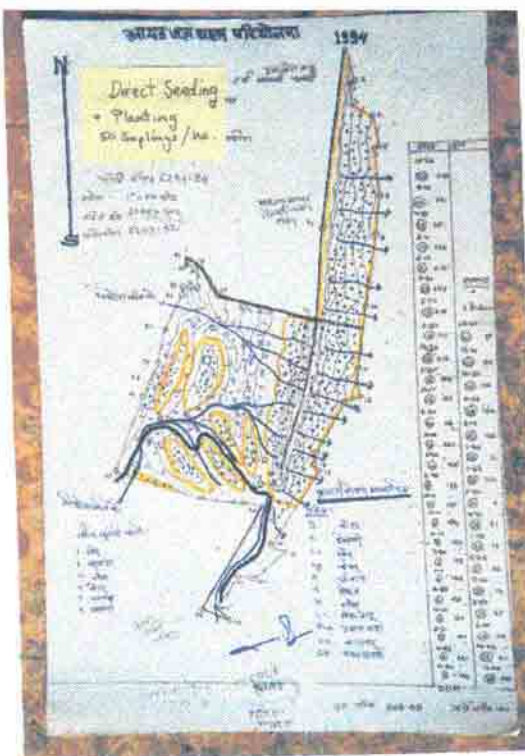




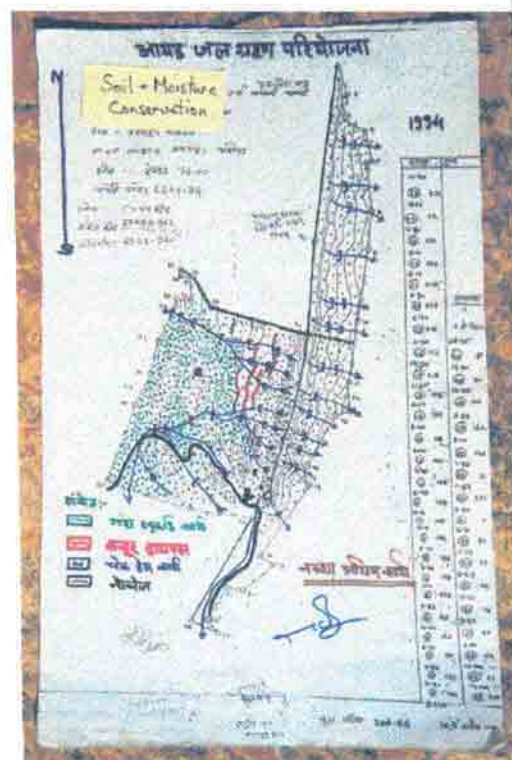
**Map 1** Identifies existing vegetation including seed source trees, coppicing shrubs, and grasses.



**Map 2** Indicates areas with poor, moderate and good soils.



**Map 3** shows areas where seeds and sapling planting should be concentrated.



**Map 4** locates areas where soil and water conservation technologies can best support natural and assisted regeneration.

