

PD/AAAT-417 15
15N-45172

MAHARASHTRA SOCIAL FORESTRY PROJECT

PROJECT NO. 386-0478

Mid-Term Evaluation Report

September 16 - October 10, 1985

A.I.D. EVALUATION SUMMARY PART

(BEFORE FILLING OUT THIS FORM, READ THE ATTACHED INSTRUCTIONS)

A. REPORTING A.I.D. UNIT (Mission or AID/W Office) _____

B. AFS EVALUATION SCHEDULED IN CURRENT FY ANNUAL EVALUATION PLAN? Yes slipped ad hoc

C. EVALUATION TIMING interim final ex post other

D. ACTIVITY OR ACTIVITIES EVALUATED (List the following information for project(s) or program(s) evaluated; if not applicable, list title and date of the evaluation report)

Project #	Project/Program Title (or title & date of evaluation report)	First PRGAS or equivalent (FY)	Most recent PRGAS (MO/YR)	Planned LOP Cost ('000)	Amount Obligated to Date ('000)
386-0478	Maharashtra Social Forestry Project	FY82	9/90	30	

E. ACTION DECISIONS APPROVED BY MISSION OR AID/W OFFICE DIRECTOR

- Action(s) Required
- Distribute evaluation report to AID/W, GOI and GOM.
 - Initiate discussion with GOI and GOM regarding their response to evaluation recommendations; document subsequent progress in regular Mission quarterly reports.
 - Review with DEA possibility of AID-direct contracting for project-funded technical assistance.
 - Determine probable level of unutilized grant and loan balances in project and develop recommendations for their reprogramming/use/disposition.
 - Identify suitable candidates for mission-funded forest research and education, social forestry monitoring and evaluation, and forestry extension/community management positions and proceed with hiring.
 - Draft amended project reimbursement agreement based on project cost structure to date and likely course over future.
 - Negotiate and execute amended project reimbursement agreement with GOI.

Name of officer responsible for Action	Date Action to be Completed
P. Amato	4/01/86
H. Fisher	4/15/86
G. Thompson	4/15/86
H. Fisher	4/15/86
D. Heesen	5/01/86
K.C. Kapoor	6/30/86
G. Thompson	12/31/86

(Attachments, if necessary)

F. DATE OF MISSION OR AID/W OFFICE REVIEW OF EVALUATION

G. APPROVALS OF EVALUATION SUMMARY AND ACTION DECISIONS:

Signature: *Harold E. Fisher* Project/Program Officer: _____ Representative of Borrower/Grant: _____

Typed Name: Harold E. Fisher Directorate Social Forestry

Signature: *Peter W. Amato* Evaluation Officer: _____ Signature: *Owen Gylke* Mission or AID/W Office Director: _____

no 2 day 19 year 86 3/30/90

H. EVALUATION ABSTRACT (do not exceed the space provided.)

Project aims to increase the rural supply of firewood, fodder, fruit and small timbers; to increase rural incomes; and reduce the rate of deforestation in the State of Maharashtra, India. The project is being implemented thru the Maharashtra Horticulture and Social Forestry Department (H&SFD) over the eight year period 1982-1990. This mid-term evaluation was conducted by a GOI-USAID team that visited 54 villages in 20 state districts, interviewed project personnel and reviewed project documentation. The major findings and conclusions are;

- community and private tree planting activities have achieved or exceeded proposed targets;
- villager interest and participation in both community plantation and private tree planting is increasing;
- those H&SFD officers who have been given extension training are becoming a solid staffing foundation for the program;
- the assumption that rural communities would wish to assume complete responsibility for the management of their plantations appears invalid;
- the project's assumption that fuelwood and fodder will be the motivational factor for village participation in the program and not wood as a cash crop also appears invalid;
- H&SFD resources have been shifted almost exclusively to plantation activities with little attention being given to continued development of staff expertise and management capability;
- information from management and research studies needed by H&SFD staff to assist in the preparation of detailed village management have yet to be undertaken.

The evaluators noted the following "lessons":

- project goals, i.e. fuelwood and fodder vs wood as a cash crop and the issue of community management should be framed with more care and attention not only to the interests of the GOI, but also to the interests and abilities of the implementing agencies and the recipients themselves;
- more specificity regarding the training program should be developed in the PP. This would include who is to be trained, by whom, the quality and level of training, the facilities to be used and the numbers to be trained against a specific project timetable;
- the long term sustainability of the program needs to be stressed. A greater emphasis is needed on measuring the success of the project not simply in terms of production output e.g. number of hectares of trees planted but rather in terms of how successful the H&SFD has been in getting the communities involved in all aspects of the program.

I. EVALUATION COSTS

1. Evaluation Team

Name	Affiliation	Contract Number OR TDY Person Days	Contract Cost OR TDY Cost (US\$)	Source of Funds
Dr. J. Ellen Fort	University of Idaho (forester/socio- logist)	P.O. ASB-0249- 0-00-5164	\$9,850	Project Budget

2. Mission/Office Professional

3. Borrower/Grantee Professional

A.I.D. EVALUATION SUMMARY PART II

3. SUMMARY OF EVALUATION FINDINGS, CONCLUSIONS AND RECOMMENDATIONS (try not to exceed the 3 pages provided) Address the following items:

- o Name of mission or office
- o Purpose of activity (ies) evaluated
- o Purpose of the Evaluation and Methodology Used
- o Findings and Conclusions
- o Recommendations
- o Lessons learned

1. USAID India Maharashtra Social forestry Evaluation (Project No. 386-0478)

2. Purpose of the Activity: India faces severe shortages of wood and fodder as a result of increasing land use pressures by people and livestock coupled with ineffective systems for managing these resources. The Sixth and Seventh Five Year Plans (1980-1990) have placed increasing emphasis on social forestry as an important element in India's development plans. Today, all states in India have social forestry programs and the larger states have major, donor-assisted programs. The Mission in its CDSS has stressed the importance of assistance to India in its Social Forestry efforts.

The goals of the Maharashtra Social Forestry Project (Project No. 386-0478) are to increase the supply of firewood, fodder, fruit and small timber in rural areas; reduce the rate of deforestation; and increase rural employment. The purpose of this eight year project (October 1982 - September 1990) is to develop the institutional capability of the Government of Maharashtra's Horticulture and Social Forestry Department (H&SFD) to assist villagers to manage their community and private lands for increased and sustained production of forest products.

3. Evaluation Purpose and Methodology: This evaluation was the first major in-depth review of the project. It was originally scheduled and actually conducted near the end of the project's third year (September 16 to October 10, 1985). The purpose of the evaluation was to determine the project's progress in 1) implementing an extension organization and tree planting program based on villager participation in community and private forestry activities, and 2) developing a management system that is capable of sustaining social forestry activities through and beyond the life of the project. The six member team interviewed officials at all levels within the H&SFD as well as Government of Maharashtra and Government of India officials with major responsibility for social forestry programs. The team divided itself into two groups and collectively visited 54 villages throughout Maharashtra during a nine-day period. At each village, community and private tree plantings were observed and interviews were conducted with H&SFD field staff, village leaders and villagers of various ages, classes and gender. Findings and conclusions are based on the site visits and interviews, and on the analysis of management data and documents provided the team by the H&SFD.

4. Findings:

A. Training

Significant progress in staff training and extension was accomplished during the first two years of the project. However, the perceived need and current effort to equip staff with additional skills required for the successful transfer of plantation management responsibility from the H&SFD to the village is decreasing.

Date this summary prepared:

SUMMARY

B. Technical Support Activities

To make informed decisions, management needs data that provides information on project productivity, that identifies problems constraining project effectiveness, and that can be used to formulate plans, budgets and project alternatives. Information on plantation productivity, market conditions and village dynamics is needed and is not being obtained.

C. Project Management Activities

Government of Maharashtra funds allocated to this project have exceeded levels proposed in the project paper. However, during the past year the funds have been expended almost exclusively on tree planting activities. Expenditures on activities that directly effect the department's operational capability, personnel recruitment and staff effectiveness are rapidly diminishing.

5. Recommendations

A. Training

Village level: Training be modified and targeted at specific social/economic groups within each village; training methods should emphasize techniques requiring minimal literacy skills; and village motivators should be given specialized training.

Staff Training: Overseas training be included as an integral component of the staff training program; and permanent training programs be developed and implemented for specific categories of staff and be taught by professional extension educators.

Extension: All villages be assigned motivators, the motivators role and responsibility be increased and women motivators be encouraged. The H&SFD move towards having 100 percent directly recruited Assistant Plantation Officers and that this recruitment emphasize selection of women staff.

B. Technical Support Activities

1. Research Recommendations:

- a. Research proposed on agro-forestry systems submitted by a Maharashtra Agricultural University be initiated immediately.
- b. H&SFD collect and analyze plantation data so trends in production can be quickly made available to extension officers.
- c. Studies on the following be undertaken.

- (1) Detailed wood balance study to estimate present and future returns that can be expected from marketing of food products from private and community plantations.
- (2) Long-term case studies of village dynamics as they relate to the management of community plantations and the distribution of forest products:
- (3) Studies on the impact that forest laws and regulations governing the sale and transport of forest products.

2. Monitoring and Evaluation Recommendations:

H&SFD proposal to strengthen and computerize monitoring and evaluation of social forestry activities be implemented.

C. Project Management Activities

- a. Expand the H&SFD from five to six circles so its divisional boundaries conform to administrative units in other state departments thereby facilitating inter-department coordination.
- b. Provide H&SFD a complete complement of staff in all 29 administrative districts of the state, and transport mechanisms that ensure the flexible mobility of extension personnel.
- c. H&SFD provide employee's staff incentives that could include special pay and residential quarters, and promotional opportunities for directly recruited Assistant Plantation Officers.
- d. H&SFD emphasize the planting of fodder and fruit trees, feature information on fuel-saving devices in extension programs, and encourage school nursery programs.
- e. H&SFD encourage women to operate small private nurseries adjacent to their homes and provide training in cottage industry activities since both of these activities directly impact and benefit females.
- f. Planting targets be revised so the proportion of block plantation to private plantation acreage averages 40:60.
- g. Funding and expenditures for buildings, technical support, training, and research be increased to the levels specified in the project paper.
- h. Government of Maharashtra and USAID develop and agree on a modified FAR payment schedule which reflects present project activities and costs as of December 31, 1985.

6. Lessons Learned

Project goals need to be more carefully constructed based upon the interests and or abilities to achieve the goals of all parties concerned. In some instances goals may be inconsistent with one another, i.e. to achieve the aim of social forestry to produce timber to increase the rural supply of fuelwood and fodder may be inconsistent with the aim of providing maximum income return to the participants through sale of timber as a cash crop. Also, the aim of full community management may not be an attainable goal given the inability of communities to decide on how the project products will be divided within the community.

In terms of training, the project has demonstrated that more specificity is needed in the PP as to who is to be trained, by whom, the quality and level of training, the facilities to be used and the numbers to be trained against a specific project timetable.

Finally, the sustainability of the program needs to be stressed. A greater emphasis is needed on measuring the success of the project not simply in terms of production output e.g. number of hectares of trees planted but rather in terms of how successful the H&SFD has been in getting the concerned communities to be aware of and to participate to the greatest extent possible in all aspects of the program.

✓

ATTACHMENTS

ATTACHMENTS (List attachments submitted with this Evaluation Summary; always attach copy of full evaluation report, even if one was submitted earlier)

MAHARASHTRA SOCIAL FORESTRY PROJECT
Project No. 386-0478
Mid-Term Evaluation Report
September 16 - October 10, 1985

MISSION COMMENTS ON FULL REPORT

COMMENTS BY MISSION, AID/W OFFICE AND DONOR/CORPORATE/GUARTEE

The evaluation highlights the critical importance of the right mixture of "software" (management, training and clearly defined rights and obligations) with the "hardware" of the project. The evaluation team is to be commended for a searching but balanced inquiry. Problems notwithstanding, we feel that this project is moving well against its objectives and has provided the mission with a broad base for future work.

Mission Review Committee (MRC) reviewed this evaluation and was satisfied with its conclusions. Appropriate Mission staff will carry out the recommendations as described in the PES and more fully in the evaluation.

MAHARASHTRA SOCIAL FORESTRY PROJECT

PROJECT NO. 386-0478

Mid-Term Evaluation Report

September 16 - October 10, 1985

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VII

PROGRAM IDENTIFICATION DATA SHEET

1. Country: India
2. Project Title: Maharashtra Social Forestry Project
3. Project Number: 386-0478
4. Project Dates:
 - a. Project Agreement: August 31, 1982
 - b. Project Action Completion Date: September 30, 1990
5. Program Funding: USAID Bilateral Funding - Loan: \$25 Million
Grant \$ 5 Million
6. Mode of Implementation: USAID Direct Hire staff and short-term consultants working with Government of India and Government of Maharashtra Social Forestry Directorate personnel
7. Project Design: USAID Direct Hire staff and short-term consultants
8. Responsible Mission Officials:
 - a. Mission Directors: Priscilla Boughton 1982-83
Owen Cylke 1983-Present
 - b. Project Officers: George Belt 1981-1982
Dave Heesen 1982-1983
Hal Fisher 1983-Present
9. Previous Evaluations: None
10. Host Country Exchange Rates:
 - a. Name of Currency: Rupee
 - b. Exchange Rate Used in Project Paper: Rs. 9.40 = U.S. \$1
 - c. Average Exchange Rate during Life of Project: Rs. 10.56 = U.S. \$1

IX

I. EXECUTIVE SUMMARY

Problem and Overview: India faces severe shortages of wood and fodder as a result of increasing land use pressures by people and livestock coupled with ineffective systems for managing these resources. The Government of India extensively reviewed (National Commission on Agriculture) its forestry prospects in 1976 and recommended that India's strategy for forestry development include "social forestry" to supply fuelwood, fodder, small timbers and other forest products to rural populations and that states reorganize their forest departments to include social forestry units. The Sixth and Seventh Five Year Plans (1980-1990) have placed increasing emphasis on social forestry as an important element in India's development plans. Today, all states in India have social forestry programs and the larger states have major, donor-assisted programs. These programs focus on the development of an effective management system to establish and maintain tree and fodder plants on community and private lands near villages and to enlist popular participation in and responsibility for that effort.

U.S. Assistance: The goals of the Maharashtra Social Forestry Project (Project No. 386-0478) are to increase the supply of firewood, fodder, fruit and small timber in rural areas; reduce the rate of deforestation; and increase rural employment. The purpose of this eight year project (October 1982 - September 1990) is to develop the institutional capability of the Government of Maharashtra's Horticulture and Social Forestry Department (H&SFD) to assist villagers to manage their community and private lands for increased and sustained production of forest products. To achieve this, the project is developing a social forestry extension program through the H&SFD. Over the life of the project, this program will encompass all 27 administrative districts in Maharashtra and include 4,300 individual villages and approximately 6.5 million rural inhabitants. The Department has a permanent professional and clerical staff of approximately 1600 which includes more than 800 field extension officers. In addition, the Department envisions employing part-time village motivators for each of the 4,300 project villages. The H&SFD's principal program thrusts are to establish a 10 hectare community plantation in each village which extension officers can then use to demonstrate to villagers the benefits associated with sustained social forestry activities; and to distribute approximately 20,000 tree seedlings to individuals in each village for planting on their uncultivated patches of farm land, field boundaries and homesteads. Much of the extension effort is targeted at helping the village develop the long-term capacity to manage the community plantation for sustained yields and distribute the produce equitably among its constituents with particular concern for the needs of the poor. The H&SFD planned to turn over all responsibility for management of the plantations to the community after three years. Operational programs in training, research and monitoring and evaluation are also undertaken and managed by the H&SFD. The projects authorized cost is \$60 million of which USAID's contribution is \$25 million loan and \$5 million grant.

Evaluation Purpose and Methodology: This evaluation was the first major in-depth review of the project. It was originally scheduled and actually conducted near the end of the project's third year (September 16 to October 10, 1985). The purpose of the evaluation was to determine the project's progress in 1) implementing an extension organization and tree planting program based on villager participation in community and private forestry activities, and 2) developing a management system that is capable of sustaining social forestry activities through and beyond the life of the project. The six member team interviewed officials at all levels within the H&SFD as well as Government of Maharashtra and Government of India officials with major responsibility for social forestry programs. The team divided itself into two groups and collectively visited 54 villages throughout Maharashtra during a nine-day period. At each village, community and private tree plantings were observed and interviews were conducted with H&SFD field staff, village leaders and villagers of various ages, classes and gender. Findings and conclusions are based on the site visits and interviews, and on the analysis of management data and documents provided the team by the H&SFD.

Findings:

Project Achievement: Community and private tree planting activities have achieved or exceeded proposed targets. The schedule for community plantation activities given in the project paper included annual targets for number of villages, community woodlot management plans and acreage of community plantation. All of these targets have been achieved. Targets associated with tree seedling distribution activities have been annually achieved and are being increasingly exceeded.

Interest in Social Forestry: Villager interest in both community plantation and private tree planting is increasing. During the initial phase of the project the H&SFD had to convince villages to join the program. Individual villages now are approaching the H&SFD and requesting that they be included in the community plantation program. The demand for tree seedlings for planting on private individual's land holdings now is exceeding the supply.

H&SFD Employee Attitude: The orientation of the H&SFD and the attitude of H&SFD employees towards extension activities and villager participation has exceeded optimistic initial expectations. Staffing for the H&SFD was obtained almost exclusively from the Maharashtra Forest Department. Officers in that department have historically restrained rural inhabitants from using forests and have had no extension responsibility or training. Officers with this background were assigned to the H&SFD, were given limited extension training and, coupled with their desire to succeed, have formed a solid staffing foundation for the H&SFD.

Community Participation: Rural communities are hesitant to assume complete responsibility for the management of their plantations. Originally, the H&SFD had planned to transfer all responsibility for the management of community woodlots to the villagers during the fourth year

of the plantation. Generally the community woodlots will not begin producing significant amounts of produce until the fifth to eighth year. The villagers concern for the protection of their community plantation, their lack of management capacity and the villages political/social/economic diversity, coupled with the absence of immediate investment returns, make them reluctant to assume full responsibility for the plantation at this time.

Fuelwood Demand vs. Income Generation: Project documentation suggests that an individual's demand for fuelwood and fodder will be the motivational factor behind the project whereas the villages and villagers indicate that they are participating in community and private tree planting activities because of the opportunity it provides for increasing their incomes. Women generally place greater importance than men on the production of produce for domestic consumption as opposed to cash crops. However, in Indian society and culture, income generation seems to be the principal concern of household decision-makers.

Human Resources Development: H&SFD resources have been shifted almost exclusively to plantation activities with little concern for the continued development of staff expertise and management capability. Expenditures on staff training and development and on factors that provide staff incentives and enhance staff recruitment are decreasing annually. Without continuous investment in the H&SFD's human resources the project's initial success will not be sustained.

Management Studies: Information from research and management studies are needed by H&SFD staff but planned and proposed studies have yet to be undertaken. A study designed to provide extension officers local estimates of production associated with various agroforestry plantation systems has been in the approval process for more than two years. Detailed wood balance and village dynamics studies are needed to guide communities and extension officers in the formulation of detailed village management plans. Without technical information the extension officer cannot function.

Project Design and Policy Implications: The H&SFD's human resource is the single most critical element associated with the successful implementation of this extension oriented program. Without the assistance of well trained extension officers one cannot expect villagers to assume responsibility for and management of community assets. A major design implication for resource management projects like this one which are highly dependent on the local agency's management capability is that major design effort should be concentrated on elements which focus on implementable staff development and technical and managerial training programs for all levels of the agency's personnel. In addition, the design of this and similar projects addressing community managed resources would benefit from a highly structured exchange of lessons learned in analogous fields such as water management.

II. CONCLUSIONS AND RECOMMENDATIONS

EXTENSION AND VILLAGE FORESTRY ACTIVITIES: CONCLUSIONS AND RECOMMENDATIONS

Significant progress in staff training and extension was accomplished during the first two years of the project. However, the perceived need and current effort to equip staff with additional skills required for the successful transfer of plantation management responsibility from the H&SFD to the village is decreasing. Tree planting is one of the community plantation activities but it is not the only activity or the most important activity associated with a successful program. To be successful, the project requires a H&SFD staff that is effectively trained in and skilled in the use of extension and managerial methods.

Villager Training Recommendations:

- a. Training be modified and targeted at specific social/economic groups within each village.
- b. Training methods emphasize techniques requiring minimal literacy skills.
- c. Village motivators be given specialized training.

Staff Training Recommendations:

- a. Overseas training be included as an integral component of the staff training program.
- b. Permanent training programs be developed and implemented for specific categories of staff and be taught by professional extension educators.
- c. Methodologies used in training emphasize problem solving skills.
- d. Extension staff semi-annually attend one or two-day technical update sessions and the formal and informal exchange of information between extension staff be increased.
- e. Joint training workshops and seminars involving H&SFD, agricultural and soil conservation personnel be encouraged.

Extension Recommendations:

- a. All villages be assigned motivators, the motivators role and responsibility be increased and women motivators be encouraged.
- b. The H&SFD move towards having 100 percent directly recruited Assistant Plantation Officers and that Assistant Plantation Officer recruitment emphasize selection of women staff.
- c. The title of Plantation Officers and Assistant Plantation Officers be changed to Plantation/Extension Officer and Assistant Plantation/Extension Officer, respectively.
- d. Interaction between forest extension officers and agricultural extension officers, publicity and organized group visits to villages be formally incorporated into the extension activity.

Seedling Production and Distribution Recommendations:

- a. Private, school and non-government organization nurseries be substantially expanded and women be encouraged to raise village nurseries.
- b. State and centrally funded seedling distribution policy be carefully evaluated by the H&SFD, the Government of Maharashtra and the Government of India since the current policy is a disincentive to the establishment and continual operation of village nurseries.
- c. Impact of private tree planting programs on agricultural land use, cropping patterns, labor and rural income be used to establish a seedling distribution policy.

Transfer of Plantation Management Responsibility Recommendations:

- a. H&SFD relate plantation yields to soil type and agro-climatic zones and establish dates for the transfer of management responsibility of community plantations from H&SFD to the villagers based on that criterion.
- b. The H&SFD structure activities involving the acceptance of responsibility for management of the community plantations so they begin with the village management plan and continually increase until the formal transfer date.
- c. H&SFD personnel actively support and encourage the villagers to assume responsibility for the management of the community plantations.
- d. Villages that successfully assume management of their community plantation be used as "demonstration villages" for other communities.

Distribution of Produce from Community Plantations Recommendations:

- a. Government of Maharashtra develop three to five alternative models for the distribution of products from community plantations and allow villages to select the most appropriate one for their situation.
- b. Production of products from community plantations through time be considered in the distribution scheme.
- c. Plantation Officers and Assistant Plantation Officers not be assigned with the responsibility of enforcing benefit distribution schemes.

TECHNICAL SUPPORT ACTIVITIES: CONCLUSIONS AND RECOMMENDATIONS

Without a continuous flow of technical information, extension officers cannot be responsive to their client's demands or maintain credibility with their actions and advice. To make informed decisions, management needs data that provides information on project productivity, that identifies problems constraining project effectiveness, and that can

be used to formulate plans, budgets and project alternatives. Information on plantation productivity, market conditions and village dynamics is needed and is not being obtained. Monitoring activities have been initiated but need to be strengthened and focused at management's priority concerns. Without this basic information one cannot expect the community forestry aspects of the project to succeed.

Research Recommendations:

- a. Research proposed on agro-forestry systems submitted by a Maharashtra Agricultural University be initiated immediately.
- b. H&SFD collect and analyze plantation data so trends in production can be quickly made available to extension officers.
- c. A detailed wood balance study be undertaken so present and future market conditions for forest products can be realistically estimated.
- d. Long-term case studies of villages be undertaken to obtain an understanding of village dynamics as they relate to the management of community plantations and the distribution of forest products.
- e. An analysis be undertaken on the impact that forest laws and regulations governing the sale and transport of forest products may have on the sustained production of community and private plantations.

Monitoring and Evaluation Recommendations:

- a. H&SFD proposal to strengthen and computerize monitoring and evaluation of social forestry activities be implemented.
- b. Monitoring and evaluation be focused at inputs into and production of nursery and plantation activities, inputs into and resulting villager response to extension activities, inputs into and resulting staff effectiveness of training activities, and market conditions for forest and fodder products.

PROJECT MANAGEMENT ACTIVITIES: CONCLUSIONS AND RECOMMENDATIONS

Project components which have a direct bearing on the operational effectiveness of the H&SFD and which create an atmosphere for H&SFD personnel that is conducive to a potent extension effort include staffing patterns, workloads, personnel incentives and budget. Government of Maharashtra funds allocated to this project have exceeded levels proposed in the project paper. However, during the past year the funds have been expended almost exclusively on tree planting activities. Expenditures on activities that directly effect the department's operational capability, personnel recruitment and staff effectiveness are rapidly diminishing. At this point in the project there is a lack of emphasis on project activities that have the greatest impact on the long-term sustainability of the program.

Departmental Attitude Reorientation Recommendations:

- a. H&SFD personnel expand their efforts on presenting themselves as extension officers and the department as an extension organization.
- b. H&SFD personnel increase the flow of information from the public to themselves and from themselves to the public.

Departmental Organization Recommendations:

- a. Expand the H&SFD from five to six circles so its divisional boundaries conform to administrative units in other state departments thereby facilitating interdepartment coordination.
- b. Provide H&SFD a complete complement of staff in all 29 administrative districts of the state since the state has increased its administrative districts from 27 to 29 and expanded its departmental programs accordingly.

Employment Conditions Recommendations:

- a. H&SFD provide transport mechanisms that ensure the flexible mobility of extension personnel.
- b. H&SFD provide employee's staff incentives that could include special pay and residential quarters, and promotional opportunities for directly recruited Assistant Plantation Officers.

Women's Participation Recommendations:

- a. H&SFD emphasize the planting of fodder and fruit trees, feature information on fuel-saving devices in extension programs, and encourage school nursery programs since each of these activities most directly impact and benefit female members of the community.
- b. H&SFD encourage women to operate small private nurseries adjacent to their homes and provide training in cottage industry activities since both these activities directly increase continuous, long-term rural employment opportunities for women.

Project Revisions Recommendations:

- a. Planting targets be revised so the proportion of block plantation to private plantation acreage averages 40:60.
- b. H&SFD and USAID jointly revise the estimated cost and benefit streams developed for community block plantations.
- c. Funding and expenditures for buildings, technical support, training, and research be increased to the levels specified in the project paper.
- d. Government of Maharashtra and USAID develop and agree on a modified FAR payment schedule which reflects present project activities and costs by 31 December 1985.

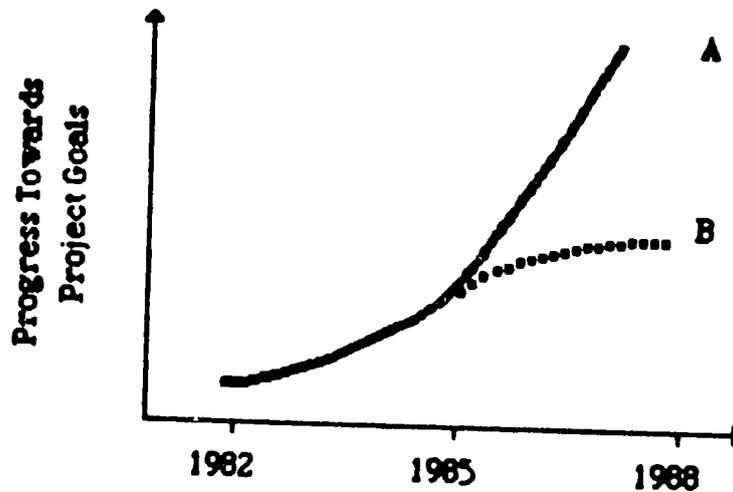
III. INTRODUCTION

The Maharashtra Social Forestry Project is an exciting project for several reasons:

1. it's implementation began in 1982 using deputed staff from the Maharashtra Forest Department. The newly formed Horticulture and Social Forestry Department (H&SFD) faced substantial operational obstacles and has realized significant accomplishments during the past 3 years;
2. it's addressing, head-on, the issue of social forestry on community lands. The productive use of community lands is one of India's priority concerns; and
3. it's making significant progress as an organization and as a program. It has achieved nearly all of its stated, operational targets during the past three years.

However, this initial success raises the question: Can the progress be sustained as the project nears the most difficult and trying periods associated with the management of community lands? The evaluation team concentrated its energies on issues which, if resolved, would help insure a positive response to this question.

H&SFD's program can be graphically depicted in the following manner:



The team believes the H&SFD can continue to follow track A. The obstacles will be significant and frequent, but past experience demonstrates the H&SFD's capability to overcome them. Track B is more likely if the H&SFD accepts initial success as adequate, relaxes its desire and efforts to train personnel to function in their new and expanding roles, and fails to perceive extension as its major activity. Recommendations in this report are an attempt to assist the H&SFD in continuing its trajectory along Track A.

IV. PROJECT PURPOSE AND OVERVIEW

The goal of the Maharashtra Social Forestry Project is to:

1. increase supply of firewood, fodder, fruit and small timbers in rural areas,
2. increase rural incomes, and
3. reduce the rate of deforestation.

To achieve these ends, the project's purpose is to develop an institutional capability which can assist villagers with the management of their community and private lands for increased and sustained production of forest and fodder products. This capacity could be achieved through the successful implementation of the project's elements. Its elements include:

1. Expansion and strengthening of the H&SFD into an effective forestry extension organization.
2. Establishment of plantations on government, community and private land to serve as the primary focus of H&SFD extension activity. These plantations would serve as a means to develop the capacity of villagers and their representatives to manage such resources.
3. Creation of nursery and plantation management skills, necessary to sustain a village forestation program. This would be accomplished through extension programs.
4. Provision of formal training in forestry extension methodologies, community mobilization techniques and forestry technologies to members of the H&SFD, communities and other organizations.
5. Provision of technical and managerial support for the H&SFD extension and management activities.
6. Acquisition of applied research on technical and social economic aspects of social forestry focused on solving managerial problems impacting the project's implementation.

The project's principal operational aim is to establish community plantations and small private nurseries in 4,300 villages spread throughout Maharashtra's 29 districts. On the average, approximately nine hectares of community plantation would be created in each village and at least an additional 10 hectares of private, community and government land would be brought under forestation as a result of distributing tree seedlings to individuals and groups.

The H&SPD is headed by the Director of Social Forestry and is supported by two Joint Directors and associated staff. At the field level, the Director supervises five Joint Directors, each in charge of a field organizational unit known as a circle. Each circle consists of approximately five divisions. Twenty-seven of 29 districts corresponding to the 29 political and administrative divisions of Maharashtra are each headed by a Deputy Director. Two Deputy Directors currently have responsibility for two districts. Forestry extension is the primary responsibility of each Deputy Director and their staff. The permanent staff at the district level includes two Assistant Directors, 10 Plantation Officers (PO) and 20 Assistant Plantation Officers (APO). Except for APOs, all H&SPD forestry staff are on three year deputation from the Maharashtra Forest Department. Half of the APOs were directly recruited and half are on deputation. The H&SPD was staffed early in the life of the project and has maintained its staffing complement.

To implement the project, the H&SPD works through the gram panchayat to establish community plantations. The initial aim was to transfer full responsibility for management of the plantations to the panchayat after three years. The institutional tools for effecting this buildup and transfer of responsibility are a plantation management plan and an effective forestry extension organization.

The agreement for the project was signed in August 1982. Staff recruitment was immediately initiated and field activities were begun during the last quarter of 1982. The first plantations were established following the summer monsoons in 1983.

The first in-depth review of the project was scheduled for the fall of 1985. Annexure II lists the members of the evaluation team and the location of field sites visited. The review concentrates on three issues:

1. Extension and village forestry activities;
2. Technical support activities; and
3. Project management activities.

V. EXTENSION AND VILLAGE FORESTRY ACTIVITIES

The most critical issues facing the Maharashtra Social Forestry Project are associated with activities which influence the sustainability of community assets over the longer term. The evaluation team concentrated its efforts on those activities in an attempt to identify modifications which could increase the project's likelihood of long-term sustainability. The activities included personnel training programs, extension methodologies, seedling production and distribution systems, village management responsibilities, and distribution of benefits from community plantations. Findings and recommendations associated with each of these activities are presented in this section of the report.

TRAINING

As stated in the project paper, a principal element of Maharashtra Social Forestry Project is the:

"Provision of the formal and in-service training of forestry professionals in the techniques of forestry extension, community mobilization and forestry technology."

The paper goes on to state that the H&SFD will provide training for villagers to enable them to manage their community plantations and to participate in farm forestry activities.

Two training issues will be addressed: villager training and staff training. Long-term sustainability of social forestry cannot be accomplished unless the staff are adequately trained.

Villager Training

1. Findings:

Training of villagers is done by the H&SFD staff. All levels of staff, including Circle Directors, are involved in villager training. The primary training activities for villagers have been general transfer of information about the program, transfer of information on nursery and planting techniques, and field trips to successful community plantations and farm forestry activities. Village motivators, sarpanches, other gram panchayat members, cultivators and laborers have been the primary participants.

The budget available for training has declined during the past two years. During the same period, the number of exchange visits between districts decreased from 3337 to 2511. A fairly large number of women laborers have been employed in nursery and plantation activities, but a disproportionally small number of women have participated in the training activities. However, the number of women participating in training is increasing in many districts. Based on H&SFD data shown in Table 1, the

TABLE 1. Proposed training schedule and actual training.

	Proposed Course Duration in days	Actual Course Duration in days		Proposed Number of Participants		Actual Number of Participants		
		1983	1984	1983	1984	1983	1984	
<u>IN INDIA</u>								
Sr. Management Seminars	14	5	9	10	20	2	5	
Sr. Staff Extension Program Management	21	8	5	40	80	48	57	
Plantation Officer Extension Course ^a	42	10 90	3 90	78	222	10 35	35 35	
Technical Training Course	6	3	NA	20	40	32	NA	
Extension Instructor Short Course	21	NA	13	14	24	NA	30	
Staff Motivational Workshops	10	2	2	100	300	13	11	
Motivator's Orientation	3	2	2	450	900			
						7000 ^b	13000 ^b	
Local Government Officials Demonstration	1	2	2	250	350			
<u>OVERSEAS</u>								
Degree Program 36 months			2	0	0	0		
Non-Degree Program 12 months			2	4	0	0		
3 months			5	7	0	0		
1 month			10	15	8	0		

Notes: a Multiple offerings per year.
b These two types of training programs were combined.
NA Information not available.

bulk of the training activities have focused on villager training, which has far exceeded the original project paper goals and nearly doubled from 1983-84 to 1984-85.

2. Recommendations:

- a. Villager training should be modified. Target groups within the village need to be carefully identified and specific training programs developed to meet their needs. For example, sarpanches, gram panchayat members, and concerned villagers that are to be responsible for managing the community plantation need training in management techniques; cultivators need training in agro-forestry systems; all villagers need training in the economic and marketing aspects of both community plantations and farm forestry; and women need training in the use of smokeless chulahs and the potential uses of exotic species.
- b. The methods of training used for villagers should emphasize techniques which require minimal literacy skills. The use of films, videotapes, demonstrations, pictorial brochures, dramatic presentations and field trips is important and is to be encouraged. Special materials and methods targeted at specific village groups need to be developed. Problem-solving workshops are necessary for village leaders involved in community management.
- c. Village motivators need specialized training in extension methodologies so they can more effectively assist the APOs. Through proper selection and training village motivators could assist in training other target groups in the village.

Staff Training

1. Findings:

Initially, H&SPD effectively contracted universities and training institutes to provide introductory extension training for its staff. Since then, staff training has fallen far short of the training needed and outlined in the project paper. Table 1 shows the proposed training schedule and the actual training accomplished to-date. Training of the senior staff and extension training for all staff is severely lacking. Overseas training is virtually non-existent. Technical training in traditional forestry topics such as nursery and plantation management has been much stronger than extension training.

Virtually all staff interviewed stated that they would like to have more training in extension, communication, and publicity. The bulk of

the current formal staff training is done by the Circle Directors. The primary training POs and APOs receive is "on the job". This tends to be satisfactory when one learns from other well-trained colleagues. Currently that is not the case.

Based on the data provided, many of the training sessions for villagers have also served as training sessions for the POs and APOs. This is not satisfactory.

Currently, a newly recruited woman APO is assigned to an experienced APO for several weeks before being detailed to her own villages. This procedure is not followed for newly recruited men APOs. The explanation for the different procedures was based solely on gender rather than the individual training requirements of newly recruited employees. Thus, the net result is that the women APOs are better trained than the men APOs.

2. Recommendations:

- a. Overseas training using 4-12 week courses needs to be an integral part of the training program. To date only 10 percent of the non-degree overseas training proposed in the Maharashtra State Social Forestry project paper has occurred. It is imperative that bottlenecks impeding the nomination, selection and approval of individuals associated with overseas training be eliminated. The team endorses the Government of Maharashtra proposal of preparing, in advance, a list of officers eligible for overseas training and assigning officers from that list to appropriate courses as they are offered. Women officers should be included in overseas training.
- b. The development of a reasonably permanent training program which uses professional extension educators is strongly recommended. The non-forestry training should be provided predominantly by professional educators in the fields of extension, sociology, economics, and anthropology. Training program curricula should be developed by extension and forestry subject matter specialists. These programs should be tailored specifically to the needs of the category of staff members attending them and should not be combined with villager training programs. The Government of Maharashtra proposes the development of a "fullfledged training institute of its own." The team accepts this as one solution but would prefer a solution structured around the use of existing professional training institutes on a longer-term contractual basis.
- c. The methodologies used in training need to emphasize problem-solving skills. The format for extension training should not be the traditional lecture and rote

memorization mode but, rather it should be interactive, including group exercises, role-playing, videotaping and small group discussions. Extension foresters will be faced by a wide variety of situations with no easy answers. Thus, the use of instructors and a training process which increase the extension forester's ability to analyze and solve problems is imperative.

- d. Opportunities for staff members within districts, within circles and within the state to exchange information on successes and failures in both extension and forestry activities are needed. This might be accomplished through the use of one- or two-day semi-annual workshops for all levels of H&SFD personnel. These workshops could also include new information on agro-forestry practices and extension methodologies. Between semi-annual meetings, communication between staff could be supplemented via monthly H&SFD newsletters.
- e. Joint training programs, seminars and workshops involving H&SFD, agricultural extension and soil conservation personnel could sensitize each cadre to the other's activities and broaden their professional knowledge.

EXTENSION

A principle element of the project was to create a social forestry extension organization. Extension was a new orientation for the traditionally-trained foresters. Annexure III provides a conceptual framework of the extension concept. A better understanding of this concept is vital to the long-term sustainability of the program and to enhancing the overall effectiveness of extension activities.

1. Findings:

It was encouraging to see that extension activities permeate the entire organization. Most Joint Directors and District officers that the team met see extension as an integral part of their job. Extension work in the villages is not delegated solely to POs and APOs. Most senior officials indicated that they spent up to two-thirds of their time in the field. A portion of their "field" time was spent working with villagers and not merely with H&SFD staff.

Concern was expressed to the evaluation team by many H&SFD staff about the increasing workload being placed on POs and APOs as new villages are added to the program each year. Their workload may be reduced when gram panchayats assume management responsibility for community plantations and villagers become more involved in nursery and plantation activities. Currently, the time spent by POs and APOs between

plantation management and extension activities is skewed heavily towards plantation management. Increased training and expanded use of village motivators could decrease their workload. Presently the data indicate only 43 percent of the villages have motivators. There is some interaction between agricultural extension activities and those of the H&SFD. Such interaction could aid in reducing H&SFD workloads and should be encouraged and increased.

Extension work done by women APOs and motivators has the potential to be more effective than that done by men APOs and motivators. In Indian society where men cannot easily work with village women, they reach only half of the village population. Women APOs interviewed reported having no difficulty with men cultivators in farm forestry activities nor supervising male laborers. At the present time no data is being kept by the monitoring and evaluation section on measures of effectiveness of extension activities by sex so it is not possible to determine how effective the extension activities are or who is effective.

Publicity activities vary greatly among districts according to the data provided. They average a little over one activity for every two villages. Only one-third of the districts have used radio programs. Four districts have used television. Newspaper articles and poster campaigns have been used in 60 and 75 percent of the districts, respectively. Overall the number of publicity activities decreased from 1983-84 to 1984-85.

The villages in the program initially heard about the program through H&SFD staff member extension activities rather than through their publicity activities. The H&SFD staff reported to the team that many villages are now coming to them requesting to be in the program. However, they had difficulty relating their specific publicity activities to increased knowledge about the program. At this time it is impossible to adequately assess the effectiveness of current publicity activities.

One District Deputy Director is conducting field trips and informational sessions for his clerical staff so they can answer questions about the program when members of the public come to the office. This is an excellent practice and demonstrates a broader understanding and recognition of extension concepts.

Finally, evaluation and monitoring visits to villages can be used to positively impact future extension activities. By bringing an outsider to a village, villagers may assign increased importance to the program. For this reason the visits must be carefully planned and analyzed so messages sent to the villagers are adequately assessed. Considerable time and money is invested in all visits to villages and, thus, maximum extension benefit should be realized from them.

2. Recommendation:

- a. All villages should be assigned motivators as soon as possible. Their job responsibilities could extend beyond motivation to include distribution of seedlings and information on fuel saving devices. Active village motivators with responsible roles could extend the effectiveness of the PO and APO extension activities. Emphasis needs to be placed on selecting women motivators. One way to involve women in community forestry activities could be to encourage women members of the panchayat to be motivators. They could serve as a liaison between the panchayat and village women and could keep village women informed of panchayat decisions regarding social forestry activities.
- b. As deputed Forest Department APO's complete their assignment, it is desirable to replace them with directly recruited individuals. Recruitment of APO staff could emphasize women. Women APOs have the potential to increase village extension activity since they can effectively communicate with both men and women villagers. Only two percent of the current H&SFD staff are women (Table 2).
- c. The title of the PO and APO should be changed to Plantation/Extension Officer and to Assistant Plantation/Extension Officer as recently proposed by the Government of Maharashtra. Their primary jobs are not to raise plantations. That is to become the community's responsibility. Their primary job is to do extension and their title should reflect that responsibility.
- d. Interaction with agriculture extension staff could be increased. Whenever possible POs and APOs should participate in scheduled agricultural extension Training and Visit training sessions. Publicity activities should be increasing rather than decreasing. Emphasis should be on activities which reach illiterate or marginally literate people. Organized group visits to villages need to be formally incorporated into the extension activities. There are nearly 2200 villages already in the program. Over 50 villages were visited by the evaluation team. Numerous groups of visitors have visited villages during the past two years or will visit villages during the next two years. These visits should be distributed between all the villages and not concentrated on a few successful and convenient ones.

TABLE 2. Horticulture and Social Forestry Department staffing.

<u>Name of Office</u>	<u>Position</u>	<u>Target</u>	<u>1985</u>		
			<u>Total</u>	<u>Men</u>	<u>Women</u>
Director	Director	1	1	1	0
	Deputy Director (Administration and budget)				
	Assist. Director (Administration & Pub. Relations)	1	1	1	0
Monitoring and Evaluation	Joint Director	1	1	1	0
	Assist. Director	2	2	2	0
	Assist. Director (Evaluation)	3	3	3	0
Training, Research and Extension	Joint Director	1	1	1	0
	Deputy Director	0	1	1	0
	Assist. Directors	0	2	2	0
	Subject Matter Specialists	3	0	0	0
	Deputy Director Nurseries	1	1	1	0
	Research Officers	2	0	0	0
	Research Assistants	2	0	0	0
Circle	Joint Director	5	5	5	0
	Assist. Director	5	5	5	0
	Assist. Public Relations	5	5	4	1
District	Deputy Director	27	27	27	0
	Assist. Director	54	54	54	0
	Surveyors	81	81	81	0
	Plantation Officers	270	270	270	0
	Assist. Plantations	540	542	521	21
	Motivators	2140	927	251	676

Target: Project paper target.

Achievement: Actual achievement as reported by H&SFD.

The visits should be carefully planned to maximize the extension benefits of the visit. An important aspect of that planning includes determining who is visited and what activities are visited. Often photographers accompany the visitors. Copies of pictures taken could be presented to each village to be displayed in an appropriate public place to provide additional publicity for the program and to reinforce to the villagers that it and they are an important part of the program.

SEEDLING PRODUCTION AND DISTRIBUTION

The availability of tree seedlings through time is necessary if social forestry is to be sustained and expanded. Two factors affect seedling availability: seedling production and seedling distribution. Seedling distribution must focus on who uses the seedlings and how they are used.

1. Findings:

Based on data collected by the H&SFD (Table 3), over 90 percent of the seedlings in this project have been produced in H&SFD nurseries. However, between 1983-84 and 1984-85 the number of private individuals raising nurseries increased over seven fold while the number of H&SFD nurseries increased less than 40 percent over the same period. This trend of increasing numbers of private nurseries is desirable. However, the number of school and PVO/NGO nurseries is still disappointingly low.

Unfortunately, H&SFD village nurseries are only operated for a single year within any given village. Seedlings are only purchased by the H&SFD from the village nurseries the initial year the project enters the village and that year they are distributed free of charge to villagers. Funding for village nurseries is not provided during subsequent years. However, annually, state and center schemes, such as Rural Fuelwood Plantation and Tree for a Child are implemented through the H&SFD and provide seedlings free of charge to villagers throughout Maharashtra.

A number of H&SFD officials suggested that funding for village nurseries be provided for at least three years for the following reasons:

doing so would provide parity between the private tree planting and community plantation emphasis of the project; and

larger, risk-taking farmers are most willing to take seedlings in the first year, while smaller, more cautious ones are more enthusiastic in later years when the risks and benefits are better defined. Thus, a single year policy is skewed towards the larger farmers.

TABLE 3. Number of nurseries and seedling production by year.

<u>Purpose</u>	<u>For distribution</u>		<u>For SFD Planting</u>		<u>Total</u>					
	<u>1982-84</u>	<u>1984-85</u>	<u>1982-84</u>	<u>1984-85</u>	<u>1982-84</u>	<u>1984-85</u>				
	-----		-----		-----		-----		-----	
			(000 Seedling)							
	8,400	14,876	15,323	15,375	23,723	30,251				

<u>Source of Production</u>	<u>No. of Nurseries</u>		<u>Potted</u>		<u>Naked</u>		<u>Basket</u>		<u>Total</u>	
	<u>1982-84</u>	<u>1984-85</u>	<u>1982-84</u>	<u>1984-85</u>	<u>1982-84</u>	<u>1984-85</u>	<u>1982-84</u>	<u>1984-85</u>	<u>1982-84</u>	<u>1984-85</u>
	-----		-----		-----		-----		-----	
			(000 Seedlings)							
H&SFD	531	725	20640	22969	2277	3519	79	190	22996	26678
Farmers or private individuals	55	388	542	3112	35	153	10	-	587	3265
Men	20	157	386	1940	10	153	5	-	401	2093
Women	35	181	156	732	25	-	5	-	186	732
Schools	11	15	85	302	-	-	-	-	85	302
Non-government organizations	-	1	-	1	-	-	-	-	-	1
Other	1	1	30	5	25	-	-	-	55	5
TOTAL	598	1130	21297	26389	2337	3672	89	190	23723	30251

Note: Men and Women do not equal Farmers or private individuals because not all Districts reported the data by these categories.

One of the major successes of the H&SPD project has been the enthusiasm of farmers for planting trees on their own land. While the project envisioned around 47 percent of the total area planted to be private land by the 1985 planting season, private individuals had planted more than 20,000 hectares while all other planting activities under the H&SPD project had accounted for no more than 17,000 hectares.

Larger farmers were anticipated to be the first to take advantage of the opportunity to plant seedlings on their land, and for this reason the Maharashtra State Social Forestry Project document established a free distribution limit of 50 seedlings per household. The USAID project paper stipulated a similar limit of 300 seedlings per household but neither limit has been strictly observed.

One unanticipated aspect of private planting concerns the tendency for more prosperous farmers to take up forestry as a cash crop. These farmers, motivated mainly by anticipated financial gains, have planted their lands to eucalyptus and teak. There have been cases where aggressively enterprising farmers have shifted one or two hectares of their productive farmland from agricultural crops to forest crops but, generally, the forest crops have been grown on their marginal agricultural lands. Since larger farmers seem to be benefiting very handsomely from social forestry perhaps there is cause for concern on grounds of distributional equity. More likely, the pattern to be expected is one similar to the adoption of high yielding varieties of wheat and rice in the late 1960's and early 1970's, whereby smaller farmers quickly followed their larger colleagues in adopting the new technologies and in benefiting from them. Over a decade it would be reasonable to expect poor farmers to benefit proportionately more than rich farmers, since they will be able to grow trees on marginal land whereas rich farmers will have to switch their more fertile land from some other crop to trees if they want to participate in social forestry activities. The opportunity cost of money for forestry will be significantly less for poor farmers with marginal land than for rich farmers with good land. Thus, tree farming is not expected to exasperate the distribution of income in the countryside so far as farmers are concerned.

One aspect that should be given some attention, however, is the matter of labor utilization. Many farmers switching to tree crops on their own land are doing so in part to reduce their labor costs. The impact of this on the employment situation for agricultural labor is unknown. It may well prove that employment generated from planting trees on marginal and degraded land will more than compensate for the displacement of agricultural labor. In any case, India does need pulp for paper, feedstock for rayon manufacture, and poles for construction as well as fuelwood and forest products for domestic consumption. Social forestry is making significant progress in meeting all these needs.

2. Recommendations:

- a. Private nurseries could be substantially expanded. Nurseries provide a potential revenue-generating opportunity for women, schools and non-governmental organizations. H&SFD assistance and training needs to be focused at these potential village nursery operators.
- b. Seedling distribution policy needs to be carefully evaluated by the H&SFD, the Government of Maharashtra and the Government of India. The current distribution policy is a disincentive to the establishment and continued operation of village nurseries. The Maharashtra Social Forestry Project is only one of a number of seedling production and distribution schemes administered by the H&SFD. Seedling distribution policy needs to be standardized for all the schemes supervised by the H&SFD. In the absence of a standardized policy, seedling distribution criteria are meaningless. As long as individuals can acquire seedlings free of charge, private nurseries will not be profitable. Lack of permanent private nurseries will result in a reduced supply of seedlings over the longer-term.
- c. Impact of private tree planting programs on agricultural land use, cropping patterns, labor and rural income should be used to establish a seedling distribution policy.

TRANSFER OF PLANTATION MANAGEMENT RESPONSIBILITY

The original intent of the project was that the H&SFD would transfer the responsibility for community plantation management to the village after three years. This intent is expressed in the management plan prepared for each community plantation. The assumption is that the gram panchayat or a body appointed by it is interested in and willing to assume management responsibility for their plantation.

1. Findings:

With transfer of management responsibility less than a year away for the 540 plantations established in 1983, many gram panchayats are expressing a reluctance to assume that responsibility. There appear to be a number of factors contributing to their reluctance. The first is related to the income generation potential of the plantation. Those gram panchayats whose community plantation has begun to generate income from grass and fodder production and/or where a thinning of pole size material may be possible during the next year generally seemed more willing to assume management responsibility. Income generation is most commonly stated as a necessary criterion because of protection costs (approximately

Rs 2500/year). Few gram panchayats have sufficient income from other sources to assume this cost.

A second factor affecting transfer of management responsibility and, possibly one of greater importance than income generation, is the attitude of the sarpanches and gram panchayat members. Plantation establishment and management have been done primarily by the H&SFD and the village has not been actively and continually involved in the process. Although they have been kept informed of the activities and have signed the management plan, they often consider the community plantation belongs to the government. The perception that a community plantation is a government plantation is visibly reinforced to all villagers by the expensive trench-cum-mound constructed around them. Private plantations generally use less expensive protective measures.

A third factor which is uncondusive to the transfer of management responsibility is the frequent attitude of villagers that it is the government's responsibility to insure the availability of products needed by individuals. A self-help attitude is clearly lacking in some gram panchayats.

A fourth factor affecting the transfer of management responsibility is the concern that many sarpanches have about the protection of the plantation from theft and destruction once the H&SFD presence is removed. Although legal recourse is available to the gram panchayats, it appears unlikely that they will exercise that recourse. If this concern is a major factor in their reluctance to assume management responsibility for the plantation, an extended H&SFD responsibility is not going to resolve the problem. There will be an even more valuable resource to protect as the plantation reaches harvestable size.

Finally, many H&SFD staff have accepted the gram panchayat's reluctance to assume management responsibility rather than assisting the gram panchayats in overcoming obstacles they see associated with the management of their plantations. One can understand why H&SFD staff are reluctant to take risks with the plantations. They have invested considerable time, energy, and money, not to mention pride, into establishing them. However, the role of extension is to help the gram panchayats help themselves and the long-term sustainability of the community plantation depends on community management. The H&SFD cannot possibly manage and protect 4300 small, scattered forests.

Currently, the opportunity for gram panchayats to generate revenue for use at their own discretion on village programs is limited. Community plantations offer gram panchayats the potential to generate such income. This factor may help sustain community plantations over the longer-term.

2. Recommendations:

- a. The point in time that responsibility for management of the community plantations is transferred from the H&SFD to the gram panchayat should be based on the soil type and agro-climatic zone in which the plantation lies. The transfer date may vary from three to seven or more years. During the next 12-month period the H&SFD needs to relate plantation yields to soil types and agro-climatic zones and to establish a transfer date for each. Because of the wide variability in productivity potential, an arbitrary criterion of three years is not considered reasonable.
- b. The H&SFD must structure activities involving the acceptance of responsibility for management of the community plantations so they begin with the management plan and continually increase until the formal transfer date. It is unreasonable to expect that one day the plantation is the government's and the next day it is the gram panchayat's. The active involvement of villagers must begin before the first tree is planted. The management plan should identify all tasks related to nursery and plantation establishment, maintenance, and management. It should clearly specify the roles and responsibilities of the H&SFD, the gram panchayats and the villagers and define when and how the roles and responsibilities will change.

There is a tendency among the H&SFD staff to perpetuate the myth that plantation management is a complex undertaking beyond the abilities of villagers. This attitude must be overcome. The extension foresters should not disappear from the villages when the communities assume responsibility for the management of their plantations. They will need to maintain regular contact with the villagers over the years and provide advice and assistance on request.

- c. The H&SFD must actively encourage and support the gram panchayats in assuming responsibility for the management of their plantations. They should not say "Would you like to be responsible for the management of the plantation now or in two years?" Rather, they should say "This is your plantation. We want you to assume responsibility for its management. How can we help you do so?" The H&SFD should be firm, but willing to help the gram panchayats identify and implement solutions to the problems that are preventing them from assuming management responsibility.

- d. Gram panchayats who do successfully assume responsibility for the management of their community plantations should be used as "demonstration villages" for other communities. A village in Pune district has established a six member forest committee to manage its plantation. This approach should be carefully monitored and evaluated for possible use in other villages.

DISTRIBUTION OF PRODUCE FROM COMMUNITY PLANTATIONS

An equitable or fair distribution of benefits from the community plantation to the villagers presents many challenges to all involved in social forestry activities and other rural development activities in India. The project paper stated that "the anticipated distribution methods will include direct sale, auctions, payment in kind, and, where appropriate, distribution through the Government nistar system". The project paper also says that "...priority will be given to landless laborers, small and marginal farmers, and other impoverished groups prior to distribution to the general public".

Each management plan contains a resolution signed by the village sarpanch which states that the village agrees "...to abide by rules framed by the Government of Maharashtra from time to time for distribution/disposal of the forest produce and revenue received from the said plantations under the plan". On September 17, 1985 the Government of Maharashtra distributed an order that defines how the benefits from community plantations will be distributed.

1. Findings:

The evaluation team was impressed by the high level of benefits both H&SFD staff and gram panchayats expect villages to receive from the community plantations. The success stories from Gujarat have influenced expectations in Maharashtra such that villagers frequently expect the community plantation to provide a substantial income beginning in about the fifth year of operations. To date, produce derived from community plantations has been small and limited to grass and even lesser amounts of leaf fodder.

Employment of village laborers in nursery and plantation establishment activities has been the significant benefit villages derived from community plantations during their first three years. In 60 percent of the districts the number of laborers employed increased an average of about 50 percent from 1983-84 to 1984-85. During that period there was a 50 percent increase in the number of plantations established and a 100 percent increase in the area planted. The employment data also show a slight trend towards employing more women.

The benefit stream that can be expected from the community plantations depends upon a variety of factors: agro-climatic conditions;

the selection of species; future demand for fuel, fodder, poles and small timber; and prices. The first of these, agro-climatic conditions, is an immutable factor that determines the growth and quality of the products and partially the "survival rate" of the plants. Where there is assured rainfall, and good soils, the growth of the plants has been impressive. In the drought prone and drought stricken districts the growth is poorer and the survival rate is lower. All the districts, regardless of agro-climatic conditions, had plantations with survival rates over 80 percent. Often this was a result of replacement plantings undertaken by the H&SFD.

Selection of species is heavily influenced by the preferences and perceptions of the H&SFD staff. One of the major goals of the project is to increase the fuel and fodder supply in rural areas. Most gram panchayats perceive the fodder needs of their villages and, in the drought-prone districts, frequently prefer fodder trees to timber trees. Some gram panchayats have planted more than 80 percent of their plantations with fodder species. The villager's need for income and their perception of large financial gains that can be obtained from eucalyptus and teak plantations, have begun to raise the proportion of land in community plantations that is planted to species which are sold in the market place.

Gram panchayat members and villagers are uncertain as to how they should, will or may be required to distribute the benefits from the community plantations. Unless their plantation had actually begun producing a considerable amount of grass and/or fodder or unless pole size material was expected soon to be available, most villagers had given little thought to distribution schemes. Very infrequently did villagers refer to the management plan for distribution principles. Women interviewed had little, if any, knowledge about the distribution scheme to be used.

A variety of distribution schemes were suggested by villagers ranging from selling all produce at an auction to the highest bidder, with the gram panchayat using the income for community development projects, to distributing all produce equally among village members at no cost. Few people interviewed felt that landless villagers without cows should receive grass from the community plantation to sell or barter with other villagers. In some villages, villagers intended to distribute poles to the landless or the poor at subsidized rates only if they personally used them and did not sell them. Thus, it is not clear to what extent impoverished groups will benefit from the community plantations.

2. Recommendations:

- a) The Government of Maharashtra should develop three to five alternative models for the distribution of products from community plantations and allow the gram panchayats to select the most appropriate one for their situation.

The number of alternative benefit distribution schemes needs to be addressed. One is administratively easy. However, as recognized by the Government of Maharashtra such a solution is not consistent with ecological, economic, or extension principles which suggest that individual gram panchayats should be actively involved in selecting a benefit distribution scheme that most closely meets the needs of their particular situation.

- b. The availability of benefits over time needs to be considered when developing distribution schemes. The concept of a reasonably steady flow of income to the gram panchayat has not been emphasized to villagers during H&SFD extension activities. Some gram panchayats envision clear felling the entire community plantation and generating a large one-time revenue. If the community plantation is to be sustained into perpetuity then it may be desirable to create a somewhat constant benefit stream to the gram panchayat.
- c. Neither POs or APOs should be assigned the responsibility of enforcing benefit distribution schemes associated with community plantations. The question of who should and can enforce the scheme adopted by the gram panchayat needs to be addressed. If the PO or APO in a village is responsible for collecting the Government's share of the revenue from the plantation and for insuring that the remaining benefits are distributed to impoverished groups they are placed in a role which is contradictory to that of an extension person.

VI. TECHNICAL SUPPORT ACTIVITIES

Over four percent of the project's budget is earmarked for technical support and research. These project activities are designed to provide H&SFD staff with solutions to technical problems that they encounter during the implementation of the project. Findings and recommendations associated with these two activities are presented in this section of the report.

RESEARCH

1. Findings:

Numerous technical problems have surfaced which reduce the ability of H&SFD staff to effectively discharge their duties. As yet, financial resources have not been focused on finding solutions to these impediments. If H&SFD staff are to remain responsive to their client's demands and if the credibility of their actions and advice is to be maintained, accurate information on plantation productivity, market conditions and village dynamics needs to be obtained.

2. Recommendations:

- a. The research proposal on agro-forestry systems submitted by Mahatma Phule Krishi Vidyapeeth (agricultural university) at Rahuri needs to be initiated immediately. Negotiations on this study have spanned two years. Agreement exists; it is now time for action. Information obtained from this study will be an integral part of the H&SFD extension program.
- b. Data need to be collected and analyzed that can provide estimates of the level of products produced over time from community and private block and strip plantations. Various Forest Department and H&SFD plantation establishment schemes have been on-going in the state for the past five to seven years. Measurement and analysis of productivity based on these data, coupled with annual updates based on measurements and analysis of data from project sites could provide the H&SFD with estimates of productivity in a year's time. Since farmers are beginning to practice agroforestry in every conceivable way, with numerous combinations of trees and crops, their desire and willingness to experiment could also be an integral aspect of social forestry research. With such information the H&SFD, the panchayats, and private individuals could better plan for and respond to social forestry opportunities.

- c. A detailed wood balance study needs to be undertaken so present and future returns from marketing of forest products can be realistically estimated. A major factor driving interest and participation in social forestry activities, whether community or private, is the expectation of monetary gains. Increased supplies of forest products will impact market conditions. How and when these impacts will be realized is information the H&SFD must have if it is to advise the public on social forestry opportunities in a credible manner. Panchayats and private individuals need this information to make rational decisions concerning their participation in social forestry based on realizable expectations.
- d. Village dynamics and its impact on management activities associated with community plantations need to be understood and related to village social-economic factors. Long-term case studies of a social-economic cross-section of villages could provide this type of information. Such information would allow the H&SFD to effectively assist villagers in discharging their management responsibilities and in distributing benefits in a manner that would result in the continuous flow of products from their community plantations. Results from these studies could be used to develop management systems and form operational guidelines for extension personnel and for the transfer of management responsibility from the H&SFD to the villagers.
- e. Forest laws and regulations governing the sale and transport of forest products need to be analyzed in relation to their perceived and actual impact on social forestry participation. Results of an in-depth analysis could be used to recommend amendments to forest laws if they were needed, to establish efficient and effective operational procedures for the implementation of the regulations, and to develop materials which communicate factual information concerning the laws and their procedural requirements.

MONITORING AND EVALUATION

1. Findings:

Monitoring and evaluation activities are focused at providing project managers with information about the project so rational decisions can be made. However, information systems that provide data on productivity, identify problems which constrain effectiveness, provide information to formulate plans, justify program actions and budgets, and provide information to formulate management alternatives is very limited.

Individual circle directors have developed systems to monitor daily activities of extension officers and to schedule extension, training, nursery and plantation activities. The Government of India, in conjunction with the states, has formulated guidelines for the establishment and operation of a national social forestry monitoring system. The H&SFD may be the only state in India that has extensively pilot tested the procedure. Currently it is proceeding with the implementation of that system on an operational scale. The rapid implementation of monitoring and evaluation systems is essential to the long-term sustainability of this program.

2. Recommendations:

- a. The H&SFD proposal to the Government of Maharashtra for strengthening their monitoring and evaluation cell needs to be implemented. The monitoring and evaluation activity should be computerized so information can be rapidly recorded, summarized and reported.
- b. Monitoring and evaluation needs to be focused at inputs into and production of nursery and plantation activities, inputs into and resulting villager response to extension activities, inputs into and resulting staff effectiveness of training activities, and market conditions for forest and fodder products. Detailed monitoring and evaluation activities for each of these components include:

Nursery and Plantation Monitoring: Data on nursery production and distribution need to be acquired quarterly. Data on plantation condition, management activity, and employment by sex and acreage of land holdings need to be acquired annually.

Additional evaluation criteria could be developed by the H&SFD to monitor the current benefit distribution scheme. In addition to annual data on the benefits by sex, status and size of land holdings derived from the community plantations, the project paper suggests monitoring the number and substance of complaints received by the H&SFD regarding the distribution of forest products from them and monitoring the amount of produce from them being sold outside the village. These data would allow an accurate evaluation of the project beneficiaries and, if begun immediately, could be used to develop equitable distribution schemes.

Extension Monitoring: Data on extension and publicity activities need to be acquired quarterly. Data are not available on the number of contacts made by extension

personnel in a village, on the number of times a household must be contacted before it decides to join the program or requests seedlings, on the number and frequency of village meetings, and on the type of attendee at village meetings. Until these data are collected and correlated with measures of other program activities, it is not possible to evaluate which extension activities are successful and which extension workers are effective.

Training Monitoring: Data on training for each training session describing its topic, its duration, who presented it, and who received it need to be acquired quarterly. These participant data should be tabulated by occupation, job position, sex, status and acreage of land holdings. H&SFD staff and motivator training should be tabulated separately.

Training sessions could be evaluated by attendees and by a member of the monitoring and evaluation staff. Such an evaluation would identify whether or not the material was appropriate, the response of the participants to the program, and additional training needs. These information could be used to improve future training programs and increase their effectiveness.

The monitoring system should also allow one to determine how much additional training a particular employee needs. Obviously, performance measures must be carefully developed. Number of hectares planted or seedlings distributed within an employees area is not sufficient. Proportion of households participating in the program, attendance at village meetings, publicity activities, and villager's involvement in and protection of the community plantation might all be part of an extension effectiveness measure. Until monitoring and evaluation of the extension training program are institutionalized in the H&SFD, it will be impossible to effectively manage extension training activities.

Market Conditions Monitoring: Data on prices of forest and fodder products need to be acquired semi-annually.

VII. PROJECT MANAGEMENT ACTIVITIES

This section discusses issues which have a direct bearing on the operational effectiveness of the H&SFD. It is broken into five categories: departmental attitude reorientation, departmental organization, employment conditions, women's participation and project revisions. Findings and recommendations associated with each of these categories are presented in this section of the report.

DEPARTMENTAL ATTITUDE REORIENTATION

At the inception of this project a major issue was the question of whether or not the new organization could transform its role from its traditional mission of protection and production to its new mission of extension and education. A number of obstacles to redirection of purpose were evident. Perhaps foremost among these obstacles was the very pride and esprit d'corps that had built up within the forestry profession over the last century and more. This clan had formed largely in isolation from the general population as foresters pursued their professional development in the reserved forest areas. Their relations with the public were confined to keeping people out of their domain, supervising them as forest workers or selling forest produce to them.

Can an institution, who's experience in dealing with the public is largely negative or hierarchal, become an organization that would seek involvement with rural people, share its ideas with them, and act truly as their public servant? Despite what appeared to be positive indications from the Gujarat social forestry program, the answer to this question was at best uncertain when the project began in 1982. Evidence at the end of three years shows that a considerable reorientation has indeed begun to occur.

1. Findings:

Uniforms: Symbolic of the police power exercised by the Forest Department is the uniform worn by its members up through the rank of Range Forest Officer, a rank comparable to PO in the H&SFD. Initially, individuals in the H&SFD were divided between feeling that the uniforms should be retained so their position of authority would continue to be clearly established in rural India and feeling that they should be discarded to dispel the instinctive hostility they evoke in many villagers. In all but one circle the uniforms have been discarded and H&SFD staff appear in civilian dress like other rural development functionaries.

Plantation Spacing: At the outset of the project H&SFD staff drew upon their experience in production forestry to formulate their ideas about appropriate spacing for block plantations on community lands and for plantations on private lands. Since production forestry

species were frequently planted in a 2 x 3 meter pattern, they adopted similar procedures for trees used in social forestry activities, overlooking the new management objectives. Farmers quickly began experimenting with planting patterns that had intervals as narrow as 0.5 meter. The H&SFD staff observed the farmers actions, evaluated the result and have significantly revised their traditional norms. H&SFD officials have shown a flexibility in dealing with villagers that was not evident at the beginning of the project.

General attitude toward villagers: Initially the H&SFD staff believed that farmers were basically incapable of planting and caring for trees. They tended to see forestry technology as sophisticated and complex when compared to agricultural technology. During the first three years of the project, the H&SFD staff have come to recognize villagers as sophisticated and shrewd managers of soil-based production systems who can understand the technology of growing trees very quickly.

Cost recovery: Initially the H&SFD thought in terms of full cost recovery for all project activities. This outlook reflected their experience in production forestry where the Maharashtra Forestry Development Corporation produces a substantial yearly revenue for the State exchequer. The concept of cost recovery is antithetical to the operation of other rural development agencies, which either gave away their services for free (e.g. agricultural extension advice, state highway maintenance) or subsidize it heavily (e.g. agricultural credit, irrigation water). The H&SFD's outlook now emulates that of the other rural development agencies.

Verbal and non-verbal language: Interpersonal communication involves both verbal language (what we say) and non-verbal language (what we do, what our bodies "say" as we talk). Many of the H&SFD staff are saying the "right" things. They appear to recognize the importance of working with people, that forests and the society should be integrated, and they appear to truly believe that people's participation is necessary for the project to succeed. However, they also use words like "indoctrinate", "convince" and "we tell the people what to do". Such words are not extension words. Extension is a process of helping people understand, of listening to their concerns, of learning what they do know and of clarifying misunderstandings. The body language of some of the extension officers was counterproductive to accomplishing extension goals. In discussions with villagers it is important that they stay relaxed and maintain a non-aggressive posture.

2. Recommendations:

- a. H&SFD staff should eliminate words like "indoctrinate" and "convince" from their vocabularies when talking about and when talking to villagers. Once language becomes second nature to the H&SFD staff, desirable interpersonal communication skills may follow.

Circle Directors who have exempted extension officers from the parent Forest Department uniform requirement are to be commended. This action should be incorporated in the H&SFD operating policy. It should not, however, preclude the use of civilian uniforms that provide identity with the H&SFD.

- b. The H&SFD staff should concentrate on two-way communication flows; from the extension officer to the villager and from the villager to the extension officer. Training workshops to develop better listening skills and to better understand non-verbal behavior could be helpful.

DEPARTMENTAL ORGANIZATION

Although the H&SFD is definitely the major agency involved in social forestry activities in the state of Maharashtra, it is clearly not the only agency engaged in that effort. The Public Works Department, the Irrigation Department and the Forest Department for many years have planted and continue to plant trees along roadsides, railsides, canal sides and on urban and rural degraded lands. To accomplish its goals and objectives, the H&SFD must be able to efficiently collaborate and coordinate its activities with similar programs in other agencies.

1. Findings:

Table 4 lists schemes that are linked indirectly to H&SFD. The table has been assembled from a number of sources, it may not be complete and may be slight inaccuracies. However, it gives an idea of the total social forestry activity in Maharashtra.

With one exception, the schemes listed in Table 4 are administered by the H&SFD. As a result the H&SFD implementing activities are far greater than those associated with its own departmental budget. The one exception is the National Rural Employment Program which, beginning in 1985-86, will be administered by the gram panchayats.

A large portion of the funding is used for distributing seedlings to private individuals. Table 5 indicates the number of seedlings that were distributed through these schemes in the Ahmednagar District over the last several years. Their use in other districts is similar.

Programs administered through the H&SFD, including its department funded activities, are coordinated at the district level through a Social Forestry Committee that meets periodically under the Chairmanship of the Collector. Other committee members include the Deputy Director of Social Forestry (member secretary), the Chief Executive Officer, the Executive Engineer for Irrigation, the Executive Engineer for the Public Works

TABLE 4. Maharashtra State social forestry related programs and their outlays by year.

<u>Name of Scheme</u>	<u>1982-83</u>	<u>1983-84</u>	<u>1984-85</u>	<u>1985-86</u>
<u>STATE SPONSORED SCHEMES</u>				
	- - - - - (00,000 Rupees) - - - - -			
Central Nurseries	53.0 ^a	40.5 ^b	8.0 ^c	4.5 ^b
School/community nurseries	-	15.0	32.0 ^c	10.0 ^c
Tree for a child	25.4 ^a	26.4 ^b	2.0 ^c	10.0 ^c
Roadside/canalside plantation	350.4 ^a	-	4.9 ^c	4.3 ^c
Employment Guarantee	-	-	119.2 ^c	67.3 ^c
Vanmahotsava ("Forest festival")	-	-	20.0 ^c	22.0 ^c
<u>CENTRALLY SPONSORED SCHEMES</u>				
Massive fruit/fuel trees for small/marginal farmers	-	-	56.0 ^c	79.1 ^c
Rural fuelwood plantation	32.4 ^a	50.0 ^a	84.6 ^c	51.4 ^c
Western Ghats development program	-	-	19.0 ^c	16.1 ^c
National rural employment program	-	-	471.9 ^c	730.0 ^c
Drought prone area program	-	-	4.5 ^c	22.8 ^c
Integrated rural energy program	-	-	6.3 ^c	-
Rural landless employment guarantee scheme	-	-	182.4 ^c	-
STATE AND CENTRAL SCHEMES	<u>461.2</u>	<u>131.9</u>	<u>1010.8</u>	<u>1017.5</u>
Maharashtra Social Forestry Project	102.4 ^a	656.2 ^a	800.0 ^b	843.1 ^b
GRAND TOTAL	<u>563.6</u>	<u>788.1</u>	<u>1810.8</u>	<u>1860.6</u>

Notes: a. Figures from Government of Maharashtra, Planning Department, Annual Plan 1984-85, Part Two.

b. Figures from Government of Maharashtra, Planning Department, Seventh Five Year Plan, 1985-90 and Annual Plan, 1984-85, Part Two.

c. Figures supplied by Maharashtra Social Forestry Department, Pune.

TABLE 5. Seedlings distributed under various schemes in Ahmednagar District by year.

Name of Scheme	1982-83		1983-84		1984-85		1985-86	
	Pub lic	Pri vate	Pub lic	Pri vate	Pub lic	Pri vate	Pub lic	Pri- vate
	(00,000 Seedlings)							
Tree for a child	-	0.09	-	0.10	-	0.01	-	0.16
Rural Fuelwood plantation	-	3.20	-	3.36	-	1.60	-	0.40
Fruit trees on Scheduled Castes/Tribes lands	-	0.11	-	0.19	-	-	-	-
National Rural Employment Program	-	-	1.03	11.00	1.23	-	1.23	-
Employment Guarantee Scheme	-	-	1.02	-	-	-	-	-
Massive fruit/fuelwood program for Small and Marginal farmers	-	-	-	-	-	4.02	-	2.85
School/Community nurseries	-	-	-	-	-	5.16	-	-
Rural landless employment guarantee scheme	-	-	-	-	-	-	-	0.16
SCHEME SUBTOTAL	-	3.40	2.05	14.65	1.23	10.79	1.23	3.57
Maharashtra Social Forestry Project	1.05	-	1.75	1.60	3.79	3.74	6.90	7.94
GRAND TOTAL	1.05	3.40	3.80	16.25	5.02	14.53	8.13	11.51

Department, the Maharashtra State Seed Corporation representative and the Divisional Forest Officer.

The presence of the other schemes allows the H&SFD to administer a far greater total social forestry effort than project focused, departmental funding alone would permit. However, this additional work has been undertaken without additional staff. The H&SFD has managed the extra burden successfully, but the implementation of new wasteland development initiatives will tax its capability unless additional staff are added.

2. Recommendations:

- a. The H&SFD needs to expand from five to six circles so its divisional boundaries are aligned with revenue divisions. This would facilitate better coordination between division commissioners and other heads of departments.
- b. The H&SFD needs to be provided a complete complement of staff in all 29 administrative districts. During the second year of the project two new districts were formed in Maharashtra. Staff are needed so the H&SFD can effectively implement its programs in these new districts.

EMPLOYMENT CONDITIONS

The H&SFD initially acquired nearly all of its staff on deputation from the Forest Department. The parent organization is an old, well established agency with strongly developed employee benefits. Many of its benefits are not currently available to H&SFD staff. Since the H&SFD will continue to maintain the majority of its staff positions through deputation, its employee benefits have a direct bearing on the quality, morale and performance of its personnel.

1. Findings:

Mobility: The mobility of field staff and officers is critical to the successful operation of the H&SFD. Increased workloads and constant staffing levels requires that the same personnel be in more places more often. Vehicles are essential if their responsibilities are to be effectively discharged.

Staff Incentives: If H&SFD staff are to reorient themselves from producers/protectionists to promoters/extensionists, there must be incentives for them to do so. Leadership at the Joint Director and Deputy Director levels can provide incentives. So can job satisfaction. Both were very much in evidence during the mid-term evaluation.

Other incentive systems seem somewhat problematic. When the H&SFD staff were deputed for three years from the Forest Department to the H&SFD they generally received promotions. This was counterbalanced by the lack of housing facilities for H&SFD officers. Consequently, the H&SFD staff often have lower net incomes than their colleagues in the parent organization. This problem will gradually disappear as the H&SFD begins to construct its own housing accommodation, even though the process of building may take several years.

More problematic is incentives for APOs who were directly recruited into the H&SFD. Unlike their deputed counterparts, they will not be transferred back to the Forest Department, but will remain in the H&SFD for the balance of their careers in forestry. At the present time there is no career track for these employees within the H&SFD.

2. Recommendations:

- a. Each district office should have three jeeps. The Director's office could effectively use six jeeps. The H&SFD needs to purchase small motorcycles or mopeds for all of its APOs or provide them with low interest loans so they can personally purchase them. Dependence on rural bus systems reduces APO effectiveness and decreases their productivity.
- b. Because of the unique responsibilities of Forest Department employees on deputation to the H&SFD, special pay should be considered for officers of rank PO and above.

Construction of residential quarters for POs and APOs needs to proceed as rapidly as possible. Women could be given preference during the assignment of these quarters. Housing at the APO level might be an effective employment benefit that could result in the direct recruitment of higher quality personnel.

Promotion opportunities for the directly recruited APO cadre need to be formulated, approved, and implemented by the H&SFD. Without a career track, their future performance can be expected to decrease. A career track might presently result in a higher quality direct recruit candidate.

WOMENS' PARTICIPATION:

Social forestry programs have a great potential to directly and indirectly benefit women members of rural Indian society. Women benefit directly from the increased availability of fuelwood and fodder resources since they are frequently responsible for their collection. Often, more

than 50 percent of the labor force used in social forestry nurseries and plantation activities is women. Because women are generally not participants in the formal village decision making process, the H&SFD needs to continually consider women's issues as it establishes goals and procedures for implementing its programs.

1. Findings:

Increased Supply of Firewood, Fodder and Fruit: In almost all villages, women indicated that, in addition to fuelwood, they used agricultural crop residues, cowdung and small twigs for cooking. Those who have access to trees on their own land, often continue to supplement fuelwood with agricultural waste; marketing the major portion of their trees as a cash crop. When compared to their need for increased incomes, both men and women presently perceive the supply of fuelwood as the lesser problem. The exceptions are in the rural-urban fringes where a few suggested that they buy fuelwood from adjacent towns. It is not clear what proportion of families in villages are willing to buy fuelwood at a price. The present proportion may still be small. The effective supply of fuelwood could be increased through the expanded use of energy-saving devices.

Generally, both men and women place greater emphasis on raising fodder tree crops than on fuelwood crops. In many districts fodder trees were the major component in both private and community plantations. Both men and women indicated that the leaves would be used for fodder and the stems would be sold as a cash crop or used for domestic purposes. Remaining residues would be used as fuelwood.

Women place emphasis on raising fruit trees in private and community plantations. The interest is greatest in villages that have motivators. The fruits are used by families and are sold as cash crops. Women's involvement in social forestry increases the demand for and availability of fruit trees in project villages.

Girls comprise nearly 50 percent of the school population in Maharashtra. However, few were involved in the H&SFD school nursery programs. Their involvement could increase the participation of their mothers in social forestry activities and could help insure their participation in social forestry when they become adults.

Increased Rural Employment: Employment is addressed primarily towards the landless population of the village since their major opportunity to benefit from social forestry is through employment. In landless families the need for employment is equal between men and women. There is evidence that nursery and plantation activities have increased employment opportunities for women. During the life of the project, both employment of women in nurseries and the number of women managed nurseries has increased. Unfortunately, districts which have women-managed nurseries have women motivators, whereas as districts without women-managed nurseries report only male motivators.

Cottage industries which use produce from community plantations could provide employment opportunities for women. They include making pickles, scaps and gums, extracting honey, preserving fruits, and weaving cane products. Although these industries exist in villages throughout India, they were not observed in the project villages the team visited.

2. Recommendations:

- a. The H&SFD needs to emphasize the planting of fodder and fruit trees in private and community plantations.

Smokeless chulas, solar cookers, biogas plants and improved crematoria should be vigorously encouraged and included as an active component of the extension program. The H&SFD might consider a reward scheme to encourage the adoption of fuel-saving devices within project villages. For example, women in households which adopted fuel-savings devices could be given cooking utensils and a certificate during a public village ceremony.

School nursery programs should be expanded. The income received from selling seedlings could be used to purchase textbooks, training materials and school uniforms.

Benefits associated with each of these activities most directly impact and benefit women members of the community.

- b. Within project villages, women and landless should be encouraged and trained to raise seedlings around their homesteads for sale to the H&SFD and to private farmers.

The H&SFD could provide training in cottage industry activities for women. Selected industries could increase continuous, long-term rural employment opportunities for them. Institutions with experience in this type of training exist in the states of Maharashtra and Gujarat.

PROJECT REVISIONS

Economic factors, department programs, and department responsibilities have changed substantially since the beginning of this project. The H&SFD has managed the change well but the constraint of financial resources has restricted programs and policies within the Department.

1. Findings:

Rephasing Project Targets: During the life of the project 4300 villages will be identified and, within them, a total of 81,000 hectares of community and private land will be reforested in those villages. Villages are selected annually. All 4300 villages will be included in the program during the five year period July 1983 to July 1987. The originally schedule extended until July 1988 but the extra year is no longer necessary.

Originally, the proportion of block plantation to private plantation acreage was 50:50. In many villages, community land is becoming more difficult to obtain because of encroachments, because of assignments to landless and other programs, and because villagers want to retain grazing land for traditional uses. At the same time more landowners are recognizing that growing trees can be profitable and also protects their land from erosion while providing wood, fuel and fodder for domestic use. Thus, planting on private land is increasing. As advances are made in agroforestry more trees may be planted on private lands. Within a village, the proportion of block plantation to private plantation acreage is now larger for private plantations.

Until 1985 each district in the state was annually assigned approximately an equal number of villages. Last year that did not occur. A uniform assignment of targets is desirable unless staff are shifted between districts to balance the workloads. Workload imbalance will selectively reduce village extension activity and result over the longer term in a greater number of community plantation failures.

Cost Revisions for Plantation Models: Data on actual expenditure incurred to date were reviewed for 27 community block plantations in six districts. Since cost data for the current year, 1985-86, cover only the first five months of the fiscal year, it is not possible to determine whether annual expenditures in 1985-86 will exceed the original 1982 estimates. Since pre-planting operations (PPO) and first year of operations (FYO) costs per hectare are the largest components in the total per hectare cost model, Table 6 summarizes the data over time for these two items.

PPO expenditures exceeded the estimated cost in only eight of 27 cases and in those eight cases it was by less than 10 percent in all but one. FYO expenditures were less than the initial estimate in 14 of 17 plantations. Overall per hectare costs have been reasonable and in line with original estimates.

The project paper used a wage rate of Rs 3 to Rs 3.6/day. Currently, the minimum wage averages Rs 8/day. During the period 1982 to 1985 material costs also rose. Therefore, it is unclear why the reported actual per hectare plantation expenditures are still similar to the original 1982 estimates. The original estimates are given in

TABLE 6. Summary of pre-planting and first year operations costs per hectare by year.

Year	No. of Sample	No. Showing Excess Expenditure
Pre-Planting Operations		
1982	12	3
1983	9	2
1984	6	3
First Year Operations		
1983	5	1
1984	12	2

Annexure IV. Because of the increase in wages and materials, the H&SFD recently prepared estimates based on the revised costs and included several cost components that were omitted from the initial estimates (Annexure V). The evaluation team's tentative modification of these revisions is given in Annexure VI. Plantation cost estimates can only be evaluated and finalized after the discrepancies between the reported expenditure data and cost estimates are resolved.

The project paper estimated nursery production costs to be Rs 350 per thousand seedlings. This estimate is still reasonable. Although labor and material costs have risen, the increase has been offset by the H&SFD policy to use numerous, large regional department nurseries and to only use a private nursery for a single year. Increased emphasis on village level, reasonably permanent, private nurseries could modify nursery production costs.

Since the demand for fuelwood does not exist in the villages, except on special occasions such as weddings and feasts when fuelwood may have to be purchased and house construction/repairs are undertaken too sparingly to constitute a significant and regular demand, the market for social forestry products is in the urban and semi-urban areas.

A few villages had resident village fuelwood dealers. Although village trade in poles is not unknown, it is currently infrequent. Since supplies to most market towns in Maharashtra presently seem to come from Andhra Pradesh, villagers do not expect any difficulty in disposing of their products. H&SFD information on the retail price of firewood, poles and bamboo in some market centres in Maharashtra is shown in Annexure VII. Producer's prices, after subtracting the costs of cutting, transporting, handling, storing, interests on working capital and profit margins of the intermediaries, would not exceed 50 percent of these retail prices.

Just as wages and material costs have risen over the initial estimates during the last three years, so too have output prices. If one assumes that the Maharashtra producer price is approximately 50 percent of the retail price, Table 7 gives realistic estimates of current producer prices for Maharashtra.

TABLE 7. Current estimates of output prices for community plantations products.

<u>Item</u>	<u>Price in Rupees</u>
Poles (18 foot)	14.00/pole
Bamboo (Hollow 21 foot)	1.50/pole
Bamboo (Solid 21 foot)	3.00/pole
Fuelwood	250.00/metric ton
Leaf fodders	186.00/metric ton
Grass	186.00/metric ton
Fruits	1240.00/metric ton
Tree seed	19.00/metric ton
Grass & legume seed	0.12/kilogram

Using these prices and the revised cost estimates given in Annexure VI, cost and benefit streams were developed for a community block plantation. Its financial internal rate of return was above 12 percent. The original project paper evaluated investment opportunities against a 12 percent internal rate of return.

Expenditure levels: Table 8 shows project paper expenditure targets in rupees by Indian Fiscal Year (IFY) as well as actual expenditure for the period 1982-85.

TABLE 8. Proposed and actual expenditures in million rupees.

<u>IFY</u>	<u>PP</u> <u>Target</u>	<u>Cum PP</u> <u>Target</u>	<u>Act.</u> <u>Expt.</u>	<u>Cum Act.</u> <u>Expt.</u>
82-83	19.984	19.984	10.237	10.237
83-84	55.723	75.707	64.009	74.246
84-85	70.162	145.869	84.307	158.553

At this point in the project, the total expenditure in Indian rupees exceeds project paper targets. However, Table 9 compares the proposed proportion of expenditures by budget category with the proportion associated with actual expenditure. Although total expenditures exceed project paper estimates, funding for selected budget categories has been disappointing. The categories where expenditures are lacking (buildings, technical support, training and research) are the precise categories which have the greatest impact on the long-term sustainability of the project.

TABLE 9. Proportion of expenditure by budget category.

<u>Budget Category</u>	<u>Proposed in PP</u>	<u>Actually Incurred</u>
Direct plantation costs	.457	.515
Indirect plantation costs		
Staff	.254	.283
Operation costs	.094	.125
Building & equipments	.112	.053
Research and Training		
Technical support	.022	.000
Training - Domestic	.022	.019
Foreign	.019	.004
Research	.020	.000
TOTAL	1.000	1.000

2. Recommendations:

- a. The project targets should be phased over the period September 1982 to March 1988 and be modified as shown in Table 10. Given the difficulty in obtaining community land and the increased interest in private plantations, the proportion of block plantation to private plantation acreage should be changed to 40:60. Since the number of villages and area targets gradually increased during the project period, the effect of this change on average community plantation size is to hold it approximately constant at nine hectares per village for the last three years of the project. Original targets and accomplishments are shown in Table 11.

TABLE 10. Revised project village and acreage targets.

IFY	VILLAGE No.	BLOCK	PRIVATE	WATERSHED Hectares	STRIP	Scheduled	
						Castes/ Tribes	Total
82-83	0	0	0	0	0	0	0
83-84	540	2,355	2,355	40	200	50	5,000
84-85	810	5,730	5,730	90	500	350	12,400
85-86	810	6,950	6,950	110	590	400	15,000
86-87	1,070	9,720	14,580	0	0	0	24,300
87-88	1,070	9,720	14,580	0	0	0	24,300
TOTAL	4,300	34,475	44,195	240	1,290	800	81,000

TABLE 11. Physical targets and achievements by year.

Activity	1982-83		1983-84		1984-85		To date	
	Target	Actual	Target	Actual	Target	Actual	Target	Actual
Villages	540	540	800	810	800	810	2,140	2,160
	----- (Number) -----							
Plantations	----- (Hectares) -----							
Block	2,355	2,639	5,730	5,441	6,950	6,643	15,035	14,723
Private	2,355	2,517	5,730	5,918	6,950	12,273	15,035	20,708
Watershed	40	16	90	63	110	50	240	129
Strip	200	461	500	678	590	552	1,290	1,691
Scheduled Castes/Tribes	50	26	350	329	400	482	800	837
TOTAL	5,000	5,659	12,400	12,429	15,000	20,000	32,400	38,088

Target: Project paper target

Actual: Actual achievement as reported by H&SFD.

- b. H&SFD and USAID jointly revise the estimated cost and benefit streams developed for community block plantations.
- c. Funding and expenditures for buildings, technical support, training and research needs to be increased to at least the proportion specified in the project paper.
- d. The Government of Maharashtra and USAID develop a revised budget to reflect costs associated with the implementation of recommendations stemming from this evaluation as well as other changes in project costs, and agree on a modified fixed amount reimbursement payment schedule by 31 December 1985.

ANNEXURE I. GLOSSARY OF TERMS.

APO	Assistant Plantation Officer. Forest Department rank of Forester.
Gram Panchayat	A five member, elected, village governing body with responsibility to administer development activities within the village and carry out various other functions delegated to it by government.
H&SFD	Horticulture and Social Forestry Department
IFY	Indian Fiscal Year. April 1 to March 31.
Nistar system	Rights and privileges given to villagers by the forest department governing the villager's use of forests and forest produce from forest department lands.
PO	Plantation Officer. Forest Department rank of Range Forest Officer.
Rs	Rupees
Sarpanch	Elected head of the gram panchayat.

ANNEXURE II. TEAM MEMBERS AND VILLAGES VISITED.

	<u>Team Members</u>
Dr. Charles R. Hatch, USAID/New Delhi	Team Leader and Forestry Advisor
Mr. Harold E. Fisher, USAID/New Delhi	Project Officer
Dr. Jo Ellen Force, University of Idaho	Extension Specialist
Dr. B. Sen, USAID/New Delhi	Agricultural Economist
Dr. Zarina Bhatti, USAID/New Delhi	Social Scientist
Dr. Harry W. Blair, Bucknell University	Political Scientist

Villages visited

<u>District</u>	<u>Village</u>
Sindhudurg	Bandha Vetye Sanghli
Kolhapur	Liattiwade Madilage Rakadi Tilvani Vathar Tarf
Sangli	Itakare
Satara	Kameri Chinchner Koregaon Kumthe Bhujinj Anawadi
Nagpur	Pipla Dhapewada
Bhandara	Pahela
Wardha	Seloo Yelakali

<u>District</u>	<u>Village</u>
Yeotmal	Sarui Hatola Nargaon Belora
Ahmednagar	Sidhi Chincholi Chimini Nepti
Nashik	Musalgaon Nitane Aoshewadi
Dhule	Nawadane Kundanewata
Jalgaon	Rangengaon
Pune	Karanje Kenjal
Beed	Pargaon Ashti
Osmamanabad	Upla Dhamiphal Bavi
Latur	Samangaon Babulgaon Gharni Ralga
Nanded	Pokharni Dhanova Marlak Bondar
Parbhani	Erandeshwar Bori
Jalna	Golapangri Dudhana Kalegaon
Aurangabad	Bhamburda

ANNEXURE III. THE EXTENSION PROCESS

A better understanding of the extension concept is vital to the long-term sustainability of the program. Figure 1 provides a conceptual framework for the extension process. At the beginning of the program, the majority of the villagers had no input into the program. Very few Gram Panchayat members appeared to have any input into the management plan except to sign it. During these first few years of the program, the extension program has been primarily one of dispensing information to the villagers. Thus, a reasonable portion of the villagers seem to be aware of the program at this time.

During the coming year the emphasis in the extension activities must focus on ensuring the villagers develop knowledge about forest management. Knowledge implies a thorough understanding of the information provided and an ability to apply the knowledge. This comprehension is necessary to sustain the program.

Once the villagers and H&SFD are knowledgeable about forestry and each other wants and needs from the program, true involvement in decision-making, management, and problem-solving can result. At such a time the villagers can participate in guiding the program and actual societal learning will have been accomplished.

It is clear that the extension process has begun in the H&SFD. It is not clear that the extension process will continue to evolve unless the H&SFD staff receives adequate training from well-qualified, competent extension professionals.

THE EXTENSION PROCESS

NO INPUT -----> INFORMATION -----> KNOWLEDGE -----> INVOLVEMENT

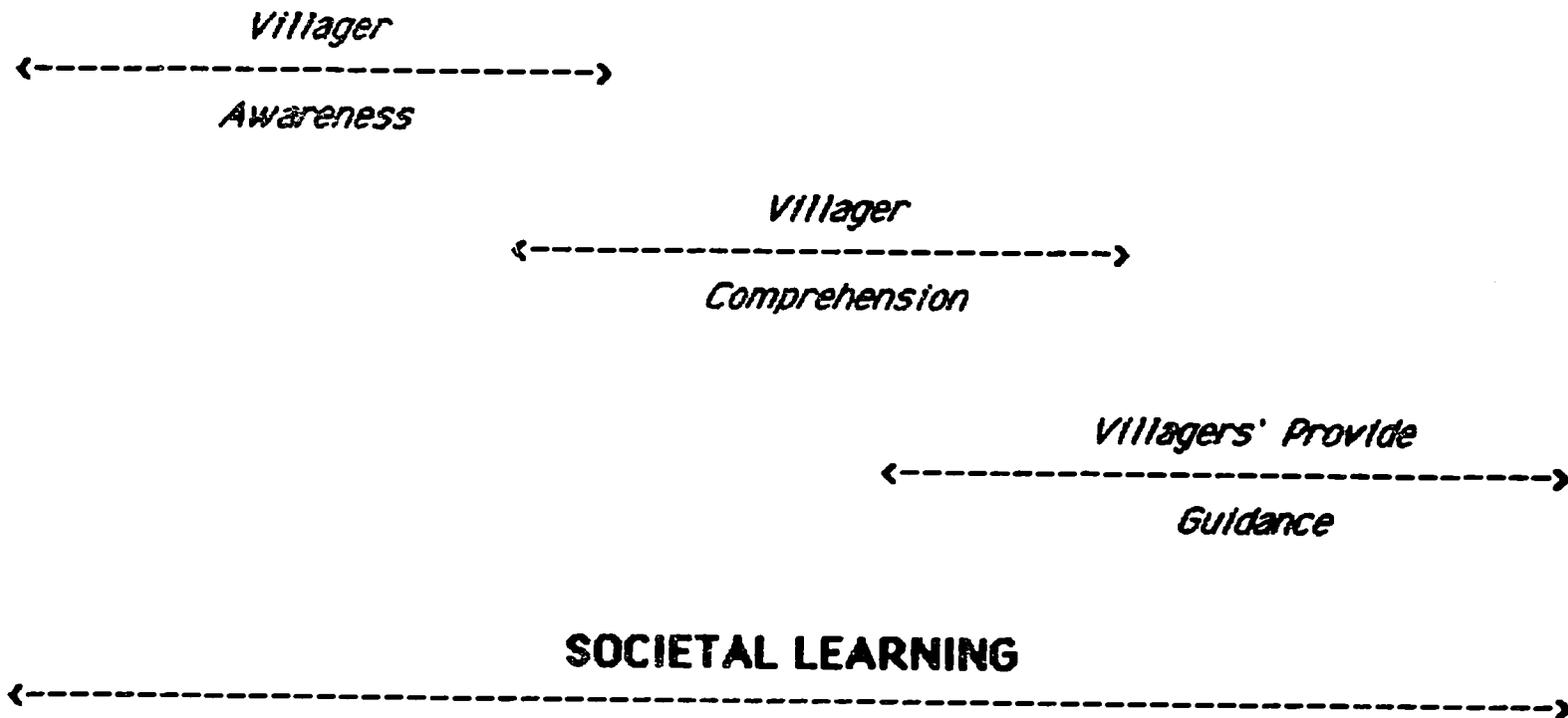


FIGURE 1. A diagram of the conceptual processes underlying extension activities.

ANNEXURE IV. ORIGINAL ESTIMATE OF COMMUNITY PLANTATION COSTS.

BLOCK PLANTATIONS COSTS

<u>Pre-Planting Operations</u>	<u>Costs in Rupees per hectare</u>		
	<u>Labor</u>	<u>Materials</u>	<u>Total</u>
Survey and demarcation	3	-	3
Preparation of treatment map	6	-	6
Soil conservation	30	-	30
Trench-cum-mound fencing	882	-	882
Alignment for pits	10	-	10
Roads & inspection paths	8	-	8
Motivator/Watch & ward (3 mo.)	90	-	90
Digging of Pits	560	-	560
Preparing seed spots	90	-	90
Miscellaneous and equip.	-	10	10
Labor welfare	-	95	95
Nursery cost	81	-	81
Seed cost	-	108	108
TOTAL	1760	213	1973
 <u>First Year Operations</u>			
Filling of pits	160	-	160
Transportation	4	176	180
Planting of agave	5	-	5
Planting of seedlings	250	-	250
Road maintenance	2	-	2
Weeding	250	-	250
Casualty replacement	44	-	44
Fire protection	4	-	4
Motivator/Watch & ward (12 mo.)	360	-	360
Miscellaneous and equip.	-	7	7
Labor welfare	-	67	67
Nursery cost	77	13	90
TOTAL	1156	263	1419
 <u>Second Year Operations</u>			
Weeding	125	-	125
Motivator/Watch & ward (12 mo.)	360	-	360
Fire protection	4	-	4
Miscellaneous and equip.	-	4	4
Labor welfare	-	32	32
TOTAL	489	36	525

<u>Third Year Operations</u>	<u>Costs in Rupees per hectare</u>		
	<u>Labor</u>	<u>Materials</u>	<u>Total</u>
Weeding	125	-	125
Fire protection	4	-	4
Motivator/Watch & ward (12 mo.)	360	-	360
Miscellaneous and equip.	-	2	2
Labor welfare	-	31	31
TOTAL	489	33	522

Subsequent Years Operations

Fire protection	4	-	4
Miscellaneous and equip.	-	1	1
Labor welfare	-	25	25
TOTAL	4	26	30

<u>Year</u>	<u>Summary in Rupees per hectare</u>		
	<u>Labor</u>	<u>Materials</u>	<u>Total</u>
Pre-Planting Operations	1760	213	1973
First Year Operations	1156	263	1419
Second Year Operations	489	36	525
Third Year Operations	489	33	522
Fourth Year Operations	4	26	30
Fifth Year Operations	4	26	30
TOTAL	3902	597	4499

ANNEXURE V. H&SPD REVISED ESTIMATE OF COMMUNITY PLANTATION COSTS.

BLOCK PLANTATIONS COSTS

<u>Pre-Planting Operations</u>	<u>Costs in Rupees per hectare</u>		
	<u>Labor</u>	<u>Materials</u>	<u>Total</u>
Survey and demarcation	4	-	4
Preparation of treatment map	1	-	1
Soil conservation	90	-	90
Trench-cum-mound fencing	1163	-	1163
Alignment of pits	8	5	13
Preparation of site including digging pits	870	-	870
Miscellaneous and equip.	-	15	15
Labor welfare	-	52	52
Contingencies	-	26	26
Nursery cost	00	400	800
Agave planting	75	75	150
TOTAL	<u>2611</u>	<u>573</u>	<u>3184</u>
<u>First Year Operations</u>			
Filling of pits	500	-	500
Nursery cost	300	175	475
Transportation	50	210	260
Planting grass seed	80	120	200
Planting of agave	45	-	45
Planting prosopis	8	40	48
Planting of seedlings	175	-	175
Weeding & Casualty replace	350	-	350
Fire protection	8	-	8
Watch & ward (10 mo.)	300	-	300
Sign board	10	40	50
Miscellaneous and equip.	-	15	15
Soil working	350	-	350
Labor welfare	-	44	44
Contingencies	-	22	22
TOTAL	<u>2176</u>	<u>666</u>	<u>2842</u>

<u>Second Year Operations</u>	<u>Costs in Rupees per hectare</u>		
	<u>Labor</u>	<u>Materials</u>	<u>Total</u>
Casualty replacement	102	90	192
Weeding	320	-	320
Maintenance	30	-	30
Watch & ward (12 mo.)	360	-	360
Fire protection	8	-	8
Labor welfare	-	16	16
Contingencies	-	8	8
TOTAL	820	124	944

Subsequent Year Operations

Fire protection	15	-	15
Watch & ward (12 mo.)	360	-	360
Labor welfare	-	8	8
Contingencies	-	4	4
TOTAL	375	12	387

<u>Year</u>	<u>Summary in Rupees per hectare</u>		
	<u>Labor</u>	<u>Materials</u>	<u>Total</u>
Pre-Planting Operations	2611	573	3184
First Year Operations	2176	666	2842
Second Year Operations	820	124	944
Third Year Operations	375	12	387
Fourth Year Operations	375	12	387
Fifth Year Operations	375	12	387
TOTAL	6732	1399	8131

ANNEXURE VI. EVALUATION TEAM ESTIMATE OF COMMUNITY PLANTATION COSTS.

BLOCK PLANTATIONS COSTS

<u>Pre-Planting Operations</u>	<u>Costs in Rupees per hectare</u>		
	<u>Labor</u>	<u>Materials</u>	<u>Total</u>
Survey and demarcation	4	-	4
Preparation of treatment map	1	-	1
Soil conservation	90	-	90
Trench-cum-mound fencing	1095	-	1095
Alignment for pits	8	5	13
Digging of Pits	870	-	870
Miscellaneous	-	15	15
Labor welfare	-	48	48
Nursery and seed costs	200	400	600
Agave and thorny species	105	75	180
Motivator (3 months)	19	-	19
Contingencies	-	29	29
TOTAL	2392	572	2964
<u>First Year Operations</u>			
Filling of pits	500	-	500
Nursery cost	53	106	159
Transportation	9	210	219
Grassbed preparation and seed sowing	80	120	200
Planting of agave	45	-	45
Sowing of prosopis seeds	8	40	48
Planting of seedlings	175	-	175
Weeding and casualty replacement & soil working	350	-	350
Fire protection	8	-	8
Watch and ward (10 mo.)	300	-	300
Signboards	10	40	50
Miscellaneous	-	15	15
Labor welfare	-	32	32
Motivator	75	-	75
Contingencies	-	25	25
TOTAL	1613	588	2201

<u>Second Year Operations</u>	<u>Costs in Rupees per hectare</u>		
	<u>Labor</u>	<u>Materials</u>	<u>Total</u>
Casualty replacement	32	64	96
Weeding	320	-	320
Maintenance	30	-	30
Watch & ward (12 mo.)	360	-	360
Fire protection	8	-	8
Labor welfare	-	16	16
Motivator	75	-	75
Contingencies	-	9	9
TOTAL	825	89	914

<u>Third Year Operations</u>			
Watch & ward (12 mo.)	360	-	360
Fire protection	15	-	15
Labor welfare	-	9	9
Motivator	75	-	75
Contingencies	-	5	5
TOTAL	450	14	464

Subsequent Year Operations

Fire protection	15	-	15
Labor welfare	-	2	2
Contingencies	-	2	2
TOTAL	15	4	19

<u>Year</u>	<u>Summary in Rupees per hectare</u>		
	<u>Labor</u>	<u>Materials</u>	<u>Total</u>
Pre-Planting Operations	2392	572	2964
First Year Operations	1613	588	2201
Second Year Operations	825	89	914
Third Year Operations	450	14	464
Fourth Year Operations	15	4	19
Fifth Year Operations	15	4	19
TOTAL	5310	1271	6581

ANNEXURE VII. RETAIL PRICES OF SELECTED FOREST PRODUCTS.

<u>Location</u>	<u>Fuelwood</u>				<u>Eucalyptus Poles</u>				<u>Teak Poles</u>				<u>Solid Bamboo Poles</u>				<u>Hollow Bamboo Poles</u>			
	<u>82</u> Rupees/metric	<u>83</u>	<u>84</u>	<u>85</u> ton	<u>82</u>	<u>83</u>	<u>84</u>	<u>85</u>	<u>82</u>	<u>83</u>	<u>84</u>	<u>85</u>	<u>82</u>	<u>83</u>	<u>84</u>	<u>85</u>	<u>82</u>	<u>83</u>	<u>84</u>	<u>85</u>
Kolhapur	400	400	500	600	-	-	1.5	2.0	13.0	15.0	17.0	19.0	2.0	2.0	2.5	3.0	6.0	6.0	7.0	8.0
Aurangabad	-	-	-	350	-	-	-	6.0	-	-	-	25.0	-	-	-	-	3.0	4.0	5.0	6.0
Nashik	650	650	670	550	-	-	-	3.0	5.0	6.0	6.0	8.0	4.0	5.0	6.0	7.0	3.0	4.0	4.0	5.0
Akola	-	550	600	650	-	-	-	-	-	3.5	4.0	4.0	-	10.0	10.0	12.0	-	3.0	3.0	4.0
Nagpur	400	400	450	350	1.0	1.0	1.0	1.0	2.5	2.5	3.0	3.5	-	4.0	4.5	4.5	-	-	-	-