USAID DESIGN TEAM REPORT

on

MADHYA PRADESH
SOCIAL FORESTRY PROJECT

NEW DELHI, INDIA

JANUARY 1981

TABLE OF CONTENTS

	Page
Summary	1
Madhya Pradesh	4
The Proposal	7
Evaluation of Proposal	24
A. Viability	24
B. Equity	44
C. Growth	50
D. Integration	53
E. Recommendations and Modified Proposal	57
Strategy of Program Expansion	58
The System of Feedback, Analysis, Research and Progressive Modification of Practices	62
Staff Recruitment and Development	66
Incentives and Means for Village Participation	70
Means to Promote Supporting Activities Outside the Directorate	74
Additional Comments	75
Budget for Modified Proposal	76
Criteria for Future Evaluation of the Program	90

Map 1	Madhya Pradesh	9
Table 1	Organizational Chart of Social Forestry Wing	10
" 2	Expansion Plan, M.P. Proposal	11
" 3	Budget, M.P. Proposal	13
" 4	M.P. Budget in Revised Format	14
" 5	Pilot Division Expansion Plan	60
" 6	Regular Division Expansion Plan	61
" 7	Expansion Plan, Modified Proposal	63
" 8	Summary of Staff Expansion, Modified Proposal	67
" 9	Organization Chart for SF Wing, Modified Proposal	68
" 10	Budget, Modified Proposal	77
" 11	Proposed M.P. and Modified Budgets by type of Expenditure	82
" 12	Proposed M.P. and Modified Budgets by Organization and Function	83
" 13	Nursery Costs	84
" 14	Plantation Costs	86
" 15	Proposed M.P. & Modified Budgets	87
" 16	Modified Budget by Phase and Function	88
" 17	Field Activity Costs, Modified Proposal	89

Annex 1 Technical Analysis
Annex 2 Economic Analysis
Annex 3 Social Soundness Analysis

Summary

The Government of Madhya Pradesh and the United States Agency for International Development have tentatively agreed to share the costs for development and operation of a social forestry organization for its initial phase of approximately five years. The cost of the program has been estimated at about forty crore rupees. It would be divided about equally between the governments of Madhya Pradesh and the United States. USAID requested this team*to assess the proposed program and to recommend modifications in it that appear necessary.

The team undertook its assessment with four basic questions in mind.

1. Is the proposed program viable from ecological, economic, social and administrative points of view?

2. How equitably will gains from the proposed program be distributed?

3. What capacity will the program have for growth and improvement?

4. What potential does the program have for growing contribution within the framework of rural development strategy in Madhya Pradesh?

The proposed program is a pioneering effort to conserve forest resources by developing village supplies of fuelwood, timber, fodder and other necessities on currently unforested lands and, by producing such crops, to alleviate the poverty that now forces villagers to destructive forest uses. As befits its pioneering character, the experimental qualities of the program deserve foremost consideration. The test of the program five years hence will be its capacity to accomplish more than seems possible today. The team has therefore approached its assessment with the view that, above all, the proposed social forestry organization must have the capacity to rapidly translate the lessons of field experience into continuously improving skills, operational procedures and institutional relationships.

The team concluded its review with full confidence in the ability of the Madhya Pradesh Forest Department to execute its proposed program effectively at the planned level of expenditure. Its economic and ecological analyses indicate that the first five years of program activity can be expected to have a very favorable impact on the rural economy of the State. Its social and administrative analyses indicate that, with modest modifications, the program can be expected to strengthen local government and increase local resources for development, to improve the relative wellbeing of poor households and women, and to consequently slow the degradation of land resources. The program addresses, perhaps more directly than any other, causal links between poverty and environmental deterioration. Existing village projects, which comprise thousands of hectares, demonstrate the ability of the Forest Department to make it work.

*The Design Team consisted of consultants, Dr. Jeffery Romm, Team Leader; Dr. Daniel Bromley, Economist; Ms. Zarina Bhatty, Social Anthropologist; Dr. Malcolm O'Dell, Jr., Sociologist; and Mr. Tom Greathouse, Forest Regeneration Specialist. Dr. George H. Belt, Forestry Officer, AID/India & Ms. Kathleen McNamara, Forestry Specialist, AID/Washington also served on the team.

Great though its physical achievements over five years may be, however, the social forestry organization man fail in the long run if its capacities to work with villagers, and to accommodate their increasing pressures for economic enhancement, social justice and land, do not grow more rapidly than the proposed program makes appear possible. Several aspects of the proposed program seem vulnerable when viewed from the perspective of what it can become in five years' time. The team's recommendations focus on them.

1. Project approaches should be tested before they are extended. The team recommends a plan of program expansion in which (a) one pilot division is launched in each of the proposed eight regional zones the year prior to zonal operations, (b) work in each pilot and the 28 regular division begins with intensive effort in one central block and is then extended to adjoining blocks in successive years, and (c) experience in pilot divisions and intensive blocks is evaluated systematically to determine what works best, where, and why. Under this plan, intensive blocks would be established in three pilot divisions the year prior to scheduled program initiation, thus adding 1981 as a preparatory sixth year of the program.

2. If the predictability of village protection of social forestry projects is to be increased, the social forestry organization must be able to increase continuously the economic returns that plantations can provide to villagers. This implies the need for an effective system of technical and economic assessment of plantation possibilities in different social and ecological conditions, innovation in plantation cropping patterns and associated improvements in local water regime. The team recommends establishment of a Statewide system of trials for these purposes during the preparatory and first operational year of the program, and full establishment in the preparatory year of of the organization's Research and Monitoring & Evaluation Units to develop the trial system.

3. The social forestry organization must be able to transfer responsibilities for project protection and management to villagers as rapidly as possible if project continuity is to be assured and if project costs are to be reduced and program efficiency increased over time. There is need for a strategy to develop village participation and skills, for legal arrangements that secure village rights in and responsibilities for social forestry projects, and for mechanisms to distribute project benefits equitably. The team recommends early creation of a State-level committee to sponsor (a) development of guidelines for village participation in project planning and management, (b) substantial revision of the proposed form of agreement with panchayats, and (c) studies of the distribution of project benefits and costs within villages.

4. The social forestry organization must be able to train, field and supervise staff who are increasingly able to promote improvements in village land use and its organizations. This implies the need for an educational system to develop the combination of social, technical and planning skills that social forestry extension workers will require for a solid organization of educators on which the system can be based, and for administration that promotes and guides staff development. The team recommends early creation of a committee to prepare and oversee a staff development plan and to define research priorities.

5. The organization must be able to inform the general public about its activities, to develop cooperative relations with departments, academic institutions and voluntary agencies possessing competences its program will ultimately require, and to formulate positions on policies that affect it. The team recommends a Public Affairs Office under the Director of Social Forestry and a Public Affairs Officer under each Zonal Director to coordinate and promote efforts of these kinds.

All of these recommendations are consistent with intentions expressed in the Forest Department's proposal and are offered simply to strengthen a program that can stand on its own merits.

The recommended budget includes costs and savings that result from the above modifications. In the following summary, its fund allocations are divided by source and by three program phases: the preparatory and first years; the second and third years; the fourth and fifth years and essential sixth-year maintenance costs associated with prior investments in plantations and nurseries.

Expenditure (Crore)		Source (Crore)				
Phase	Amount	Madhya Pradesh	USAID			
			Loan	Grant	Total	%
1	Rs. 6.2	3.0	2.8	.4	3.2	52
2	Rs.15.6	7.6	7.7	.3	8.0	51
3	Rs.20.8	10.4	10.1	.3	10.4	50
Total	Rs.42.6	21.0	20.6	1.0	21.6	51

Madhya Pradesh has budgeted Rs.20 crore for the program. The difference between the budgeted and recommended amounts can be covered during the preparatory year by provision of seedlings from existing nurseries and of planting sites prepared under the 1980 Scarcity Scheme.

The first section of this report describes the background of social forestry in Madhya Pradesh. The second summarizes the Madhya Pradesh proposal. The third is the team's assessment of the proposal. The fourth presents the team's recommendations. The fifth is the recommended budget. The sixth proposes financial arrangements. The final section includes criteria for program evaluation. Detailed economic, social and technical analyses are appended.

Madhya Pradesh

Madhya Pradesh dominates the table land of Central India. Its rivers drain northward to the Ganges through the States of Uttar Pradesh, Rajasthan, and Bihar, and westward to the Indian Ocean through Maharashtra and Gujarat, and eastward through the coastal plains of Orissa and Andhra Pradesh to the Bay of Bengal. It is generally rolling terrain cut by occasional low ranges and the great valleys of the Narmada and Mahanadi Rivers. Its westward edge verges on desert; its eastern edge touches the humid tropics. Its southern Bastar region is the last massive area of tropical forest remaining in peninsular India and is part of the Dravidian South. Its northern tip rests in the fertile Ganges Plain. Madhya Pradesh is slightly larger than California, and is the largest State in India.

Madhya Pradesh had no political identity before 1952. It was created of numerous Hindu and Muslim principalities, and districts from different spheres of colonial administration. Its population is about 50 million people and an equivalent number of livestock. Eightyfour percent of its people are scattered among 70,000 villages. Madhya Pradesh is a cultural mosaic, many parts of which lean toward the traditional centers of less isolated surrounding States. Its original settlers, described as tribals despite quite varied histories of political development, comprise about 20% of the population but dominate the western, eastern and southern flanks of the State. Some groups are linked to the Dravidians, others to the Mon-Khmer and Tibeto-Burman language streams. The Gonds of the southeast once governed a large empire. Others have lived in clans throughout history. The only shared feature of tribals is their retreat from Hindu society, typically to refuge in the forest.

The forests of Madhya Pradesh are the most extensive in India. The British drew richly from them. The State still depends heavily on them for its revenue. More than 35% of the land in the State is classified legally as government forest. This represents the approximate span of standing forest at the time of Statehood. As of today, an estimated 30% of this forest has been reduced to shrubbery and grassland. Another 9% is being cultivated. Wood scarcities prevail in about half the State's districts and are expected in most within several decades. Cutting exceeds forest growth by at least four times.

The disappearance of the forest is a complex phenomenon. The doubling of population since Statehood and the undiminishing dependence of woodfuel are obviously important causes. The difficulty of protecting boundaries against land hunger and wildcat commerce is another. But there are also profound reasons in the legal histories of land and socio-political dynamics they reflect. Half of the government's forest domain was expropriated at Independence from the large landlords, princes and royal agents who held claim to it. In most areas, villagers held customary rights of forest usufruct, "nistar", to satisfy their needs

for wood, forage, fodder, food, fiber, medicines, oils, resins and others among the multitude of forest products. Rarely would those holding the land interfere with "nistar" rights. After expropriation, the government displaced local customary controls and tended to treat "nistar" as a grant rather than entitlement. Control was lost and confrontation between villagers and the Forest Department, the agent of public authority, grew increasingly frequent. Tribals were particularly affected. The forest meant survival to them but they had no formal claim on it and little power to protect their interests.

In the 1950s, some foresters in Bastar sought solutions to the conflict between their duties and the basic needs of forest communities. They attempted modes of cooperation with tribal communities that they hoped would activate traditional mechanisms for collective forest control. Their approach recognized and protected community forest rights. In the latter 50s, the approach was modified and applied in non-tribal areas. The Forest Department established plantations on degraded lands solely for the provision of village "nistar" needs, usually with the expectation that villagers would ultimately assume responsibility for plantation management.

Villages are units of land rather then settlement in India. Their areas are defined by circles of rights diminishing outward from the village center. Village "nistar" plantations were, and still are, usually placed on "revenue wastelands", lands that are titled to government but used by villagers without restraint. In essence, nistar plantations on these lands increase the potential value of villagers' rights of usufruct but also increase the potential strength of government rights of ownership. The balance between village and government authority in these lands is tenuous and sensitive. Its status at any time influences the will of both parties to make the land more productive.

In the early 1960s, Madhya Pradesh attempted to strengthen panchayats, local institutions of representative government, by giving them rights in the expropriated, or "protected", forest. The move was hasty and resulted in widespread forest destruction. The balance of authority had shifted, with demonstratively poor effects. Foresters went on the defensive. New policies constrained villagers' options by, for example, nationalizing the markets for particular timber species to regulate their harvest. Not until the 1970s were foresters again willing to consider cooperative arrangements between villagers and their department.

In the mid-70s, the National Commission on Agriculture completed its massive review of India's rural economy and the future policies and programs it required. Its report included a lengthy argument for "social forestry", or forestry by and for the people, which it suggested should have an emphasis equal to that of the custodial forestry practiced on government reserved forestland. A key advocate of the social forestry "plank" was a Madhya Pradesh forester who had initiated the Bastar experiments in community forestry two decades earlier.

The NCA recommendation was seized most aggressively by Gujarat, which developed a commendable program that eventually attracted the first World Bank loan for social forestry. Uttar Pradesh later received similar financial support, less for its achievements than for the urgency of its fuel shortages and Himalayan watershed conditions. In Madhya Pradesh, the Forest Department gained State and Ford Foundation support for planning teams to develop social forestry programs in four pilot districts. It established a Social Forestry Planning Unit to coordinate and expand upon activities in the pilot districts, and it set a precedent by staffing the Unit with professionals from different disciplines and departments.

The Madhya Pradesh Social Forestry Unit has been remarkably successful, although not primarily within the limits of its stated purpose. It has mobilized serious support for social forestry throughout the State government. Under energetic leadership and without significant resources of its own, it has catalyzed social forestry work by government and private citizens in most parts of Madhya Pradesh. It has opened discussion of policy and planning issues in ways that are proving helpful throughout India. Perhaps most importantly, it has demonstrated the functions and justifications for a full-scale Madhya Pradesh social forestry organization.

The Proposal

The Forest Department of Madhya Pradesh proposes to establish a social forestry directorate. The directorate would have two general purposes: to reduce forest destruction by satisfying village needs that cause it, and to improve village welfare by increasing the production of wood, forage and food crops on uncultivated unforested lands within the village. Its specific objectives are

1. to develop village plantations that satisfy needs for fuelwood, fodder and timber, create village employment opportunities, and increase village incomes,

2. to gain village participation in plantation projects that adequately secures the local protection and management plantations require for long-term productivity,

3. to promote cottage industries that will increase the economic value to villagers of plantation products.

The Director of Social Forestry would hold the rank of a Chief Conservator of Froests, reporting to the Conservator-in-Chief of the Forest Department.

The proposed directorate would work in villages along the lines of an extension and community development agency. It would eschew the paramilitary and technical identities of its counterpart "Production" and "Development" wings of the Forest Department, and would recruit field and staff personnel from agriculture, education and the social sciences. It would associate its field agents with the "development block" organization, the unit that coordinates various departmental extension workers in areas of 50,000-100,000 people. While the two other wings will continue to concentrate on forest management in government reserves, the social forestry directorate would promote rural development and forest protection by increasing the productivity of uncultivated deforested land, a class that includes at least one-third of Madhya Pradesh.

The proposed directorate would have two branches, each supervised by an Additional Director. One branch would be responsible for staff functions at the State level. It would have a research and training unit that is to become a Social Forestry Institute by the fifth year of operation. It would also have a planning, monitoring and evaluation unit that includes a publicity officer. The second branch would be responsible for program execution. By the fifth year of the program, it would have eight regional zones, each supervised by a Zonal Director,

and 36 operational divisions (units) under the charge of Deputy Directors. A division would cover approximately one million people and would be responsible for project planning, nursery production, and project implementation. An Assistant Director would coordinate unit field operations. Divisions would be subdivided and staffed by field agents to the block, panchayat and village levels. All ranks of directorship would be held by professional forest officers. Field agents would be drawn from diverse backgrounds. They would number almost 2800 by the fifth year, or well over 90% of directorate personnel. Table 1 is the proposed organization chart.

Directorate headquarters would be established during the first year in Bhopal, the State capital. Three zones and twelve divisions would be established concurrently in the western region (see Map 1). An extension officer (van vistar adhikari) and three assistants (sahayak van vistar adhikari) would be placed in each block; one village worker (van sewak or sewika) would be assigned to every one or two village panchayats. Nursery operations, project planning and village extension would begin. Nurseries would be operated by the directorate and by villagers, schools and other non-governmental groups with directorate assistance. Plantations would be started in the second year of unit operations. Three new zones and twelve divisions would be established in northern Madhya Pradesh in the second year of the program. An eastern zone with eight divisions would be added in the third year and a central zone of four divisions would begin in the fourth. Table 2 summarizes the proposed schedule of expansion in terms of zones, divisions, nursery units, seedling production, plantation targets and total annual expenditures.

Village participation in the social forestry program would depend on such factors as land availability, the urgency of village nistar scarcities, village interest, and the ability to conclude an agreement between the village panchayat and the Forest Department. (The proposed agreement is appended to this section.) The species composition, site and scale of a project would be determined in consultation with the panchayat council and other villagers. The project would be executed by people from the panchayat at normal government wages. The government would assume responsibility for project protection and management for a ten-year period. The panchayat would assume full control thereafter. A village management committee would be organized to distribute plantation products in accord with panchayat-prescribed procedures. Upon maturity of wood crops, the panchayat would split the revenue from sale of material in excess of village needs and harvesting costs.

Until such time as the Social Forestry Institute is established, field personnel would be trained at existing departmental schools. Professional staff development would be accomplished through a variety of programs in India and abroad.

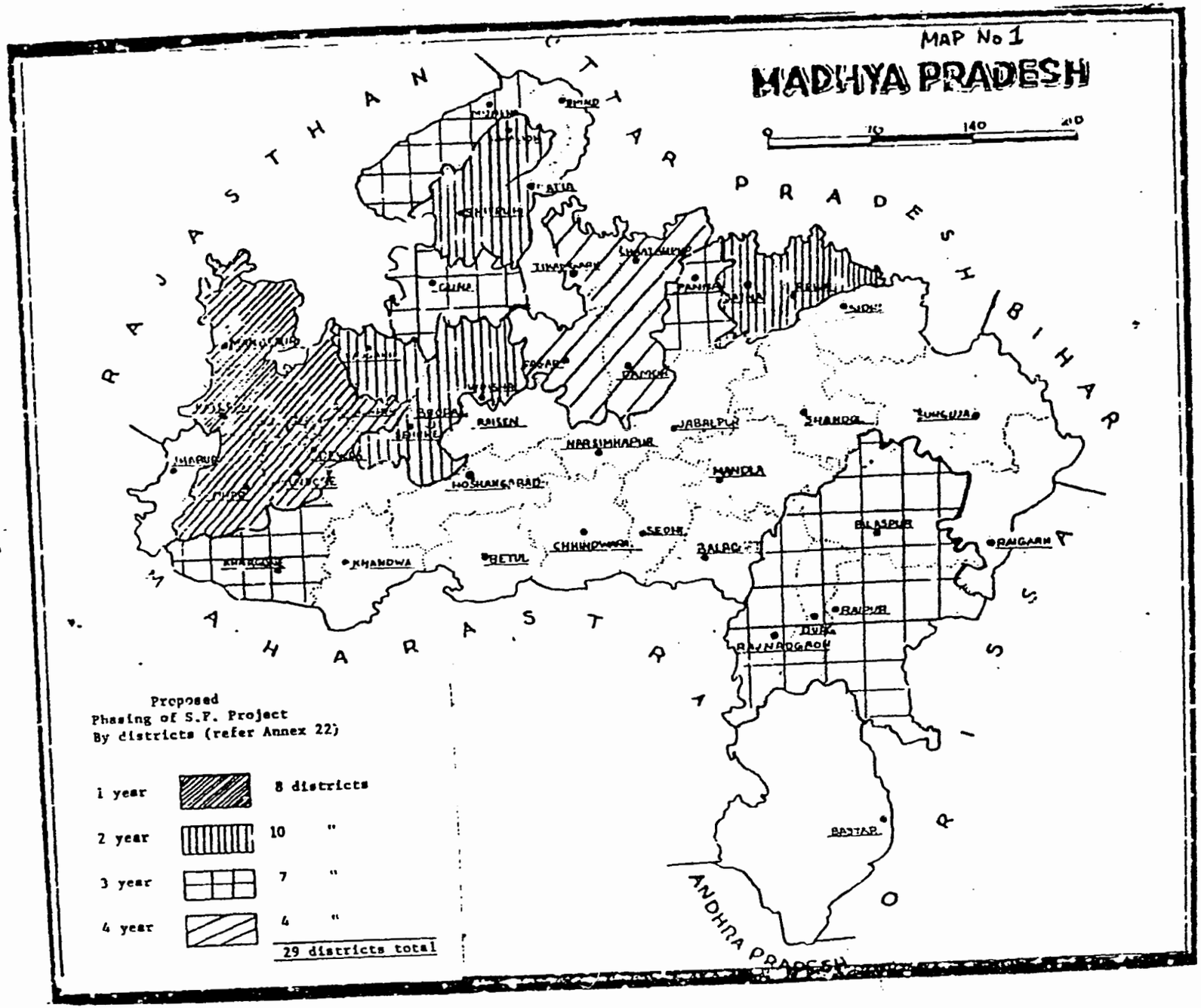

MAP No 1
MADHYA PRADESH
0
70
140
210
RAJASTHAN
UTTAR PRADESH
BIHAR
ORISSA
ANDHRA PRADESH
MAHARASTRA
ATER
GUNA
RAISEN
JABALPUR
SHAHDOL
SURGUJA
NARSIMHAPUR
MANDLA
HOSHANGABAD
BILASPUR
RAIGARH
CHHINDWARA
SEONI
BALAGHAT
BETUL
KHANDWA
RAIPUR
DURG
RAJNANDGAON
BASTAR
Proposed
Phasing of S.P. Project
By districts (refer Annex 22)
1 year
8 districts
2 year
10 "
3 year
7 "
4 year
4 "
29 districts total

Table 1
Organizational Chart of Social Forestry Wing
from M.P. Proposal

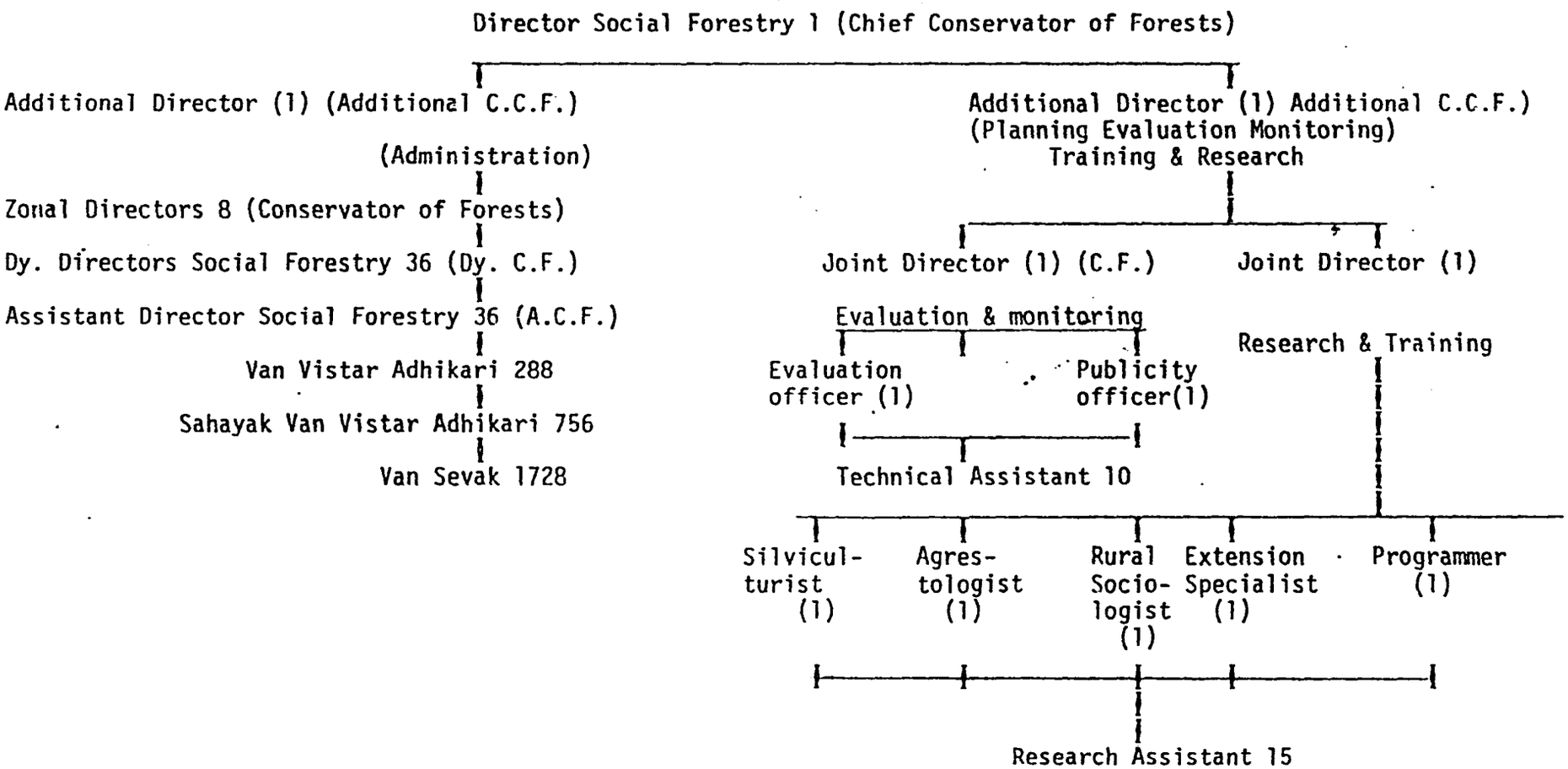


Table 2
Expansion Plan,
M.P. Proposal

Year	No. Zones	No. Divisions	No. Central Nurseries	No. Block Nurseries	Seedling Production ('000)	Plantation targets (hectares)	Total Expendi-tures ('000 Rp)
I	3	12	12	72	9024	-	37530
II	6	24	24	144	29048	4500	69552
III	7	32	32	192	42064	14500	88831
IV	8	36	36	216	50872	21000	102750
V	8	36	36	216	54072	25400	106359
Total	8	36	36	216	185080	65400	405022

The proposal states that the social forestry directorate would work for high levels of public participation and toward coordination with other agencies concerned with panchayat and rural resource development. It would also supply seedlings and assistance to people for planning private land, and would have supplementary activities for grassland improvement and aesthetic plantations.

The program is to be monitored by the headquarters monitoring and evaluation unit. Headquarters would also maintain rolling plans, liase with other agencies, and expand an already active public education program.

Table 3 summarizes the proposed budget. Table 4 reformats the budget presentation for greater clarity, consistency, and ease of comparison with the modified budget the team recommends in a later section. Differences between Tables 3 and 4 are explained in notes attached to Table 4.

Table 3

Budget, M.P. Proposal

(From Table V - 16 M.P. Proposal)
Yearwise cost of the Project
(000') Rs.

Project component	Y E A R S					
	I	II	III	IV	V	TOTAL
Cost of survey mapping site assessment and preparation of plan	600	600	400	200	-	1800
Expdt. under nurseries during diff. yrs. of the Project	7542	13954	15168	16052	15276	67992
Financial inputs for diff. activities	15660	30540	48345	63790	69335	227670
Financial inputs for grassland improvements	-	1200	3720	5960	7360	18240
Forest Extension in farm land	-	1320	2640	3520	3960	11440
Cost of construction of buildings	8440	16800	14000	8400	5800	53440
Total cost on Research	1248	1248	798	798	798	4890
Training	200	200	200	200	200	1000
Total cost of Administration & Supervision	3840	3690	3560	3830	3630	18550
T O T A L	37530	69552	88831	102750	106359	405022

Table 4
M.P. Budget in Revised Format

Headquarters

Function Item ( ) indicates explanatory note	Prep.	I	II	III	IV	V	VI	TOTAL
		Y E A R S						
Administration								8735
Staff (1)		635	635	635	635	635		3175
Operations (2)		600	600	600	600	600		3000
Equipment (3)		1560	600	200	200			2560
Grant & Consultancy(4)								
Public Affairs								116
Staff (1)		23.2	23.2	23.2	23.2	23.2		116
Operations (2)								
Grant & Consultancy								
Monitoring & Evaluation								1142
Staff (1)		228.4	228.4	228.4	228.4	228.4		1142
Operations (2)								
Grant & Consultancy								
Research								7890
Staff (5)		398	398	398	398	398		1990
Operations (6)		400	400	400	400	400		2000
Equipment (7)		450	450					900
Buildings (8)						3000		3000
Grant & Consultancy								
Education								1000
Staff (5)								
Operations (6)								
Equipment (7)								
Buildings (8)								
Scholarships(9)		200	200	200	200	200		1000
Grant & Consultancy								
SUB-TOTAL		4495	3535	2685	2685	5485		18885

TABLE 4 (contd.)

M.P. Proposed Budget in Revised Format
('000) Rs.

Zones

Function Item	Prep.	I	II	III	IV	V	VI	TOTAL
		YEAR						
Administration								8608
Staff (10)		507	1014	1183	1352	1352		5408
Operations(2)		300	600	700	800	800		3200
Equipment (3)								
Public Affairs								
SUB-TOTAL		807	1614	1883	2152	2152		8608

Divisions

Administration								118530
Staff (11)		2191.7	4383.4	5844.5	6575	6575		25570
Operations (12)		1380	2760	3680	4140	4140		16100
Equipment (13)		8820	8820	5880	2940	-		26460
Buildings (14)		8400	16800	14000	8400	2800		50400
Planning								
Operations (15)		600	600	400	200	-		1800
Additional Staff								
Extension								51950
Staff (11)		3472.3	6944.6	9259.5	10417	10417		40510
Operations (16)		-	1320	2640	3520	3960		11410
Nurseries								68023
Governmental (17)								
Establishment		3960	3960	2640	1320	-		11880
Operations & Maintenance		3414	9658	12111	14228	14772		54183
School & Private(18)		168	336	448	504	504		1960
Plantations (19)								130810
Establishment		-	8220	24660	39360	46580		118820
Maintenance			-	1245	4210	6535		11990
SUB-TOTAL		32406	63802	82808	95814	96283		371113
TOTAL		37708	68951	87376	100651	103920		398606

TABLE 4 (contd.)

Explanatory Notes

(1) Staff calculations are derived from Annexes 16 and 13 of the Madhya Pradesh Social Forestry Proposal. The figures of Annex 16 include staff costs for the Evaluation and Monitoring Unit, excepting computer assistants, and for a publicity officer. As the results of both are incorporated in the total budget, double-counting has occurred. The E&M and publicity staff expenditures are corrected here and listed separately. An addition error in Annex 16 is also corrected. Annexes 13 and 16 are inconsistent with respect to costs for specific staff categories. The higher costs of Annex 16 are used here.

(2) Operational expenditures are derived from Table V-13, p 75, of the MPSF proposal, which lumps together all headquarters and zonal operations costs except those for the Research Unit. Zonal operations costs have been removed here and placed in the zonal budget. No basis could be found for distinguishing the operations costs for E&M and publicity, so these continue to be included in this category for administrative operations.

(3) Equipment costs here include those for all headquarters functions, except research, and for zonal offices. On the basis of Table V-13, p 75, zonal equipment could have been separated out as follows:

I	II	III	IV	V	Total
600	600	200	200	-	1600

This shortcoming of Table 4 prevails in all subsequent budget tables. It matters ultimately only for the clarity of presentation. The inability to distinguish equipment costs for monitoring & evaluation on the basis of available information creates a more significant problem.

(4) Blank categories are used in this table to prepare it for comparison with the display of the team's recommended budget.

(5) Research staff expenditures are derived from Annex 12. They presumably include training staff costs as well.

(6) Research operational expenditures are taken from Table V-11, p 72, of the MPSF proposal. They presumably include training operations costs.

(7) Equipment costs are derived from Table V-11, p 72, and presumably include training equipment costs.

TABLE 4 (contd.)

(8) The Social Forestry Institute is scheduled for construction in the fifth year. Its building cost is so recorded. See Table V-10, pp 70-71.

(9) See p 74, MPSF proposal.

(10) Derived from Annex 18.

(11) The basic Division staff expenditures are calculated in Annex 6, then transferred to Table V-7, p 64, of the MPSF Proposal. They do not include the costs of the Assistant Directors of Social Forestry to be assigned to each division. (See organization chart and Annex 7, as well as the text). Rp.17,000/year has been added here for each year of division operations to cover the cost of ACF-level officers in ADSF posts.

Annex 6 combines the costs of administrative and field extension personnel. This table separates the two categories. The former is recorded here.

(12) Operational expenses are given as Rp.200,000/division/year in Annex 9 and Table V-7, p 65, of the MPSF Proposal. They include Rp.85,000 in non-recurring equipment costs. These costs have been shifted to the divisional equipment category, and operational costs of Rp.115,000/division/year are recorded here. A significant reduction in total budget resulsts.

(13) Equipment costs include capital items in Annexes 8 and 9. They total Rp.735,000/division.

(14) See Annex 7 and Table V-10, pp 70-71, MPSF Proposal.

(15) See pp 53-4 and Table V-16, p 78, MPSF Proposal.

(16) Extension operations costs are explained on pp 67-8 and displayed on pp 68-9, MPSF Proposal.

(17) Governmental nursery costs are discussed on pp 54-60 and summarized on p 60, MPSF Proposal.

(18) See pp 60-1. Rp.8,000 will be used for school nurseries, Rp.6000 for private nurseries, in each operating division per year. An error in Table V-5, p 61, leads to a Rs.31,000 underestimate of costs. It is corrected here.

TABLE 4 (contd.)

(19) The budgets for wood-based and grassland plantations are developed in Annexes 10-1, 10-2, 10-3, and 11, and summarized in Tables V-7 and V-8, pp 54-6, MPSF Proposal. They are combined here on the assumption that virtually all plantations will be of mixed composition.

General note: The Table 3 category, "Financial inputs for different activities," derived from pp 64-5 of the MPSF proposal, combines all costs within divisions except those for grassland improvement, extension operations, project planning, buildings. It has been eliminated here for clarity. Its parts are divided between administrative staff and operations, extension staff, and plantation establishment and maintenance.

The budget of Table 4 is placed in more concise forms in later sections.

APPENDIX

Draft Agreement between Government and Panchayat for Social Forestry Plantations in Unoccupied village lands.

(From MP Proposal)

AN AGREEMENT made this _____ day of _____ in the year one thousand nine hundred and _____ between _____ _____ . On behalf of _____ village Panchyat hereinafter called "Panchyat" of the one part and the "Government of Madhya Pradesh" hereinafter called "the Governor" of the other part.

WHEREAS the Panchyat has agreed to raise plantations in its grazing/nistar lands as shown in the schedule hereto annexed and the Governor has agreed for the purpose on the terms and conditions hereinafter contained.

AND WHEREAS by rule, under Section 76, clause (d), of the Indian Forest Act, 1927 or under Section 46 clause (a) and (b) and Section 332 of the M.P. Panchyat Act, 1962 hereinafter called "the said Act", whoever enters into any contract with any Forest acting on behalf of Government shall, if so required by such Forest Officer, bind itself by a written instrument to perform such construct.

NOW THESE PRESENTS WITNESS that in pursuance of the above and in compliance with the said rule, and in consideration of the privileges secured to it by this agreement, the Panchyat hereby does bind itself to perform every duty and act expressed in the conditions hereinafter contained as to be performed by it and covenant with the governor that the Panchyat and each of its servants and agents, will abstain from every act expressed in the conditions hereinafter contained as to be abstained from, and the Panchyat does hereby agree in case of any act or omission on the part of the Panchyat and its servants and agents which in the opinion of the Forest Office amounts to a breach of any of the said conditions, to pay to the Government through the forest Officer on demand made in such behalf the amount of penalty as will be determined by the Forest Officer not exceeding one hundred rupees and that the said sum of penalty not exceeding one hundret rupees for each such breach will in accordance with Section 85 of Indian Forest Act, be recoverable from it as an arrear of "Land Revenue".

The SAID CONDITIONS are as follows, namely:-

I. The Panchyat shall perform the following duties and acts that is to say:-

(1) that the Panchyat shall set apart a plot of village grazing/nister land shown in the schedule hereto annexed for purposes of raising plantations or development of fodder and pasture.

(b) The Government land transferred to a Gram Panchayat or a Janpad Panchayat shall be managed, as per Section 375 of the M.P. Panchayat Act. 1962 by such Panchayat in accordance with the rules as the State Government may make in this behalf. The Government land so set aside shall be used for Social Forestry, for which it is transferred to a Panchayat and it shall be managed subject to any special reservation made or to the conditions herein contained.

(c) In the event the Panchyat decides to resume the land or utilize the piece of land so set aside for any other purpose it shall pay to the Governor the compensation as determined by the Forest Officer and will forfeit any right on the forest produce so obtained from the said area.

(d) That the Panchayat shall permit and assist the Forest Officer in raising the Plantation and in protecting the same for ten years after which it shall be transferred to the Panchayat for management, protection and maintenance.

(e) That the Panchayat shall not permit cattle of any kind to be let loose or to graze within the plantation area unless such areas are opened for grazing under specific orders of the Forest Officer.

(f) The Panchayat shall be permitted to cut and remove the grass and to collect the fruits from the said plot after paying a licence fee @ Rs.10.00 per hectare per annum.

(g) The Panchayat will be permitted to lop the fodder trees for leaf fodder, free of cost, only during scarcity of grass and agricultural fodder.

(h) The Panchayat shall bear the expenses incurred on keeping chowkidar, if required, for protection of plantation from fourth year onwards.

(i) The Panchayat, as per Section 82 of the M.P. Panchayat Act, 1962 may by a resolution passed by majority of two third of its members, impose a fee for grazing of cattle, removal of dry and fallen fuel wood or any other minor forest produce from the said area.

II. The Governor, it's servants and Officers shall perform the following:-

(a) that the Forest Officers shall carry out plantation at Government cost in the plot specified in the schedule hereto annexed.

(b) that the officers of the Forest Department Social Forestry Authority shall provide technical and other guidance as necessary.

(c) When any transfer of the management and maintenance of a forest is made under clause (a) of Section 46 of the M.P. Panchayat Act, the State Government shall direct that all amount required for such management and maintenance or 50% portion of the net income from such forest shall be placed at the disposal of the Gram Panchayat.

III. It is further agreed between the parties that:-

(a) The thinnings and final felling on maturity of plantation will be done under the guidance of the Forest Officer.

(b) The cost of harvesting will be borne by the Government.

(c) The harvested produce shall be placed at the disposal of Panchayat, after charging from Panchayat the royalty and the cost of harvesting, for distribution to the villagers at approved rates.

(d) The remaining produce after meeting the needs of village community shall be disposed off by the Panchayat through public auction and the sale proceeds will be shared between Government and Panchayat on 50:50 ratio.

(e) The sale proceeds from (d) above received by the Panchayat will be utilized for the benefit of the community on projects to be approved by the Forest Department/Social Forestry Authority.

IV. AND it is further hereby agreed between the parties that in this agreement:-

(1) the term "Forest Officer" shall be deemed to mean the Deputy Conservator of Forest/Divisional Forest Officer/Dy. Director Social Forestry or any Forest Officer authorised by him in writing to act in the matter of the clause in which the said term is employed.

(2) the term "Governor" shall be deemed to mean the Governor of Madhya Pradesh, his successors and assigns.

(3) the term "Social Forestry Authority" shall be deemed to mean Forest Department or a Co-operate Body charged with the works of Social Forestry in Madhya Pradesh.

(4) the term "The Panchayat" shall include each and every person/signing this agreement and its executors, administrators and (subject to any conditions against sub-letting or assigning this contract or any share or interest therein, which may be part of the conditions of this contract) its or their assigns both jointly and severally.

V. If any question arises:-

(a) Whether there has been a breach of any of the conditions of this agreement.

(b) as to the sums to be paid for such breach.

(c) as to the persons liable for such sum it shall be referred to and be determined by the Forest Officer in accordance with and subject to the provisions of Section 85 (2) of the Indian Forest Act, 1927.

IN WITNESS WHEREOF the Panchayat hereunto set its hand and the Forest Officer - by order of and for and on behalf of the Governor of Madhya Pradesh has hereunto set his hand.

Evaluation of the Proposal

The team's evaluation of the proposal* is based on three weeks of field observation and three weeks of analysis. It has evaluated the proposal against four criteria.

1. Is the proposed program viable from technical, economic, social and administrative points of view?

2. How equitably will gains from the proposed program be distributed?

3. Will the program have capacity for growth and improvement?

4. What potential does the program have for integration within the framework of rural development strategy in Madhya Pradesh?

The team's findings are summarized below. Detailed analyses are appended.

A. Viability

Will the proposed program achieve its purposes? The question is addressed first for individual village projects, then for the program as a whole. Village project evaluation considers the viability of plantation cropping systems, of arrangements for distribution of benefits, and of procedures for planning, management and transfer of control to panchayats, and the readiness of social forestry extension staff to satisfy project requirements for assistance. The program evaluation examines the systems for producing and delivering seeds and seedlings, for evaluating and modifying field operations, for directorate cooperation with other organizations possessing relevant capacities, for public education, and for the modification of policy. It concludes with a summary assessment of the program's economic and institutional viability.

a. Viability of Village Projects

1. Cropping Systems

The proposed program would establish energy, small timber, mixed product, and forage/fodder plantations on degraded government, community and private fallow lands. Team observations and analyses indicate that for social reasons virtually all village plantations will be of the mixed-product type. Its assessment of viability has focussed therefore on the ecological and product combinations the type contains.

*"The proposal" refers to Technical Report No.SF-6-80, prepared by the MP Forestry Department titled "Project Proposal on Social Forestry for USAID" dated October 1980. In the following discussion, this proposal is also referred to as the MP Proposal and the proposed plan. The modified plan, or modified proposal introduced in a latter section of this paper refers to a second proposal developed by the AID Design Team. The modified proposal is basically the same as the MP proposal. It contains however numerous recommendations for execution of the technical, administrative and fiscal aspects of the project.

(a) Technical Viability

The many thriving plantations in Madhya Pradesh demonstrate good judgment about site and species capabilities and effective nursery, reforestation and protection practices. The technical excellence of the Forest Department is apparent. With the rapid expansion of a social forestry program, however, much more knowledge will be required about the productive potentials of site and species combinations across the varied range of socially-pressed degraded lands that the program addresses. The team therefore recommends early initiation of a state-wide system of comparative species, crop combination and plantation management trials. The trial system, operated by the Research Unit across the entire range of potential site conditions, would generate the knowledge base required to develop and choose "best" combinations for particular circumstances.

(b) Social Viability

Thus far, site and species combinations have been selected largely by technical criteria and according to departmental priorities to reduce fuelwood and timber extraction from State forests. Little is known about villagers' preferences, although evidence indicates that villagers also place importance on grass and fodder, fruits, bamboo, medicines, and other "minor" forest products. The social viability of projects depends on villagers' interest in them, and interest derives from the products villagers anticipate. From a social point of view, choice of species mix is one of the key decisions made in a social forestry project. The team recommends that villagers' preferences should determine the decision. Information about them should be obtained during planning surveys. Villagers should participate in planning teams. Panchayats must have the authority to discuss, ratify, modify or reject proposed species mixes. Statewide trials would attempt to assess social as well as ecological suitability of various species combinations.

(c) Economic Viability

(1) Site and Species Mix

The team analyzed the economics of four model multi-product village plantations. The models reflected likely species composition and planting densities as determined from observation of current plantations in Madhya Pradesh. Harvest data were employed from a variety of sources, with conservative estimates used throughout. The four plantations were evaluated at discount rates of 10% and 15%. Net present values per hectate range from a high of Rs.8,249 to a low of Rs.4,438 at 10%. For 15%, the range is from Rs.2,820 to Rs.1,269.

Internal rates of return range from 24% down to 19%. Annuity values for each model plantation reflect annual net returns per hectare. This figure is directly comparable to returns from alternative land uses, such as open grazing, which may be competitive with social forestry. The annuity values at 10% interest are Rs.571; Rs.876; Rs.516; and Rs.471 per hectare. At 15%, these values drop to Rs.258; Rs.429; Rs.216; and Rs.193.

Site variability was introduced into the models through variations in species composition, with hardier species dominating in the poorer areas. Because precise data are not available, yield variations were not incorporated as a function of site capability. All yield estimates are on the low side, so total plantation productivity could be understated to the extent that better sites are selected. Grass yields in existing plantations have shown 30% annual increments for the first several years following enclosure, but the models used here have not incorporated these increments for the first several years following enclosure, but the models used here have not incorporated these increments in order to reaffirm the conservative flavor of economic projections.

A pure fuelwood plantation model was also analyzed. Its internal rate of return was 12%.

(2) Plantation Size

The size of individual plantations will have an important impact on economic viability for plantations below ten hectares in size. This occurs because the labor to dig cattle-proof trenches requires a larger share of total establishment costs in smaller plantations. The fencing cost for a one-hectare plantation is approximately Rs.1,200. It falls to Rs.139 for a 75-hectare plantation. In all four models, however, a one-hectare plantation would still have a net present value (at 10%) of at least Rs.3,600. Moreover, it will be much easier in mixed plantations near villages to undertake small plantations (5-15 hectares) than to find larger plots of land. Village land is most scarce, primarily because of its low economic return per hectare. To get villagers to donate very much of a scarce asset to a government agency will not be easy before proof of the benefits. Early success on small plots can alleviate their fears of land loss and economic hardship.

(3) Intensity of Management

The model plantations do not incorporate possible gains from intensification of management. No attempt has been made to estimate increased yields from better fertilization and water regimes or denser plantations and intensified cultivation. As management

practices should improve over the length of the program, it seems reasonable to expect that returns per hectare will increase. There are indications that more intensive investment per hectare may be well justified economically, particularly in smaller plantations where the fixed cost of fencing is so proportionately high. The possibility deserves systematic testing in comparative trials of different intensities.

The economic viability of the program depends on Forest Department cooperation with villagers to determine the size and species composition of plantations. Costs of successful protection and maintenance will depend on the degree of village interest in productive outcomes. The proposal gives an impression that the department prefers large-sized plots. Large-sized plots would be acceptable if villagers think that sufficient land is available for them, and if such plots would not exacerbate inter-village conflicts over remaining land. It is too soon to offer final judgments on this. The economics of plantation size and composition should be monitored as part of the recommended statewide system of trials.

In summary, the team finds the mixed plantations to be technically and economically viable under a quite reasonable set of assumptions. Size and species composition will affect the degree of viability, but would not seem to be crucial in any particular plantation unless villagers disagree with the department about them or are unable to protect and manage the new village asset. It is important that the department determine the needs for project viability in different conditions, and develop approaches that increase the chance they will be satisfied wherever projects are established.

2. Distribution of Benefits

Social forestry plantations close access to common lands, and so impose costs on those who have used the land for grazing and other purposes. The viability of a project depends not just on the level of benefits but on their distribution to insure people's interest in project maintenance. The proposed program would distribute 50% of all produce value in excess of village nistar needs to the cooperating panchayat and 50% to the government. It would leave the distribution of nistar to panchayat discretion. The team has attempted to evaluate the impact of these arrangements on village and household benefits.

(a) Returns to Government

Forest royalties to the government of Madhya Pradesh constitute 18% of total state revenue and almost 60% of non-tax revenue. Of the current harvest from government forests, approximately 26% of all wood is destined for industrial timber use, 68% for fuelwood, and

6% for poles. Foresters maintain that only 25% of the harvested wood is best suited for fuel; the remainder would find higher-valued uses in construction and industry. If the proportions of government wood harvested for fuel can be reduced by fuelwood production in village projects, a larger quantity of wood can be held or cut and sold for higher-valued uses. Government revenues present or future would increase as a result. In other words, a substantial government benefit from social forestry projects derives from the replacement of fuelwood demand on government forest and the consequent increase in wood grown and sold for economically superior purposes.

At an assumed conversion of $1.3m^3$ = 1 metric ton(MT) of wood, recorded fuelwood cutting from government forest in 1977-78 was approximately 1,760,862 MT. Timber harvest was approximately 834,992 MT. If a reallocation to "best" economic use had been possible, 648,963.5 MT would have been harvested for fuelwood and 1,946,890.5 MT for timber purposes. The timber harvest for 1977-78 would have increased by 2.3 fold. The price differential between fuelwood and timber products can approach 5-6 times. If the lower figure is chosen, the 1977-78 harvest would have provided 2.3 times more timber volume prices at five times the value than that for which most of it was sold. The effect on state revenues should be obvious.

The proposed social forestry program would create approximately 67,500 hectares of plantations. The plantations would be established over a five-year period and hence full harvesting would not be achieved until year 11, assuming a 6-year rotation. At that time, annual production of fuelwood alone from Model I would equal 15% of the 1977-78 government fuelwood harvest. If it were to replace the full 15%, it would allow 16,617.8 MT of fuelwood to be diverted to higher-valued timber uses. For Model III, the lowest fuelwood-producing model, the potential diversion is 12,663.5 MT, 12% of current fuelwood harvest. If the difference in value between fuelwood and sawlogs were Rs.500/MT the gain to government from Model I would be Rs.8,308,500 per year, or Rs.123 annually per hectare of social forestry plantation.

These estimates are conservative. Government fuelwood is currently provided to deficit areas at subsidized rates. If the government returns for fuelwood equal the subsidized price less transport cost, which totals about Rs.30 crore this year, shifting one unit of wood from fuel to sawlog form may well increase the revenue realized from it by twenty or more.

(b) The distribution of cash returns between panchayat and government

The proposed panchayat agreement would distribute 50% the value of all wood in excess of village nistar needs, net harvesting costs, to the cooperating panchayat and 50% to government. Any reduction in project returns to villagers can be expected to weaken their incentives to protect and manage the plantation. Lower levels of wood output would result. The government would gain revenue from its 50% share, but lose revenue for government timber that would not have been used for fuelwood if villagers had greater incentive to produce plantation wood.

The team analyzed returns to government and to village households under government 50%, 25%, cost recovery, and zero charge schemes. With the most ambitious yield assumptions, it found that share schemes had relatively drastic effects on expected average cash returns to village households; the annualized return per household becomes negligible under either 50% or 25% government share arrangements. Cost recovery had less impact, but even under very conservative assumptions about the rate of timber replacement of plantation fuelwood, the zero charge scheme still yielded the highest returns to government. Any government charge on the plantation resulted in a loss to government and villagers alike.

The team recommends the proposed agreement be redrawn so that all plantation produce accrues to the villagers without encumberance.

(c) The distribution of returns among villagers

The proposed program would leave distribution of project benefits and costs to panchayat discretion. The team visited a number of projects for which panchayats had developed their own distribution schemes, primarily for fodder. No two are alike. All seem to work. In none would a government worker have had the time or local knowledge to do the orchestration required. The team supports the proposed dependence on panchayats for this function.

Most panchayats cannot be expected to distribute project benefits and costs with full equality, however, and projects can become vulnerable to the acts, or the failures to act, by those who are alienated by a sense of disadvantage. Wood may be cut by those who may otherwise not expect to get it. Children may run cattle through the plantation if their mothers are uninterested. Projects will become increasingly vulnerable as plantations mature and the initial flush of wages for their

establishment fades. Thus, while directorate control of village distribution is undesirable, monitoring the effects of different distribution systems seems important. The directorate can then learn which distribution systems work better, why, and how it can promote them. Case studies of existing systems would be a good beginning; examples are given in the appended social analysis. A continuing record of all systems would be helpful. The team further recommends that the choice of system be a panchayat decision that is incorporated in the initial project plan, becoming part of the project agreement among villagers that the plan represents.

3. Village Participation

The proposal states the intent to involve villagers in project development so as to secure their support and prepare them for eventual assumption of full responsibility. It acknowledges that participation is essential. Aside from general comments about consultation and education, it gives few specifics about how participation is to be achieved. Projects are to be planned by teams of division staff. Division staff would manage them for ten years before they are turned over to panchayat control. Active villager roles are not apparent. The lack of specifics contrasts with the urgency of the issue. The team considers the proposal's treatment of participation to be among its weaker aspects.

(a) Project Planning Procedures

Projects are to be planned by division teams, largely on the basis of physical and technical possibilities. The team thinks that economic, social and organizational matters deserve equal attention. It questions whether a planning group can obtain the information it needs if it lacks social science skills and women to talk with the female half of the population. It recommends that planning teams include at least one social scientist and one woman.

Planning teams will make fundamental and virtually permanent project decisions. The choices of project location, scale and species mix will dominate all future possibilities. If villagers don't share in them in a decisive way, they will not participate in the very aspect of the project in which participation is most needed. The team recommends that planning teams include village members, that panchayat councils have full powers of plan review, and that their unanimous approval be required before a plan can be put into effect.

If a plan is approved by the panchayat council, it represents a village compact about the course and governance of the plantation. It would therefore appropriately include some statement of distribution, review and grievance procedures, and have some formal

significance that supports its authority. The team recommends creation of a social forestry policy committee that, among other functions, would develop guidelines about what project plans are to include and how the planning process is to operate to insure adequate village participation.

(b) Project Management Procedures

The proposed panchayat agreement states that management responsibility for a project will remain with the directorate for a ten year period. Responsibility would then be turned over to the panchayat. The proposal does not indicate how villagers would be prepared to assume responsibility. Management skills are learned gradually and through practical experience. If they are insufficient for some responsibility in year nine, there is no reason to assume they will be sufficient for full responsibility in year ten, when critical decisions about the future of the plantation are to be made. If skills are sufficient in year nine, there seems little reason to withhold opportunities for villagers to exercise and develop them.

The team thinks that a social forestry project should include a phased program of management training and experience for villagers who are to eventually assume responsibility for it. The proposed village management committee is a group in which increasing responsibilities can be vested from the project planning stage onward, and from which individuals can be selected for training to fulfill these increasing responsibilities. The team recommends preparation of a strategy to develop villagers' skills for social forestry management, perhaps with the aid of consultants who have worked on similar problems in agriculture.

(c) Turnover Procedures

The general policy of turnover at ten years raises questions. If a panchayat is not ready for the responsibility at that time, its plantation may be destroyed. If it is ready years before then, the directorate will waste its resources by continuing to control the project. The team recommends that the fixed-time turnover policy be replaced by a schedule of qualifications through which panchayats can move toward greater responsibility and control at their own pace. The schedule can be designed by the policy committee recommended earlier and be included as part of the panchayat agreement.

4. Summary of Project Viability

The team concludes that the proposed multi-product village plantations are technically and economically viable, and that the Forest Department has demonstrated its ability to implement them effectively. It is concerned about the risks to plantations that will

grow over time because of increasing and bad-year economic needs, disinterest among villagers, and insufficient development of villagers' abilities to protect and manage the projects themselves. It has therefore recommended a system of trials to increase the predictability and productivity of plantations, a planning process in which panchayats have control of project design, a strategy of phased skill development among and transfer of control to villagers, and the use of project plans and agreements as means to support the stability and growth of village forestry organization. The subseqeunt recommendations section develops them in more detail.

b. Viability of the Program

1. Staff Development

A Social Forestry Directorate is proposed. It would require a staff skilled and organized for a new combination of forestry, agriculture, community development and land use planning. In its first five years, it would build a cadre of 288 extension agents (van vistar adhikari) working in association with development block organizations, 756 assistant extension agents (sahayak van vistar adhikari) to supervise nurseries and develop projects, and 1,728 village forest workers (sewak and sewika) to link the directorate and the project management committees of participating panchayats. Panchayat members, primarily from the village management committees, would eventually assume managerial functions satisfied in earlier stages by directorate personnel. The directorate would also build a professional staff of managers, planners, scientists and educators.

The viability of the directorate depends on how well it mobilizes and educates professionals, extension workers, and village cooperators in the skills its purposes require. It must also be able to support the application and growth of such skills in the field. As it must modify its approaches rapidly if not to freeze at a preliminary level of achievement, its educational system must be a continuous process of information flow and staff improvement. A substantial program is required to define and develop appropriate skills and to establish patterns of communication that will move ideas, experiences and techniques effectively throughout the organization. Finally, the directorate must be able to retain experienced staff to accumulate the expertise upon which its progress depends.

The team considers the development of suitable staff skills and performance to be the most essential requirement for a viable social forestry program. If the system of staff development is sound, most problems can be resolved in time; if it is not, other attributes will have minor impact. The team thinks that the proposed staff development system should be strengthened significantly.

(a) The Professionals

The proposed directorate would recruit its professional staff from departmental forest officers educated at Dehra Dun. Dehra Dun does not now provide the background required for social forestry. It is particularly weak in social and planning fields, as well as in non-tree aspects of social forestry technology. Forest officers in the directorate would be given in-service courses, advanced education in fields like sociology, planning and management, opportunities to attend relevant seminars and symposia, and study tours, to develop the expertise they require. As they would remain part of the Forest Department's professional cadre, there is not assurance they would continue to work in the directorate or in positions for which their additional training prepares them.

The directorate needs a plan for professional staff development and retention. Without a plan, educational opportunities may benefit individuals but add little to the directorate's strength. The team recommends that a plan be developed in the year prior to full program operations. The plan would indicate, for example: the directorate's projected requirements for professional expertise after five years of operation; expertise currently available to the directorate; the types, amounts and phasing of education required to reach the five-year target; educational programs that can provide the knowledge and skills desired; a training schedule and budget; arrangements that will keep forest officers in the directorate who are trained by and for it, and arrangements that provide a predictable supply of expertise from other institutions. The team recommends that a departmental manpower committee be formed to develop the plan and review its execution. Manpower planning experts would be hired to assist the committee and the post of Training Officer would be created in the directorate to administer professional and other training programs.

(b) The Extension Staff

Until the Social Forestry Institute is established in the fifth year of its program, the directorate would train extension staff in existing departmental college and schools. Faculties of these training centers do not have backgrounds in social forestry but for training in quasi-police forestry functions. The directorate would modify the tendencies of the training centers by seconding teachers from among agricultural and social scientists in the universities. As academics are also unfamiliar with social forestry and the conditions in which it must operate, the directorate would have to design and direct the curriculum to insure that teachers focus on practical extension needs. It would also need to develop a system of continuing education, through sequences of supervised field practice and periodic courses, and of continuing diagnosis of field task and skill requirements.

Several questions are apparent. What are extension staff to be prepared to do? Technical requirements, in plantation and nursery activities for example, are more easily identified than social ones at this stage. It is clear, however, that extension staff will be heavily involved in village planning, organization and education activities, and will require much larger doses of social and organizational knowledge than is now contemplated or feasible in departmental colleges and schools. Further, the specific kinds of knowledge required are not likely to be identifiable until operational experience is gained, and outside social scientists will not know what to teach unless they participate in and assess field operations.

Second, how are teachers to be prepared and organized for an essentially new kind of education? The proposed dependence on existing facilities and seconded teachers is ad hoc at best and underestimates the difficulty of achieving effective social forestry education. It may suffice during a period of program initiation if there is intensive field follow-up to formal courses. In the longer run, faculty organization must be more stable; faculty skills must be consistent with the curriculum to be taught; curriculum must contain what extension workers most need to know if village projects are to succeed. The proposal does not indicate how these requisites will be achieved.

Third, how is the development of extension staff to be continued after their assignment to the field? Too little is known about the requisites for successful social forestry to leave extension workers on their own after initial training and expect them to operate effectively and improve their performance. Consistent follow-up is required to build their confidence and skills and to provide feedback to training centers about what is or is not useful. Systems of educational follow-up and feedback to training centers about what is or is not useful are needed.

The team makes the following recommendations. The manpower development committee and its consultants should analyze the tasks that extension workers must fulfill and design training curricula to provide the skills these tasks require. A pilot division should be established in every zone, and a pilot block in every division, where new trainees will be assigned for work prior to dispersion to less supervised sites. Pilots would be used for field training and as centers for continuing education. They would be evaluated by social scientists to determine the skills and modes of operation that best serve extension workers' needs and to translate findings into improved curricula and educational techniques. As part of its planning efforts, the manpower development committee would give explicit attention to the professional requirements for a stable progressive educational system.

(c) The Villagers

The directorate would train villagers to assume responsibility for project management. The proposal does not specify how this would be done. Effective village training programs are few. Most promote a governmental position rather than develop skills that villagers value and use. The intent to train is therefore no substitute for a strategy addressed to village needs.

The team recommends preparation of a phased strategy of village education that synchronizes the development of village skills with the staged transfer of management responsibilities requiring them. Outside consultants would help; a number have developed expertise with similar problems in agricultural contexts. The team also recommends that a village training center be established in the pilot block of each division. Demonstrations, trials and pilot projects would be designed to be accessible to the center and to present contrasting conditions and approaches for villagers' consideration. A van vistar adhikari would coordinate center activities as well as provide liason between the directorate and schools and colleges. She would be recruited from the pool of graduates in Education. An education/liason sahayak would be placed in each block, and she would be selected for her experience as a teacher.

(d) Summary

The team recommends creation of a manpower development committee at the State level, to plan education programs and oversee their execution. The committee would rely heavily on outside expertise in manpower planning and curriculum design. Its programs would be administered by a Training Officer. Some professionals would be trained as social forestry educators. Social scientists would be used in combined functions of extension assessment and education. Teachers would be recruited for education/liaison posts at division and block levels.

2. Seedling Production, Delivery and Planting Systems

The proposed directorate would plant 4,500 hectares in its second year of operation, increasing to about 27,000 hectares in the sixth year. Seedlings would be produced in nurseries the year prior to planting. To satisfy planting targets and public requests, about nine million seedlings would be grown in nurseries during the first year; the number would rise to more than 185 million in the fifth year. Seed must be collected, stored and treated prior to nursery sowing. It must be available in desired quantity, quality, species mix, and location when needed. The proposed program depends on abilities to process and move plant materials from seed source through nurseries to ultimate planting sites. The team assessed these abilities and, although suggesting minor improvements, found them to be effective.

(a) Seed Collection, Storage and Distribution Systems

The Forest Department now collects seed depending on the forest seed crop in a given year and expected planting needs the following year. Its planting program is therefore vulnerable to seed crop cycles. Desired species may not seed sufficiently to satisfy needs the following year, or costs of collection to meet demand may rise. Seed scarcity may cause the shift of seed to sites for which it is less suited, creating plantations that are less productive than if seed were drawn from trees adapted to similar conditions. These problems could be overcome if seed storage facilities and technologies were available. The bounties of good crops could then be extended to cover the troughs of bad years. Improved storage would also reduce risks of losing seed viability.

The problems of seed crop cycles and viability maintenance do not appear to be significant for the Forest Department's normal plantation programs. The good crops of some species compensate for the poor crops of others in any year. A social forestry program will be more vulnerable. Villagers' interest in plantations will depend on whether they get the particular species they want and the levels of production they expect. Species mixes are more diverse than in forest plantations, and risks of plantation failure are less tolerable.

The team recommends development of seed storage facilities for the social forestry program. Research on seed cycles, viability and storage characteristics would also be valuable. Training may be appropriate for those involved with seed collection, treatment and transport. Such means would increase the likelihood of planting each site with seed of maximum inherent growth potential. The establishment of local seed orchards, perhaps as income-earning village projects, might also be considered.

(b) Seedling Production and Distribution Systems

The Forest Department has developed effective seedling production techniques for all species used in Madhya Pradesh plantations. Most species are grown in tubes. Some are germinated in beds, then transplanted to tubes. A few are sown directly in the field. The team found that the techniques used in the field and nurseries are giving good results. As the social forestry program expands, many persons will have to be trained to operate the new nurseries and to transport seedlings without damage. Although the team found no reason to question current training methods, these may deserve consideration in the context of a rapidly expanding program.

One central nursery and six block nurseries are proposed for each social forestry division. Seedlings will be delivered to towns located on roads, then carried manually to planting sites. This creates

employment. It also insures that seedlings will reach planting sites when village tracks are impassable during the monsoon. The transport problem will be solved where the directorate gets villagers to grow their own seedlings, an objective the team supports.

(c) Nursery Practices

The team's observations indicated that the Forest Department is producing and planting vigorous seedlings that survive well. As the planting season had ended shortly before its tour, few seedlings remained in the nurseries and it could not tell if there had been problems with watering, disease, insects or other preventable factors.

(d) Plantation Techniques

Most plantations the team observed had been established in the 1977-80 period. Pits are dug. Better soil is sometimes added to them. Seedlings are planted after about 30 mm of rain has fallen at the onset of the monsoon. Plantations are surrounded by trenches to protect them from livestock. Considering the sites available, plantations show outstanding success. The plantation techniques used satisfy social forestry objectives to meet rural requirements for forest products, generate employment, promote village participation, improve the productivity of deforested lands, and eventually provide materials for cottage industries.

(e) Summary

The Forest Department's work is impressive. Seedling production, delivery and planting systems work very well despite poor sites and transport facilities. Most plantations are successful and village participation and interest are apparent in many of them. If there are issues to consider, they involve speculation about what may happen in a large expansion of social forestry efforts. Seed storage capacity may or may not become a bottleneck, and it should be watched in beginning years of the program. Seedling transport may become a problem, but the proposed approach to nursery location and relatively short-distance movements seems the best possibility at this time. The team does recommend that pickup trucks be provided to the pilot division in each zone. These multi-purpose vehicles can be used to move seedlings, equipment and people with facility and may ultimately prove desirable for every division.

3. Evaluation, Feedback, and Operational Improvement

Methods and approaches for social forestry are in a pioneer stage of development. The proposed program is expected to rapidly increase the quality of its projects as well as the scale of its operations. It includes provisions for performance monitoring and evaluation, problem identification and analysis, and modification of planning and implementation methods. The team considered the strength and organization of capacities proposed for these interdependent functions.

(a) The Planning and Evaluation System

Project plans would be developed by division-level planning teams in the proposed program. Planning teams would be composed of regular staff who would later have responsibility for implementing the projects they plan. This approach insures the essential link between project planning and implementation: those who plan projects will be able to see how applicable their plans are in the field and to modify subsequent plans in accordance with what they learn; those who implement projects will do so with the knowledge gained in the planning exercise. It is a good approach.

Projects would be evaluated formally by the Monitoring and Evaluation Unit of the separate Research and Education Branch. The team thinks this will place critical knowledge about project performance at too great an administrative distance to be useful to those with project planning and implementation responsibilities. It recommends that a project monitoring and evaluation unit be shifted from the Research Branch and placed under the Additional Director of the Implementation Branch, where its information will be more practical and useful.

Program planning is proposed for placement in the Research Branch. This is appropriate, and program evaluation is appropriately linked to it in organizational structure as a planning research function. Project evaluation, however, belongs in the implementation channel.

The recommendation implies the team's view that there is an important difference between the operational and long-term information requirements of the directorate, and that the difference should be reflected in how the directorate is organized. The Implementation Branch should contain all directorate functions that have a short-term operational purpose. The Research Branch should contain those functions that are to satisfy longer-term directorate needs.

In addition to monitoring and evaluation of projects by the Implementation Branch, in-depth analyses of selected projects are needed to improve knowledge about how and why projects perform as they do and how performance can be improved. It is particularly important to gain knowledge about the social, economic, and organizational factors that determine project outcomes. The recommended pilot blocks and divisions would provide excellent opportunities for such investigations. Given the directorate's staff limitations, the team recommends that it draw assistance for pilot research from local colleges and schools. To keep knowledge close to those who need it, the team recommends that Zonal Directors have the responsibility for school and college participation in pilot areas within their zones.

(b) The Link between Research and Implementation

If the directorate is to be like other organizations, its research unit will embark on studies that the Implementation Branch finds of little relevance to its needs. On the other hand, the long-term perspective of the research unit is critical to progress of the directorate as a whole. If long-term research is to have future operational value, and if implementation staff are to support and benefit from research endeavors, cooperative definition of research priorities and programs is essential.

Under the proposed structure of the directorate, coordination between the Research and Implementation Branches falls entirely on the Director of Social Forestry who will not have the time for the details of research program design. The team recommends that a committee of implementation and research personnel be created a) to identify critical problems that are arising in field operations, b) to translate them into research priorities, c) to determine the balance among activities in the research program, and d) to assess and discuss the results of these activities. Such an approach should increase the relevance of research to field problems and improve the transmission of knowledge that research generates.

(c) The Link between Evaluation, Research, and Training

If the directorate is to be like other organizations, its training programs will not keep pace with the growth of knowledge among staff in operational and research activities. This is unacceptable in a new field like social forestry. Each year's new staff must be better prepared for their jobs than were their predecessors. To insure that this happens, staff educators should be kept abreast of progress in field practices and research findings and should be strongly encouraged to translate such advances into more effective educational programs.

The team recommends that a committee representing the Implementation and Research Branches, perhaps the same one suggested above, a) to continuously review staff skill requirements as they appear in the field, b) to correlate available knowledge that can be used to satisfy these requirements, and c) to modify training formats in light of committee considerations.

(d) Summary

The team has recommended some organizational changes that will improve the utility and flow of information needed for progress in directorate performance. The Monitoring and Evaluation Unit would be shifted to the Implementation Branch. Pilot projects would be used to develop in-depth knowledge of operational requirements for project success. Committees would be established, under

the Director of Social Forestry, to coordinate the views of the Implementation and Research Branches regarding research and educational programs.

4. Relations between the Directorate, other Organizations, and the General Public

The complex and possibly unpredictable needs of the proposed directorate require that it have the capacity to draw upon other organizations for competences it can or should not provide itself. The directorate would also stimulate spontaneous public activity in social forestry to increase its impact with minimal claim on its limited resources. Mechanisms for cooperation and public motivation are proposed. The team examined their adequacy with respect to program expectations and requirements.

(a) Relations with other Government Agencies in the Block and Division

Social forestry requires a broad range of social and technical abilities. The proposed directorate would satisfy these requirements in two ways. It would develop breadth of skills in its own staff. It would associate its extension staff at the block level with extension agents of other government agencies. The block-level association should allow social forestry personnel to draw upon the specialized skills of other agencies, in animal husbandry, agronomy and community development for example. It should also increase the number of people who are extending social forestry information and assistance to the villages.

The proposal is cautious about the degree to which social forestry extension staff should be integrated within the block organization. It takes a middle position between development of a totally self-sufficient directorate, with its strength of purpose but limited capacities, and a full integration in block structure that would broaden capacities at the cost of focus and effectiveness.

The team supports this position as essential during the formative years of the program. It also thinks the directorate would gain from more specific efforts to attract the interest and support of other block extension agents. It recommends that the block van vistar adhikari be given the explicit mission to "sell" his or her colleagues in the block organization on the value of social forestry for their own program interests. The divisional Assistant Director of Social Forestry would help them to develop effective ways of doing so.

Some social forestry problems will not be resolved without assistance from other agencies. Questions of land tenure and panchayat organization are the most obvious. Introduction of social forestry to school programs and women's groups is another example. A division-level committee of agency and panchayat officers, chaired by the Deputy Commissioner, should help to mobilize support needed to overcome the difficulties involved. The team recommends such a committee and will discuss its possible functions later in the report.

(b) Relations with other Government Agencies at the State Level

Social forestry raises a number of policy issues respecting, for example, land law, government-panchayat relations, local finances, and subsidy programs like the nistar supply service. The Forest Department cannot handle these issues effectively in isolation. The team previously recommended an inter-departmental committee to set terms for panchayat agreements and planning procedures. The committee, perhaps chaired by the Principal Secretary for Revenue and Forests, would be an appropriate forum for consideration of policy questions affecting the directorate. It would also provide the directorate the opportunity to promote support for its program among agencies with the power to help or hurt it.

The proposed organization of the directorate places upon the Director the entire responsibility for coordination with other government agencies, as well as for contacts with non-governmental organizations and universities, and provides him no staff support for these demanding jobs. The team recommends creation of a Public Affairs Office under the Director to maintain coordination without outside agencies, act as the secretariat for the policy committee and, replacing the publicity officer proposed in the Monitoring and Evaluation Unit, administer the directorate's public education program. The office would operate on behalf of the Director in developing external relations that benefit the organization.

(c) Relations with Non-Governmental Agencies, Universities and Colleges

The proposal expresses the intent to promote social forestry activities by voluntary agencies, colleges and schools. It thereby recognizes the organizing capacities of these institutions and their potential abilities to reach rural people in ways that are difficult for government agencies. The proposal also indicates the intent to rely on agricultural universities and colleges as sources

of extension personnel, and the directorate would presumably welcome efforts by these institutions that promoted its objectives through research, education and direct action. The intentions are well-founded in the understanding that organized allies can do much to expand directorate impacts and advance its purposes.

Team observations have led to the conclusion that the distance between intent and accomplishment in this area is very great. The desired relationships will not develop unless specific measures are taken to achieve them. The team has recommended a Public Affairs Office at the State level. It also recommends the post of Public Affairs Officer in each zone, with the specific responsibility to mobilize the interests of voluntary agencies, academic institutions, and the general public. Funds would be available for grants to voluntary agencies and academic institutions through the Public Affairs Office.

(d) Public Education

The Forest Department has demonstrated its capacity to develop an effective public education program. It has used the media imaginatively, fostered public-interest projects that touch thousands of people, and has generally accomplished much more than its limited resources would lead the team to expect. The job ahead is immense; the proposal for public education activities is ambitious. Evidence indicates both can be fulfilled if public affairs are given the organizational importance recommended here.

(e) Summary

The viability of the proposed program depends on how well it can create and use support for its activities by other organizations and the general public. The team has recommended several mechanisms that should greatly strengthen its ability to do so. A State Public Affairs Office would be created and public affairs officers would be assigned to each zone. Inter-departmental committees would be established at State and division levels. Block extension officers would be prepared for the specific task of gaining assistance from other block officials. In each case, the recommendations do not modify the intent of the proposal but simply add concreteness and form to it.

5. Policies

The writings of Dr. M.S. Tomar, K.K. Naidu, and S. Dubey provide an excellent sense of the policy ambiguities that may deter advances in social forestry. The matter of panchayat agreements has been discussed earlier. Several other examples deserve mention.

(1) Nistar Supply Policy

The supply of nistar to deficit areas at subsidized rates is costly to government and may reduce the villagers' sense of scarcity that determines their interest in social forestry. If it discourages, or does not encourage, the planting of village forests, the subsidy may be increasing the level of government expense to be incurred in the future. There is reason to consider how the nistar supply system can be used to increase rather than reduce social forestry incentives while still protecting villagers against severe deprivation.

The nistar supply system uses some wood that is suitable for industrial use and is not uncommonly sold for it. Fuelwood supply to deficit areas is thus less than it is planned to be, and the shortfall is presumably compensated by increased unplanned forest cutting. The supply system may have effects on the forest that are not wholly positive.

Nistar supply can be used as a means to "carry" villagers over the time they must wait before their social forestry plantation matures. Its management might be turned over to panchayats to exercise the capacities they will ultimately require when plantations come under their control.

(2) Revenue Sharing

Where forests are extensive, villagers have little incentive or land available for social forestry. Where forests are gone and nistar supply policies appropriate, villagers will have both incentive and available land.

The former case is where forests are being destroyed. If social forestry plantations are not established, forest destruction will continue at current rates. If they are established on the little open land available, destruction may accelerate over the period prior to plantation maturity. If villagers were given shares of the revenue from forestlands within their village area, they may have greater reason to protect it under proper management. Current policy precludes the possibility.

In the latter case, there are no forests to detroy. The focus of policy is on the plantation of forests rather than the protection of existing ones. The question of revenue-sharing then bears on the plantation itself and is presumably decided in favor of whatever arrangement best promotes plantation productivity.

On the gradient between the two extreme cases, different revenue-sharing policies may be desirable to promote social forestry objectives. The opportunity to consider them does not now exist.

(3) Market Policies

Certain timber species are nationalized; most are not. One effect of nationalization is to discourage private or village planting of more valued species and to encourage relatively the planting of the less valued. The shift toward the less valued reduces the economic productivity of land and presumably villagers' incentives to plant, protect and manage forests at all. A policy established to protect the forest may have the effect today of slowing its rehabilitation and reducing its ultimate value.

These are merely examples of issues that seem likely to affect the social forestry program in the future. In each, significant contradictions exist between the impact of policy and the purposes of social forestry. They may ultimately affect the viability of the program. The proposal offers no indication about how they might be resolved.

The team repeats its recommendation for a policy-level committee with a secretariat in the Public Affairs Office of the Directorate. The committee would have responsibility to discuss and resolve such issues and the funds with which to contract studies of alternative policies and their impacts.

6. Summary of Program Viability

The team concludes that the technical basis for the program is sound, and its field observations indicate that technical viability can be sufficient to achieve social support as well. The proposed institutional structure of the program is less promising as it now stands. It would be viable in the long run if its developments were very rapid. The team suggests that initial improvement would be more effective than reliance on ad hoc modifications once the program is in operation. It has recommended improvements in the processes and organization of staff development, planning and evaluation, relations between the directorate, other agencies and the public, and policy assessment. The recommendations are consolidated and given more detail in a later section.

B. Equity

To what extent will the proposed program benefit the less endowed? The team considered its probable impacts on the distribution of well-being between the Nation and Madhya Pradesh and between urban and rural populations of the State. It analyzed the distribution of program benefits between State and Village, among groups within villages, and within households, and considered the distributive implications of proposed procedures.

"Equity" is an ambiguous test. The choice of one standard excludes others that satisfy different values of equality. Equity can mean the increased flow of resources to disadvantaged regions or classes. It can mean distribution to each according to his or her effort, need, or number. It can mean equality of opportunity, thus the unequal distribution of resources according to ability. It can imply restraint on the concentration of wealth and power, socially or spatially. It can mean strengthening local elites relative to national ones if local elites are relatively poor, or the strengthening of national elites if they represent subjugated interests. The standards are mutually exclusive in large degree. Equity is a test that can always be failed.

The team has found the proposed social forestry program to be equitable by any reasonable standards for India and has formed several recommendations to enhance its distributive virtues in time.

a. State vs Nation

Madhya Pradesh is a disadvantaged state relative to others in India. It has the lowest index of infrastructure development. It has received the least public financial assistance for industrial development among the major states. Its per capita value added in manufacture is about half the national average. It has the lowest percent of sown land that is irrigated, the second lowest consumption of fertilizer per cropped hectare, and one of the lowest agricultural value outputs per hectare and per rural person. Agricultural credit per hectare is one-third the national average. Foodgrain yields are 25% the average. Madhya Pradesh has the second highest percentage of workers in agriculture and the highest level of agricultural bonded labor. By an index of the physical quality of life, it ranks eleventh among fourteen major states. It has the fewest hospital beds per capita and the second highest birth and death rates in the nation. Its literacy rate, 22%, is one of the lowest in India. It has the largest tribal population. One-third of its population belongs to scheduled castes and tribes, the underclass of India. In these terms, any additional flow of resources to Madhya Pradesh can be said to serve the interests of equity.

b. Rural vs Urban

Madhya Pradesh is rural. Eighty-four percent of its population live in more than 70,000 villages, two-thirds of which hold less than 500 people. Only the population of Orissa is more village based. Fourteen of 45 districts have less than 5% of their sown area under irrigation, more districts in this condition than in any other state.

Half the rural population earns less income than would be required to purchase adequate calories of food, one measure used to define the poverty line in India. Rural landlessness increased by 15% between 1962 and 1972. Between 1952 and 1972, half of all forest area lost in India was in Madhya Pradesh. Almost all of it went to to cultivation. Despite the rural condition of Madhya Pradesh and the apparent promise of its land resource, investment in the state has gone preponderantly to industrial enclaves and urban centers.

The proposed social forestry program would direct investment to the more backward rural areas of the state and use them to create sustaining capital assets in land for rural people. It would shift governmental capacities significantly toward the needs of people who depend on marginal lands and degraded forests, and would attempt to achieve a social basis for productive use of lands and people suffering the impoverishment of the commons. It would satisfy essential village needs for fuel, fodder, construction materials and food, reducing the drudgery and danger that now attend the gathering of these products by the most downtrodden of villagers. It would also relieve pressures on forest and soil, and so protect the resources and opportunities of future generations. In other words, it serves equity well if that term means improving the lot of poor rural people.

c. Village vs State

Both the State and the Village lose from the destruction of forest and its replacement by a no-man's-land that is exploited with little regard for the future. The State loses future streams of forest revenue. The Village loses a source of survival and income. By creating an institutional basis for productive investment in common lands, the proposed social forestry program would satisfy the interests of both.

The proposed distribution of program benefits between State and Village has been discussed earlier in this report. The State would derive enhanced earnings from government forests and whatever share it claims from the produce of social forestry plantations. The Village would derive the value of plantation produce it obtains. As previously indicated, the proposed division of plantation produce appears to yield greater overall gains to the State than to the Village. It also appears to lessen plantation productivity by weakning villagers' incentives, thereby adversely affecting the interests of both parties. Both kinds of effect would lead to less equitable outcomes than are possible. The team has recommended that proposed share arrangements be re-drawn so that all produce of social forestry plantations belong to the Village.

d. Distribution within Villages

The proposed social forestry directorate would work through village panchayats rather than independently or with smaller village

groups directly. The reasons are compelling. The directorate would not be able to protect and manage large numbers of village plantations on its own, nor would it presently be able to create and support special village organizations for these purposes. The administrative requirements would be enormous. State authority would expand over lands devoted to village use, a pattern that would seriously strain villagers' standards of equity. Working through the panchayat structure obviates the need for directorate responsibilities it cannot afford. It also disperses rights, responsibilities and resources from State to village governments, providing opportunity to strengthen local institutions that are very deprived in comparison with those in most other states. The use of village panchayats for social forestry management seems both pragmatic and equitable, to the extent that work means the dispersion of centralized resources to local governments currently starved of them.

Village panchayats are commonly throught to be controlled by local elites, however, raising the issue of how equitably they can distribute social forestry benefits among villagers. Whether elite control of panchayats is true as a general statement or, if true, whether is leads to inequitable distribution of resources under panchayat control, are matters of conjecture. The team has observed methods of panchayat grass distribution that range from a guaranteed equality of shares among households to simple dependence on the allocative discretion of the panchayat leader. At no time did it sense there had been a conscious attempt to capture the grass for benefit of the few.

Nevertheless, the possibility that products of social forestry would be distributed unequally under panchayat control is a legitimate and very practical concern. If groups feel excluded from a fair share of project benefits, they will have reason to invade and destroy the project for what they can get: they will have sacrificed for the benefit of others the equal opportunity of an open-access resource. As village poor will be the predominant beneficiaries of the substantial wages to be available for nursery operations and project establishment and maintenance, there is little likelihood that social forestry will maintain or accentuate current disparities in village income distribution; evidence elsewhere suggests that wage benefits from forest plantation projects substantially favor the poorer groups. These benefits will occur early in a project, however, and their impact on attitudes will have to be replaced by a tangible sense of continuing benefit.

The team agrees fully with the Forest Department's proposal to work through panchayat institutions for social forestry management. It also recommends slight modifications in program design to alleviate the possibility of future distributive inequities.

(1) Distributive methods would be discussed with villagers as part of the initial project planning exercise. Social forestry planners and extension workers would present alternative models and their apparent implications. The choice of model would be left to the panchayat and would be appended to the agreement concluded between the panchayat and the Forest Department. The agreement itself would stipulate a process of recourse and appeal to be used by villagers who perceive panchayat discrimination toward their interests. The agreement would also indicate the process by which distributive methods can be re-considered and modified.

(2) Current methods of grass distribution from social forestry plantations would be surveyed and assessed. They presumably indicate local propensities that would likely prevail in the future distribution of wood products. Results of the survey would be used to sketch a few models that panchayats can discuss at the time they choose a distributive method. The models would also be used as a focus in training planning and extension workers for what should be one of their central concerns.

(3) A few trials might be established with alternative methods of distribution, as well as with alternative degrees of panchayat and Forest Department control. They would be assessed for their long-term impacts on project viability.

(4) The panchayat would comprise project management committee to represent interests particularly important for the long-term success of the project. The committee would include, for example: representatives of livestock rearers who had previously used lands enclosed for the social forestry plantation; women, who are the dominant suppliers and consumers of wood; students, who must ultimately assume responsibility for the project; and the panchayat chairman and local wan sewak/sewika. The committee would be responsible for daily protection and management, for informing the panchayat about problems that require use of its authority, and for recommendation to the panchayat of desirable changes in project policy. Its members would enter a continuing education program to be developed for them in the block social forestry center. The program would attempt to give them the skills of an experienced wan sewak/sewika over a three-four year period.

(5) As the Forest Department will provide nistar supplies to villages until a social forestry plantation replaces the need for them, it has a valuable means to exercise panchayat distribution processes and promote their modification when appropriate. Panchayats would distribute the nistar, with advice from social forestry personnel until such time as the distribution process fulfills the requirements of project viability and reasonable equity.

Although slight, these modifications can significantly enhance the probability of successful projects and reduce the possibility of distributive problems within village panchayats.

e. Distribution within Households

Women are the dominant village suppliers and consumers of wood and other foraged products. They stay in the village more than men do and consequently assume major responsibility for crop protection and property. They discipline the children, who are the primary herders of livestock, perhaps the greatest threat to plantation survival. In many areas, they earn family income through sale of forest-derived goods. A social forestry project requires their interest and attributes if it is to be successful, and can erode their socio-economic roles if the requirement is not respected. The success of a social forestry program depends on its respect for the roles of women.

The proposed program contains no specific allowance for the roles of women in it. Forest officers are sufficiently sensitive to the issue that there may be no need for special allowances to be made. Nevertheless, panchayats are male-dominated; their decisions may not reflect the preferences and ideas of those so centrally occupied in satisfying what a social forestry project will need and provide. Of particular relevance are decisions about species mix, project protection, product distribution and use, and employment in village nurseries and plantations.

The team has recommended that project plans require unanimous approval of the panchayat council. As several seats on the council are reserved for women, the unanimity rule would insure women's influence on the critical decisions about species mix, project size and location, and modes of product distribution. The team also recommends that women comprise at least one-third the membership of the village management committees established for social forestry projects and have equivalent opportunities for the training to be available to committee members. As nursery workers are usually female, it seems appropriate that village women be given reasonable opportunity to operate the private and village nurseries proposed under the program. If project plans are to reflect women's preferences and therefore be acceptable to the panchayat councils, then planning teams should include women who can determine what women villagers want and need. If women are to participate in projects sufficiently to insure their success, then wan sewikas are needed to work with them.

The proposed program does not exclude, in any way, women or the possibilities recommended here; in practice, it may render special considerations unnecessary. The tendencies within panchayats, however, suggest that the directorate will want to compensate for them by specific measures in order to increase the probability of successful projects.

C. Growth

The long-term value of the proposed social forestry directorate depends on how rapidly it can improve its operations and impacts. The directorate would work in an uncharted field. However effective its initial efforts, its real test will come in the future when increasingly difficult sites are taken and problems associated with villagers' wait for plantation returns grow in magnitude and complexity. The directorate must be able to innovate and change itself. Team recommendations in previous parts of this section have been directed toward reducing sources of inflexibility in initial structure and procedures of the directorate. In this part, the team addresses the proposed strategy of program development and tests it against the standard that the directorate must be able to accomplish much more after five years than seems possible to expect today. With experience, directorate structure and operations must become different from those that are viable for program initiation.

a. The Strategy of Expansion

The proposed directorate would establish three zones and twelve divisions in each of the first two years of operation. It would establish a seventh zone of eight divisions in the third year and an eighth of four divisions in the fourth-year. Each division would have the same package and schedule of activity as every other. Activities within any division would be spread over its entire area and would involve approximately the same intensity of effort. At the end of five years, similar structures, activities and results would be expected in all areas the program covers.

The strategy is administrative rather than developmental. It suits a program in which approaches are fully tested and can be extended uniformly with reasonable confidence. It does not suit a pioneer program that must be able to produce better results in each successive year. A pioneer program requires centers of successful accomplishment, testing and staff development from which it can extend activities and staff outward to an ever-larger area. Each successive ring of area would benefit from the improvements gained in prior ones and would have lower costs and/or better results.

The team recommends a modified strategy. One pilot division would be selected for each zone. Pilot operations would begin in one block of the division the year prior to establishment of the zone. Operations would be intensive, involving larger per hectare expenditures and extension staffs than is possible for other blocks and divisions. In the second year of pilot operations, the year of zone establishment, activities would be extended to three or four adjoining blocks at somewhat lower levels of intensity. They may be extended to the full division in the third year, but would still have higher intensities than will prevail in fully operational regular divisions. The pilot divisions would be used as training centers for their zones.

Similarly, the operations of regular divisions would be started in central blocks, then extended in successive years to surrounding blocks. Intensities in central blocks would be somewhat higher than in subsequent ones.

The recommended strategy of expansion would cover approximately the same area and require the same staff size as does the proposed strategy. It would increase average per hectare plantation costs, but the costs decline sharply year by year. It would substantially reduce the costs of nursery operations. As three zones are proposed for establishment in the first year of the program, it would also require the establishment of three pilot blocks in a prior preparatory year, thus effectively lengthening the program to six years. Details of the modified strategy are given in the next section.

a. The Stratgey of Innovation and Improvement

The proposed directorate has Monitoring and Evaluation and Research Units in its Research Branch. The units would be established in the first year of operations and would continue at the same budget levels through the course of five years. Although the effectiveness of these functions is essential to a progressive organization, the proposal gives no indication of how they would be developed and what they would do. They are difficult to develop and, without specific preparation, would probably not begin to provide useful information to the directorate in time to benefit the five-year first phase of the program.

The team has already recommended structural modifications that would place the evaluation unit in closer contact with project planning and implementation staff and would strengthen the link between the Implementation and Research Branches for research priority assessment. Its next recommendations are even more basic:

(1) The team recommends that the evaluation and research units be fully established in the preparatory year of the program. They would proceed jointly to design and implement a statewide system of trials during the preparatory and first years. The nature of the trials has been discussed early in this section. Consultants would appropriately be used for design of the system, which would include an estimated 2700 hectares in varied conditions across the State. The system would create a base of experimentation and analysis that can begin to yield valuable information within a year after its establishment. The task of its development would launch the evaluation and research units before the details of day-to-day program operations can smother them. It would also give the units opportunities to identify problems in the field for subsequent evaluation and in-depth analysis. The cost of the system is modest when compared with its future value to the directorate. Details are given in the next section.

(2) The team recommends that pilot operations be analyzed carefully by research and evaluation staff in collaboration with social and agricultural scientists from local colleges and universities. The pilots will offer exceptional opportunities to determine the effectiveness of different extension methods, social arrangements, and plantation management techniques. Such information can then be translated into improved planning, extension and implementation methods and skills.

(3) The team recommends that greater incentives be given for advances in research. The proposed budget does not allow rewards for increasing accomplishment. Budget modifications are proposed in the next sections.

These recommendations add to the budget costs for the additional year of the evaluation and research units and for headquarters administration required for management during the preparatory year. The cost increases would be compensated by resulting efficiencies of operational improvements in later years.

c. The Strategy of Education

The proposed training program has been evaluated in structural terms. As strategy, it has two important gaps. The means to improve course curricula year by year are not apparent. There are no provisions for follow-up once staff are assigned to the field. Knowledge about social forestry will deepen rapidly as the program proceeds. Its value will depend entirely on how well it is converted into useful field skills through course improvements. Further, experience in agricultural extension has demonstrated that training without field follow-up is almost useless; skills are lost quickly in an unsupportive context. A supportive context can be created by having recent trainees work together under good supervision until such time as they are ready to assume full responsibility in less secure circumstances. It can be achieved when supervisors assume responsibility to teach their subordinates. It is helped by periodic educational-cum-social gatherings that affirm staff identities with the purposes of the organization.

(1) The team recommends that all extension staff be assigned to pilot operations for one year prior to assignment to their regular post. Further, pilots would be more densely staffed than regular divisions to achieve a quality of work and experience that would otherwise not be available. Staff with aptitudes for teaching would be selected as pilot block and division supervisors.

(2) Instructors from training centers, permanent and seconded, would participate in the assessments of pilot operations mentioned previously. They would hold periodic sessions with extension and professional staff to discuss their observations and gain feedback from the field. Extension staff in the pilot divisions would gather once weekly and be visited as often in the field by their immediate

supervisors Staff in regular divisions would be visited as often but gather less frequently.

(3) Pilot blocks would be gradually developed into permanent extension training centers.

(4) Pilot and central blocks would be developed as village training centers. The principles of follow-up applying to extension staff would hold for village management trainees as well.

d. Summary

The progress of the directorate depends on how well it generates, transmits and applies new information about social forestry. The team has recommended strategies of expansion, innovation and education based on this central concern. Considerable expertise exists in India for the design of such strategies for agriculture. It can be used for this program.

D. Integration

The proposed directorate is to increase rural welfare by developing local skills and organization for the productive management of uncultivated lands. Other organizations have similar purposes. There would presumably be some advantage gained by coordinating their various contributions for sharper effect on village capacities. Such has been the logic behind the community development program, the block development organizations, and the command area development authorities. In previous parts of this section, the team considered how directorate purposes might be served directly through links with other organizations. In this, it asks how the directorate might serve broader purposes of rural development strategy and thereby advance its own through the resulting capacities of people to improve their lives.

a. Technico-Economic Packages for Village Development

Social forestry is an attempt to reduce pressures on forestlands by intensifying production on uncultivated lands without forest cover. Pressures can presumably be reduced as well by other forms of economic opportunity that villagers find preferable to forest- consuming activity. Higher-yielding crops and livestock, for example, might keep villagers closer to home. Irrigation makes both possible. Cottage industries and increased farmgate prices for produce can increase incomes and reduce the need for extensive land use. Social forestry alone has a certain force. Combined with another intensifying activity, it may protect the forest better and improve rural wellbeing more substantially. Like agricultural packages of technology, resource-oriented packages for rural development are sensible expectations.

Consider two examples. First, a key problem with social forestry is that its benefits mature slowly. Urgent village needs are a threat to a plantation. If social forestry and crop improvement were initiated as a package, villagers would gain short-term returns that increased their ability to wait for the long-term benefits of the plantation. Crop residues are the main source of livestock feed, yielding perhaps ten times the nutrition per hectare than is obtainable from open range. Increased crop production reduces the need for other feed sources. Increased nearby supplies of fuelwood free labor time for agricultural pursuits.

Second, social forestry projects can be developed in some conditions to conserve water for village use. The water can be used for livestock, crop or forage production, reducing the need for extensive grazing and fodder collection and increasing incomes.

In these examples, the pairing of two objectives facilitates the achievement of both. The directorate would appropriately test strategies of this kind over the next five years in its trials and pilot divisions. A rationale for collaboration with another agency or two may emerge, or the directorate itself may take on new functions to strengthen its impact.

The interdependence of land uses in a village area means that, as social forestry planning techniques are refined, they will gradually produce land management plans that can be used as a basis for village development strategy. The directorate may choose to act on the plan independently, but it will have the means to attrach and coordinate other agency efforts for greater overall impact. It will at least be able to provide community development workers with a useful tool.

b. Panchayat Development

The proposed directorate would work through village panchayats. In doing so, it can help strengthen these institutions, a purpose shared by other organizations. The Panchayat Department wants to strengthen them as units of local government and has shown interest in social forestry as an independent source of revenue. Community development agencies, governmental and voluntary, would like to see their growth as organizations for economic advancement. While the commitments are often shallow, the intentions expressed are resources upon which the directorate can draw for assistance in the difficult organizational aspects of its program. It can provide the focus of concrete projects for agencies commonly without one, and can gain support in the organizational efforts for which it is thus far least prepared.

c. Block Development

Blocks are becoming the basic unit of rural development strategy in India. They have progressed significantly in the coordination of extension activities; this is reflected in the Forest Department's choice to

associate its extension staff with them. Block development plans continue to be more project - and service - oriented than strategic. The Tirla social forestry plan, however, begins to demonstrate the value of a broad strategic view. Merging the Tirla social forestry and block plans would improve the quality of both and point the way toward more effective coordination of field activities among different agencies. Such a possibility may apply to all blocks. One can foresee, for example, the possibility of linking block-level social forestry and education or agricultural plans to take advantage of the contributions each activity can make to the other. The directorate has potential for leadership in this regard.

d. Regional Schemes

The Narmada basin and tribal development programs contain important potential roles for social forestry. Both programs will benefit if these roles are developed. The directorate can benefit from the resources and support of the agencies responsible for them. Most importantly, combined efforts would achieve greater impacts than separate ones: the value of "critical mass" has been proven in agricultural and industrial development and is certain to be found in the area of people-oriented resource development strategy.

Similar opportunities exist with command area development authorities. It is notable that mature irrigation systems in India usually have more trees than their surrounding hills. This suggests human motives that can be tapped by plan to achieve optimal utilization of land and water resources across a command area. Irrigation and forestry officials in Madhya Pradesh have proposed the use of water-consuming plantations to convert drainage problems into fuelwood crops. One can envisage future mosaics of agricultural fields and social forests in command areas, managed for high productivity by the control of water.

The directorate may choose to expand its participation in regional schemes as its program develops.

e. State Land Use

The Madhya Pradesh Land Use Board has been dormant. It appears to have an important role to play in the State when one looks at the policy and strategy issues that will confront a Social Forestry Directorate. A high-level Board can more easily resolve general matters than can an individual organization. There is reason to expect that the directorate will want a significant role in the Board when it or a similar organization is activated. The directorate can promote the event by establishing its own State policy committee. The committee can demonstrate the value of broad assessment and guidance on matters of land policy and rural development.

f. The Agricultural Universities

The agricultural universities supply most rural development workers hired by government. They will be the main source of recruits for directorate extension work. Their programs are traditionally specialized by crops and disciplines. They have not yet developed a broad land-and-people orientation to rural development, and they are unlikely to do so if kept isolated from agencies with experience in this field. As a result, students are less prepared for their future work than they can be; staff research does not make its potential contributions to the satisfaction of agencies' huge requirements for knowledge that will increase the effectiveness of their programs.

The directorate will have the opportunity to improve education and research for rural development by drawing the universities into its program. It proposes to do so for education of extension staff. It would also do so by using university scientists and students for assessment of pilot operations and field trials. Other opportunities should follow these initial efforts.

g. Summary

The team has attempted to assess possibilities for integration of social forestry in broader strategies of rural development in Madhya Pradesh. It has found promising opportunities and indications that the proposed Social Forestry Directorate would be willing to use them. The directorate will be occupied heavily in early years with problems of establishment.

Its proposed initial efforts toward integration are tentative but perhaps as much as can be expected. The team anticipates expansion of these efforts for pragmatic reasons as the program proceeds. It expects that the directorate will have made significant progress as an integrative rural development agency by the end of the first five-year phase of operations.

E. Recommendations and Modified Design

The Madhya Pradesh Forest Department has demonstrated the capacity to implement its proposed social forestry program. Villagers' enthusiasm is apparent. Economic evaluation indicates that social forestry is a sound investment for the village, the State, and the Nation. Forestry officials have displayed willingness to make the institutional changes necessary to insure social viability of the program and to strengthen its contributions to rural development generally. With some modifications, the team unequivocally recommends support for the program at approximately the scale requested.

Two features of the proposed program are essential to its success. A Social Forestry Directorate must be created. Its manpower and staffing plan must be approved in full, in terms both of numbers and range of skills. Several modifications are equally essential. The proposed panchayat agreement must be replaced by a document that secures fair and equitable partnership to panchayats, specifies a sequence of conditions for gradual turnover of responsibility rather than a length of time after which turnover occurs abruptly, and vests in the panchayat exclusive rights to all produce. A system of pilot block operations and statewide comparative trials must be established at the earliest possible date to create the knowledge base for program development. Project plans must have panchayat approval of plantation composition, size and location, and include a panchayat-selected method of product distribution; approval is preferably by unanimous vote to insure that all segments of the community are committed to the project at its inception. The team recommends that Madhya Pradesh undertake arrangements for these modifications of the proposed program.

Initial program design will have implications for the Social Forestry Directorate that extend far beyond its five-year establishment period. The team has directed particular concern toward understanding what the long term implications are and how they can be addressed most effectively at this design stage, when possibilities are most flexible. The reasons are obvious. Social forestry is a very long term proposition. Confidence can be drawn from the soundness of a five-year proposal, but conviction must come from the quality of processes begun to improve upon arrangements and approaches that may not withstand the pressure of time, however sound they appear today. The real test of a social forestry program is perhaps less its tangible achievements in five years than how its performance has improved or what it has become capable of achieving by the end of that period. The possibilities for growth are sown in the initial design.

The team's recommendations to modify the proposed program are motivated by such thoughts and primed by its evaluation. Five aspects

of the proposed program appear vulnerable when considered for their long term implications:

a. the strategy of program expansion

b. the system for feedback, analysis, research and progressive modification of practices

c. the system of staff recruitment and development

d. incentives and means for village participation

e. means to promote supporting activities outside the Directorate.

In each case, the Madhya Pradesh proposal expresses a fruitful intent but does not back it with substantive strategy.

1. The Strategy of Program Expansion

The proposed strategy of expansion is administrative in nature. Twelve social forestry divisions would be established in three zones in each of the first two years. Eight and four divisions would be established in two separate zones during the third and fourth years respectively. The staff contingents, phased planting targets, and thus nursery and seedling requirements, are virtually identical for each division, as are the staffs of zonal headquarters, so the time path of expansion in area, manpower and financial terms is traced readily by a curve of continuously diminishing slope.

The team thinks that three factors additional to administrative organization should govern the strategy of expansion.

a. It is desirable to test approaches before extending them.

b. Demonstration, information and services reach far more people if located together in a central place than when provided separately and diffused among scattered locations.

c. It is easier to expand a program outward from a central point than to initiate it across a broad area at once.

These factors suggest a strategy that is based on diffusion of activities and information outward from initial concentrations of effort.

The team recommends a diffusion strategy that would operate in three ways:

a. The year before a zone and its divisions are to be formally established, a pilot program would be started in one block of a central district. The pilot block would be used to test community participation and extension techniques appropriate for social forestry, develop education program for villagers, van sewaks and sewikas, and identify problems that will arise in the zonal program. The pilot would be monitored and evaluated by faculty and students from institutions within the zone. Double the normal complement of foresters, van sewaks and sewikas would be fielded in the block, providing the opportunity to try out more intensive approaches than may otherwise be possible and to train field workers in an effective way. Perhaps half the extension staff would be shifted to surrounding blocks in subsequent years and an equal number of new recruits brought in for practical training. The plan for the pilot division would be as in Table 5. Pilots for the first three proposed zones would be started in a preparatory year prior to the proposed initial year of the program.

b. The Zone would be established the year following initiation of the pilot. Work would be initiated in one central block of each division. A social forestry center would be located at an accessible point in the block. It would provide public education and training for villagers, maintain nursery and seedling distribution facilities, and would be circled by a variety of demonstration projects within sufficiently reasonable walking distance to form useful parts of training activities. In subsequent years, work would expand to three or four blocks, then to the whole division. The plan for a regular division is displayed in Table 6.

c. A third element of the diffusion strategy is to depend much more strongly on the distribution of seedlings to villagers who request them. Promotional efforts would be undertaken from the central blocks. Nursery production of free seedlings would be greater than in the proposed program. The effect of this approach is to achieve tree planting with minimal requirements of staff, demonstrated levels of village interest, low cost and probable success.

While the diffusion strategy may cost more in early years than the administrative strategy proposed, it would allow testing and consolidation of capacities before spreading them, create spatial arrangements that promote rapid movement of people, information and

Table 5

Pilot Division Expansion Plan

Expansion of:	YEAR OF OPERATION First	Second	Third	Fourth Onward
Operational area	One central block	3-4 blocks	All blocks	All blocks
Plantation target	75 hectares	375 hectares	750 hectares	750 hectares
Nursery establishment	One central nursery	Two block nurseries	Four block nurseries	-
Professional & Extension Staff				
Deputy Director	1	1	1	1
Assistant Director	1	1	1	1
Van Vistar adhikari	4	6	8	8
Van Vistar sahayak	12	18	21	21
Van Sewak/Sewika	24	36	48	48
Buildings		x		
Equipment	x			

Table 6
Regular Division Expansion Plan

TARGETS BY YEAR OF OPERATION

Expansion of:	First	Second	Third	Fourth Onward
Operational area	Establishment	One block	3-4 blocks	All blocks
Plantation target	-	150 hectares	750 hectares	750 hectares
Nursery establishment	One central nursery	Four block nurseries	Two block nurseries	-
Professional & Extesnsion Staff				
Deputy Director	1	1	1	1
Assistant Director	1	1	1	1
Van Vistar adhikari	4	6	8	8
Van Vistar sahayak	12	18	21	21
Van Sewak/Sewika	24	36	48	48
Buildings	x			
Equipment	x			

materials, and thus achieve substantially lower costs over time. The recommended plan of expansion is shown in Table 7, and can be compared with the proposed plan of Table 2.

2. The system of feedback, analysis, research and progressive modification of practices.

The proposed program would create headquarter units for planting, monitoring and evaluation and research. It reflects appreciation that growth in the quality of program performance depends on how rapidly the knowledge and skills of social forestry personnel develop through experience and the analysis of project performance.

The proposal does not specify how these units are to be developed, function or relate to one another. This is a matter of concern. In its early years, the Social Forestry Directorate will be preoccupied with the basic organizational problems of rapid expansion. Development of its "information system" will be prone to neglect unless committed to a plan, and any delay will postpone at great cost the improvements in program performance that would otherwise be gained.

An even more serious source of concern is the separation of the Directorate's information and implementation systems into two distinct branches, without indication of how they would relate to one another. Information is useful to the extent that it addresses practical problems and is possessed by those with responsibility for them. Neither measure of value can be satisfied if analysts are not accountable to the needs of implementation staff and if implementation staff have weak access to the knowledge that analysts generate.

The team proposes the following plan:

a. The Research Branch would be organized in the year prior to full program initiation (i.e. by mid-1981). It would plan and begin to establish a system of comparative project trials across the State. If necessary, it would be assisted in system design by consultants from, for example, the State and Central Forest Research Institutes, the Remote Sensing Institute, the Xavier Labor Relations Institute (Jamshedpur), and social scientists of the Agricultural University. Approximately 75 hectares of trials would be established over a two-year period, in collaboration with staff of the Development Wing, in each of the proposed 36 social forestry divisions. Baseline data would be taken on the social and ecological conditions of each trial so that the reasons for differential outcomes can be assessed at some later date. Establishing the system of trials prior to the start of full Directorate operations will insure the availability of critical information when it becomes needed in three or four years.

Table 7

EXPANSION PLAN, MODIFIED PROPOSAL

TABLE 7

OPERATIONS

PLAN SUMMARY

Year	Operating Unit	No.	Area (ha)	Intensity	OPERATIONAL STAFF CCF	ACCF	CF	DCF	ACF	VVA	SVVA	WS	Scient.	Asst.
Prep.	Headquarters(estab.)	1	-	-	1	2	2	2	-	-	-	-	6	25
	Statewide trials(16 divs)	120	1200	high	-	-	-	-	-	16	32	80	-	-
	Pilot divisions(1 block)	3	225	high	-	-	-	3	3	12	36	72	-	-
			1425		1	2	2	5	3	28	68	152	6	25
1.	Headquarters(full)	1	-		1	2	2	2	-	-	-	-	6	25
	Statewide trials(20 divs)	150	1700	high	-	-	-	-	-	20	40	100	-	-
	Statewide trials(16 divs)	120	-	high	-	-	-	-	-	16	32	80	-	-
	Zones (estab.)	3	-	-	-	-	3	-	-	-	-	-	-	-
	(1) Pilot divisions(1 block)	3	225	high	-	-	-	3	3	12	36	72	-	-
	(2) Pilot divisions(3-4 blocks)	3	1125	medium	-	-	-	3	3	18	54	108	-	-
	(1) Regular divisions(estab.)	9	-	-	-	-	-	9	9	36	108	216	-	-
			2050		1	2	5	17	15	102	270	576	6	25
2.	Headquarters		-	-	1	2	2	2	-	-	-	-	6	25
	Statewide trials	270	-	-	-	-	-	-	-	36	72	180	-	-
	Zones (estab.)	3	-	-	-	-	3	-	-	-	-	-	-	-
	Zones	3	-	-	-	-	3	-	-	-	-	-	-	-
	Pilot divisions (1)	1	75	high	-	-	-	1	1	4	12	24	-	-
	Pilot divisions (2)	3	1125	medium	-	-	-	3	3	18	54	108	-	-
	(3) Pilot divisions (full)	3	2250	medium	-	-	-	3	3	24	63	144	-	-
	Regular divisions (1)	9	-	-	-	-	-	9	9	36	108	216	-	-
	(2) Regular divisions (1-block)	9	1350	medium	-	-	-	9	9	54	162	324	-	-
			4800		1	2	8	27	25	172	471	996	6	25
3.	Headquarters	-	-	-	1	2	2	2	-	-	-	-	6	25
	Statewide trials	270	-	-	-	-	-	-	-	27	54	135	-	-
	Zones (estab)	1	-	-	-	-	1	-	-	-	-	-	-	-
	Zones	6	-	-	-	-	6	-	-	-	-	-	-	-
	Pilot divisions (1)	1	75	high	-	-	-	1	1	4	12	24	-	-
	Pilot divisions (2)	1	375	medium	-	-	-	3	3	6	18	36	-	-
	Pilot divisions (3)	6	4500	medium				3	3	48	126	288	-	-
	Regular divisions (1)	7	-	-	-	-	-	7	7	28	84	168	-	-
	Regular divisions (2)	9	1350	medium	-	-	-	9	9	54	162	324	-	-
	(3) Regular divisions (full)	9	6750	normal	-	-	-	9	9	72	189	432	-	-
			13050		1	2	9	34	32	239	645	1407	6	25
4.	Headquarters	-	-	-	1	2	2	2	-	-	-	-	6	25
	Statewide trials	270	-	-	-	-	-	-	-	18	36	90	-	-
	Zones (estab.)	1	-	-	-	-	1	-	-	-	-	-	-	-
	Zones	7	-	-	-	-	7	-	-	-	-	-	-	-
	Pilot divisions (2)	1	375	medium	-	-	-	1	1	6	18	36	-	-
	Pilot divisions (3)	7	5250	medium	-	-	-	7	7	56	147	336	-	-
	Regular divisions (1)	3	-	-	-	-	-	3	3	12	36	72	-	-
	Regular divisions (2)	7	1050	medium	-	-	-	7	7	42	126	252	-	-
	Regular divisions (3)	18	13500	normal	-	-	-	18	18	144	378	864	-	-
			20175		1	2	10	38	36	278	741	1650	6	25
5.	Headquarters	-	-	-	1	2	2	2	-	-	-	-	6	25
	Statewide trials	270	-	-	-	-	-	-	-	8	15	40	-	-
	Zones	8	-	-	-	-	8	-	-	-	-	-	-	-
	Pilot divisions (3)	8	6000	medium	-	-	-	8	8	64	168	384	-	-
	Regular divisions (2)	3	450	medium	-	-	-	3	3	18	54	108	-	-
	Regular divisions (3)	25	18750	normal	-	-	-	25	25	200	525	1200	-	-
			25200		1	2	10	38	36	290	763	1732	6	25
			67500											

KEY

Statewide Trials	A trial averages about ten hectares. It is both social and techno-economic in nature. Once a regular division becomes fully operational there is no need for the additional staff provided for trials in the division in earlier phases. Prior to that time, one VVA, two SVVA, and five WS are provided per division. The additional staff will be continued in pilot divisions. The trial system is established by a combined effort of the Research and Monitoring and Evaluation Units and Development DFOs.
(1) Pilot Divisions	The first year of pilot division operations concentrate in one block. Four VVA, twelve SVVA, and 24 WS are assigned to the block. Approximately 75 Ha are planted.
(2) Pilot Divisions	Second year operations of pilot division expand to three-four blocks adjacent to the central block. The division has six VVA, eighteen SVVA, and 36WS. Approximately 375 Ha are planted.
(3) Pilot Divisions	Third year operations of a pilot division expand to all blocks of the division. Eight VVA, twelve SVVA, and 24 WS are assigned to the division. Approximately 750 Ha are planted.
(1) Regular Division	The first year operations of a regular division concentrate on planning, nursery establishment, village contracts and training. Four VFA, twelve SVVA and 24 WS are assigned.
(2) Regular Division	The second year operations of a regular division concentrate in two-three blocks. Six VVA, eighteen SVVA, and 36 WS are assigned to each division. Approximately 150 Ha are planted.
(3) Regular Division	The third operations of a regular division extend to all blocks in the division. Eight VVA, 24 SVVA and 48 WS are assigned to each division. Approximately 750 Ha are planted.
CCF :	Chief Conservator of Forests; Director General of Social Forestry
ACCF :	Additional Chief Conservator; Additional Director General
CF :	Conservator: Staff Unit Directors, Zonal Directors
DCF :	Deputy Conservator: Deputy Director
ACF :	Assistant Conservator: Assistant Divisional Director
VVA :	Van Vistar Adhikari: Extension Officer
SVVA :	Sahayak Van Vistar Adhikari: Assistant Extension Officer
WS :	Wan Sewak or Sewika: Village-level forest worker
High Intensity :	Rp 3500/ha average
Medium :	Rp 2500/ha average
Normal :	Rp 1500/ha average

The Research Branch would monitor its trial projects and analyze results periodically to, for example,

1. develop and update a socio-ecological site capability classification system for social forestry,

2. determine the biological performance of different species and species combinations in different ecological conditions,

3. determine the economic returns to different species combinations,

4. ascertain plantation results in panchayats that have adopted different modes of project participation and the distribution of produce. Such a program would launch the Research Branch on a fruitful course before the Directorate is bombarded with operational urgencies.

b. The monitoring and evaluation of the block pilot program in each zone would be the responsibility of the Zonal Conservator. The information would thereby be made easily available to divisional executives and planners. The Conservator would use faculty and students from within his zone to assess the effectiveness of community organization, extension, and educational techniques, and to identify problems that may arise when work is begun in other parts of the zone. The Conservator may also establish a zonal committee to overview pilots and studies, and to facilitate solutions to problems that may require assistance from other agencies.

c. The Monitoring and Evaluation Unit would be shifted to the Implementation Branch and placed under its Additional Director. Doing so will insure that monitoring and evaluation produces information that field officers find useful and readily accessible. Long term planning and research studies would remain in the Research and Education Branch.

d. A committee would be created under the Director to identify field problems that require in-depth analysis, to recommend priorities for the Research and Planning Units and to advise on how research capabilities located outside the Directorate might be used. The committee would contain representation from both Branches and perhaps from outside research institutions. It would be chaired by the Director and would have funds at its disposal for the involvement of outside researchers and consultants when desirable. The committee would provide a mechanism to link the two branches on matters of research priority assessment and to link the Directorate to outside analytical resources.

The team thinks that these suggested additions to the proposed program would contribute immensely to its capacities for growth.

3. Staff Recruitment and Development

The proposal projects growth of the social forestry staff to almost 2900 people in five years' time. See Tables 8 and 9. Approximately 3% of the staff would be professional forest officers and 37% would be extension agents. Approximately 60% would be van sewaks and sewikas. The entire staff must be skilled and suited for cooperative work with villagers that succeeds in improving the quality of land use in perpetuity. The proposal emphasizes the need for staff abilities in community organization, communications, and the management of degraded lands, soil and water conservation, and the combinations of forestry, agronomic, horticultural and livestock management techniques that the practice of social forestry requires. In other words, it suggests the need to select and prepare a new breed of land manager who starts in the village rather than the forest.

The proposed program relies on temporary means to recruit and train its new land managers. It would recruit primarily agricultural graduates for extension posts and train them at existing state forest colleges. As the colleges lack teachers for critical social, technical and broader land use aspects of the program, however, they must depend on part-time instructors from other institutions who may be unfamiliar with social forestry needs and perspectives. Van sewaks and sewikas would be recruited locally and trained at zonal centers by those who had passed through the forest college curriculum. Villagers who are likely to be recruited from among members of the village social forestry committees, would be trained in block and division centers. Professional officers would have the normal Dehra Dun background and be provided opportunities for in-service and advanced training of various intensities. The proposal does not indicate how continuing education would be given to those below the professional ranks or how professionals, once trained, would be retained in appropriate positions in the Social Forestry Directorate. A Social Forestry Institute would be created in the fifth year and would presumably give focus to a systematic educational program.

The team thinks there is important need for incisive strategy toward several critical issues:

a. the transition from dependence on seconded teachers and conventional forestry education to a solidly based long-term system of social forestry education,

b. the design of social forestry curricula at all levels of education,

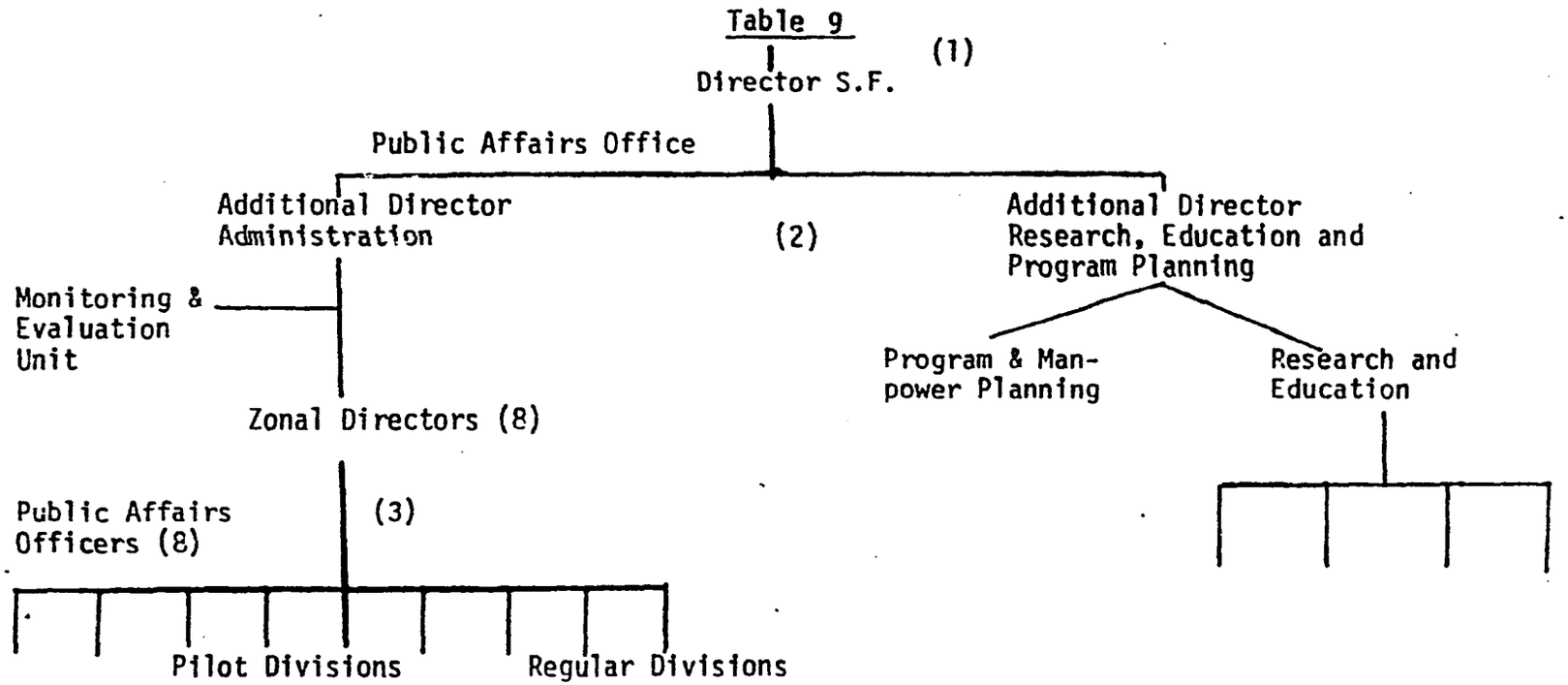
Table 8 - SUMMARY OF STAFF EXPANSION, MODIFIED PROPOSAL

Year		CCF	ACCF	CF	DFO	ACCF	VVA	SVVA	WS	Scientist/Asst.
Prep										
	New	1	2	2	5	3	28	68	152	31
	Total	1	2	2	5	3	28	68	152	31
1										
	New	-	-	3	12	12	74	202	424	-
	Total	1	2	5	17	15	102	270	576	31
2										
	New	-	-	3	8	8	70	201	420	-
	Total	1	2	8	25	25	172	471	996	31
3										
	New	-	-	1	7	7	67	174	411	-
	Total	1	2	9	32	32	239	645	1407	31
4										
	New	-	-	1	6	6	39	96	243	-
	Total	1	2	10	38	36	278	741	1650	31
5										
	New	-	-	-	-	-	12	22	82	-
	Total	1	2	10	38	36	290	763	1732	31

The "new" lines represent the minimum number of people who must be given initial training in each year. Turnover in staff will require initial training for others as well. Continuing training is required for all levels.

Organizational Chart for SF Wing
(Modified Proposal)

Table 9



36 Deputy Directors

36 Assistant Directors

290 VVA

763 VVS

1732 WS

(1) Policy Committee

(2) Research & Manpower Committee

(3) Zonal Committees

c. the selection of staff who will be able to work effectively with women and tribals, key actors in the use of non-agricultural lands.

The absence of strategies for transition from short- to long-term approaches to social forestry education, for design and continuing revision of social forestry curricula, and for recruitment of women and tribals who are critical to successful social forestry, forms one of the most vulnerable aspects of the propsed program.

The team recommends a procedure rather than a solution.

A Staff Development Committee would be established during the year prior to full operations of the Directorate. It would be chaired by the Director and assisted by his Research and Education Branch. It would have members from the Directorate, from among university educators, and from the departments of Panchayat and Agricultural Extension. The Committee would be responsible for

a. assessing the skills and attributes required for effective social forestry extension work,

b. designing recruitment procedures, curricula, and educational programs that will achieve the appropriate balance among skills and attributes required in the extension service,

c. developing a professional staff development plans for the Directorate, an associated schedule for in-service and advanced professional training, and criteria for selection of candidates,

d. monitoring staff field performance and diagnosing aspects that can be improved through changes in recruitment and education.

The Committee would also advise the Department on policies respecting cooperation with universities, the educational facilities of other departments and social forestry education centers in other states.

To fulfill its duties, the Committee would be provided funds for the following kinds of purposes:

a. sponsoring studies of village-level extension requirements and performance by, for example, extension staff at JNUVV,

b. hiring a consulting organization, like the Administrative Staff College of India, to design a long-term staff recruitment and education plan,

c. hiring consultants, perhaps from XLRI and Anand University, for design of curricula, training procedures and materials suitable for villagers, van sewaks and sewikas,

d. providing scholarships for professional education in consonance with the staff development plan,

e. supporting efforts in social forestry education undertaken by voluntary agencies and universities.

The team recommends that about 20 lakh Rupees be allocated for such purposes over a five year period.

4. Incentives and Means for Village Participation

The program proposal stresses the importance of village participation in social forestry. The reasons are compelling. Projects will thrive if villagers protect them. Panchayats can enforce rules, resolve conflicts and distribute social forestry products in ways that no extension officer can replace. They can coordinate the local services of various departments to an extent that would overburden the Social Forestry Directorate if it were to seek similar effect. No reasonable government effort can balance village indifference.

While the Madhya Pradesh proposal respects the value of participation, it offers few incentives or means that promote it. Its proposed Panchayat agreement essentially extends "protected forest" status to village and revenue waste lands, assuring villagers little but the promise of a distant return and "turnover" of the project to them. It grants government 50% the value of products sold beyond "nistar" needs, halving modest cash returns to villagers and risking disaffection even more among groups likely to get less than an average share. Its project planning process secures little participation, either by the data it selects or the choices it offers villagers. If the chance to choose species and product mix, project size and location is not the villager's, then less significant modes of participation are unlikely to right his or her sense of where control resides. Specifics of the proposal bely its participatory intent.

The team found forestry officials extremely responsive to village opinion in the field. Their sensitivity and sincerity in practice has simply not been translated into forms that build a plan. Nevertheless, forms matter when a program expands beyond the select to a large staff that needs guidance. For this reason, the team recommends additions to the proposal that will strengthen villagers' claims, interest, and thus their readiness to absorb project responsibilities to the point of eventual full and effective management.

a. Project Planning

Project plans are effective to the extent that they represent village views. The planning process should be designed to translate village wants and needs into a representative project form. It can do so in several ways. Planning survey teams can obtain information, for example, about village preferences for composition, site and scale of a proposed plantation, critical needs, labor availability, leadership, factions, modes of distributing the usufruct of common lands, and preferred terms of a social forestry contract with government. Villagers can participate as members of planning teams and, perhaps within the Panchayat framework, should have the collective power to recommend, ratify or reject choices of site, scale, composition, employment pattern, mode of product distribution, and form of agreement.

The team recommends that the requirements for socially perceptive planning surveys and for procedures of Panchayat ratification be fulfilled carefully in the Madhya Pradesh Social Forestry program. Planning teams require a member with social science background, a woman and several villagers, as well as technical staff, if they are to interpret village preferences. Procedures of Panchayat approval must insure the fair representation of all village interests. As plan approval would create the contract among villagers for long-term conduct of a social forestry project, procedures for it should be such as to forge a bond that is strong enough to sustain the project. The team recommends that an inter-departmental State Committee specify guidelines for Panchayat plan approval and enforcement, and that a District Committee be empowered to enforce them and hear appeals. Because of the importance of the project plan as a contract among villagers, the team favors Panchayat approval by unanimous vote.

b. Project Management

Discussions about village participation in social forestry commonly focus on the number of years after which projects will be turned over to Panchayat management and control. "Turnover" is a clear way to convince villagers that social forestry is not meant to expand the domain of the Forest Department but to create assets for their benefit. It is also a way to state the limits of departmental liability and the target for panchayat preparations to assume full rights and obligations. The Madhya Pradesh proposal provides for "turnover" after ten years.

The proposal does not specify how Panchayats are to be prepared for their eventual responsibilities. This should be rectified. If Panchayats are unready to assume full management responsibilities before

the target time, there is little reason to believe they will be prepared to do so afterward. Rapid liquidation of project assets may occur. Legal "turnover" must obviously be preceded by a gradual transfer of functions and skills that build village capacities for full management.

The team recommends that a strategy for transfer of responsibility be developed. The strategy may start, for example, with procedures for initial project approval by Panchayats and the creation of a project management committee. Members of the committee, comprising men, women and youth, would enter a training sequence of some years' duration and gradually assume successively more difficult aspects of project management. The committee may select chowkidars, grant rights of use, assess penalties for non-compliance with the project plan and associated rules, call for technical assistance, participate in project monitoring, and advise the Panchayat on matters of policy. If Panchayats are to gain the capacities for project management, they must do so by experience with managerial responsibility. When a Panchayat has proven its ability to protect a project securely, manage it productively, and distribute its products equitably, it should be ready for unconditional control, the target of a preparatory strategy.

Some Panchayats may be prepared to accept full project responsibility in the first or second year. Others may never be ready. The Social Forestry Directorate should want to turn over a project when a Panchayat is ready to accept it. To wait longer than that imposes unnecessary costs on the government and constrains Panchayat capacities for self helt that the project is intended to promote. To rush "turnover" because an arbitrary time has been reached can destroy a project and defeat the purposes of social forestry. Panchayats differ. The conditions for transfer of rights and responsibilities should reflect this fact.

The team recommends that the target "turnover" time of the proposed program be replaced by a policy of phased transfer based on Panchayat accomplishments. A State inter-departmental committee can design a sequence of conditions under which transfers of various responsibilities are to occur. These conditions would be stated in the project agreement Panchayat and government and would be enforced by the District Committee. Extension workers and local training programs would be directed toward bringing Panchayats through successive phases as rapidly as they are ready.

c. The agreement between Panchayat and Government

Of all aspects of a social forestry program, the project agreement between Panchayat and Government defines most strongly the essence of the cooperative relationship. Its fundamental purpose is to secure the mutual

understanding and protection of interests that effective cooperation requires. It stated what the rights and obligations of each party are to be and under what conditions they will change. It defines the conditions in which government can apply sanctions on Panchayats, the limits of those sanctions, and the mechanisms by which Panchayats can appeal departmental judgments. It should also state the authorities Panchayats and their management committees have over villagers' actions, how the Forest Department will back these authorities, and how villagers can appeal Panchayat judgments. The rights, obligations, sanctions and appeals specified in the agreement must be designed to give sufficient returns to villagers to justify their participation. They must be economically beneficial, equitably distributed, and objectively applied. To the extent an agreement falls short of these standards, it will not serve its purpose and may defeat it.

The proposed Madhya Pradesh agreement is a statement of government rights rather than mutual understanding. It does not serve the interests of a cooperative relationship or encourage a sense of village participation. Although economic analysis shows the Forest Department will gain substantial revenue from social forestry projects through industrial sale of reserved forest wood otherwise diverted to fuel, the agreement implies that the Forest Department is doing villagers a favor and is entitled to control terms of the relationship. The team strongly recommends its revision. It suggests that a State Committee assess the purposes and functions of a project agreement, design one that satisfies them, and provide mechanisms for its enforcement. The agreement should also be understandable to villagers.

d. Summary of Recommendations

The team has recommended the following additions to give substance to the participatory intent of the Madhya Pradesh proposal.

1. Include women, social science capacity and villagers in project planning teams,

2. create project management committees, composed of men, women and youth, and develop a training sequence that builds their abilities to handle successively more difficult responsibilities,

3. focus extension work on the development of Panchayat capacities for project management, train extension workers to fulfill this priority, and recruit them so that village men, women and youth will be reached effectively,

4. establish a State inter-departmental committee to design project planning procedures of a participatory nature, a sequence of conditions for transfer of management responsibilities to Panchayats, and an agreement between Panchayat and Government that creates a basis for mutual confidence and cooperation.

5. establish a District inter-departmental committee to enforce procedures and agreements and resolve conflicts respecting their application.

The team recommends that about five lakh Rupees be allocated to support trials, consultants and studies to facilitate the above. Another five lakh Rupees would be allocated for long-term studies of the effects of means for promoting participation in social forestry.

5. Means to promote supporting activities outside the Directorate

A Social Forestry Directorate will address problems that are massive and complex. It will perform in a field strewn with policy residuals of historic neglect and crossed by the interests of other organizations. Its capacities to do so would probably not reach full strength in a supportive context for at least a decade. Its effectiveness will depend on how well it advances its purposes by involving other organizations and the public at large. As involvement without responsibility is meaningless, and responsibility without reward unwelcome, the proposed Social Forestry Directorate would need means through which it can lend assistance in exchange for purposeful support that enhances its impact.

The Madhya Pradesh proposal expresses the need to forge links with other agencies and the public. It would expand current public relations efforts and back them with the tangible "outreach" of private nursery development, free seedling distribution, demonstrations, and projects with schools and voluntary agencies. It would associate its extension officers with the Block organization to draw upon and enhance the resources of other extension programs. It would create inter-departmental advisory committees at State and District levels. The intent in all cases is to create opportunities for mutual assistance.

The team supports this intent. It has somewhat less confidence in the means proposed to implement it. In the proposed organization structure, for example, there is not apparent connection between the publicity officer, in the Research and Education Branch, and field extension workers. Responsibilities and resources of the proposed committees seem too slim to draw commitments from their members. The burden of coordination with other departments, voluntary agencies and universities is placed on the Director, who cannot have the time and would not have the resources required to nourish these relationships. Finally, there is not apparent

mechanism to resolve policy issues that require the commitments of several agencies. The nature of panchayat agreement and the operations of the nistar supply system, for example, are critical policy issues for social forestry that cannot be resolved by proposed or available means.

The team recommends several modifications of the proposed program.

a. Create a Public Affairs Office immediately under the Director. The Office would (1) develop relations with universities and voluntary agencies, and fund their activities when appropriate, (2) assume State-level responsibilities for public relations and public education, and (3) serve as Secretariat for an inter-departmental policy committee, chaired by the Secretary of Revenue and Forests, coordinating the necessary analyses by the various Units of the Directorate. The Office would replace the publicity unit currently proposed in the Research and Education Branch, and would be provided funds for grants to voluntary agencies, universities, and other non-governmental groups.

b. Assign a public affairs officer in each zone to (1) work with regional voluntary agencies, colleges, and universities, (2) serve as Secretariat for the District-level committees, and (3) coordinate public education activities in the zone. Grant funds would be available to the officer from the Public Affairs Office to support non-governmental initiatives.

c. Assign one forester in each Block, preferably a woman with an education background, specifically to serve schools, voluntary agencies, and the extension workers of other departments.

d. Assign to the District Committee specific responsibilities to (1) approve and enforce project plans, agreements, and procedures by which these are formed, (2) resolve conflicts between panchayats and the Forest, (3) review the progress of the program and Department, and (4) recommend modifications of policy and procedure to the State Committee.

e. Establish the State Committee to (1) define criteria for planning and agreement procedures, (2) consider specific policy issues and solicit the research they require, and (3) formulate policy recommendations for Cabinet consideration.

Approximately 10 lakh Rupees are estimated to be necessary over five years for these modification.

6. Additional Comments

Structural effects of these recommendations are shown on the organization chart of Table 9.

The Budget

The budget of the recommended(modified) plan is displayed in Table 10. Requirements are indicated by level of directorate organization, function, budget item and year. The budget allows for a preparatory year and for coverage of plantation and maintenance costs of investments made during the fourth and fifth years. Other differences between the proposed and modified budgets are explained in the attached notes.

The proposed budget, as corrected in Table 3, and the recommended budget of Table 10 are compared in Table 11 by type of expenditure. They are compared in Table 12 by organizational unit and function. They total 39, 86 and 42.53 crore rupees respectively. The recommended budget is higher because of the addition of the preparatory year and the emphasis placed by the team on trials, pilots and sufficient staffing and support for the growth functions of the new organization. Its increases are compensated by large reductions in nursery costs. Reductions are due largely to the phased pattern of expansion within divisions and zones. The team's estimates of nursery and plantation costs are summarized in Tables 13 and 14.

Type and phasing of expenditures in the two budgets are contrasted in Table 15 as a diagnostic for determining the relative distribution of Madhya Pradesh and USAID funds in the program. The modified budget creates a relative bulge in the first two years, suggesting the desirability of front-loading a USAID loan. It also increases plantation costs substantially because of the recommended sub-program of trials and pilot divisions. This suggests the desirability of USAID absorbing a relatively heavy portion of trial and pilot costs. Other cost increases are in the critical institutional development aspects of the program that the team thinks need particular strength. Such costs are relatively difficult for Madhya Pradesh to handle and are appropriately absorbed by USAID funds.

The recommended budget is reorganized in Table 18 to fit the logic of the team's recommendations and to simplify the division of costs between Madhya Pradesh and USAID. It is divided into three basic categories:

1. Administration, including all supervisory and service personnel, buildings, equipment and operational support needed to establish and run the organization;

2. Institutional development, including public affairs, monitoring and evaluation, planning, research and staff development functions;

Table 10
Budget, Modified Proposal
('000 Rs.)

Function / Item ( ) Indicates explanatory Note	Prep.	I	II	III	IV	V	VI	Total
				Headquarters				
Administration								10970
Staff (1)	635	635	635	635	635	635		3810
Operations (1)	600	600	600	600	600	600		3600
Equipment (2)	500	1060	600	200	200	-		2560
Grant & Consultancies (3)	300	300	100	100	100	100		1000
Public Affairs (4)								419
Staff	23.2	23.2	23.2	23.2	23.2	23.2		139
Operations	30	30	30	30	30	30		180
Grants & Consultancies		20	20	20	20	20		100
Monitoring & Evaluation								
Staff (5)	228.4	228.4	228.4	228.4	228.4	228.4		1370
Operations (6)								
Grants & Consultancies (7)								
Research								
Staff (8)	398	418	438	456	478	498		2688
Operations (9)	400	400	400	400	400	400		2400
Equipment (10)	300	300	300					900
Buildings						3000		3000
Grants & Consultancies (11)	500	400	400	400	400	400		2500
Education (12)								3800
Staff								
Operations								
Equipment								
Buildings								
Scholarships	100	200	500	800	800	600		3000
Grants & Consultancies	200	200	100	100	100	100		800
Sub-Total	4214.6	4814.6	4374.6	3994.6	4014.6	6634.6		28047
				Zones				
Administration								8608
Staff		507	1014	1183	1352	1352		5408
Operations		300	600	700	800	800		3200
Equipment (13)								
Public Affairs								
Staff (14)		51	102	119	136	136		544
Operations (15)								
Sub-Total		858	1716	2002	2288	2288		9152
				Divisions				
Administration (16)								121511
Staff	548	2740	4566	6027	6575	6575		27031
Operations	345	1725	2875	3795	4140	4140		17020
Equipment (17)	2430	9045	7425	5955	2205	-		27060
Buildings		8400	16800	14000	8400	2800		50400
Planning (18)								2400
Operations	150	600	600	300	150	-		1800
Additional Staff	50	200	200	100	50			600
Extension								59575
Staff (19)	1022	3893	6716	9374	10911	11379		43295
Operations (20)	330	1650	2750	3630	3960	3960		16280
Nurseries								52568
Governmental Establishment	270	1320	3060	3350	2350	1200		11550
Operations & Maintenance (21)	1090	1329	3971	7219	9376	10521	5440	38946
School & Private (22)	42	210	350	462	504	504		2072
Plantations (23)								152042
Establishment	4988	8850	12075	25950	36938	44250		133051
Maintenance		356	784	1343	3503	5696	7309	18991
Sub-Total	11265	40318	67172	81505	89062	91025	12749	388096
Total (24)	15480	45991	68263	87502	95365	99948	12749	425298

Table 10
Notes

(1) The modified budget has higher staff and operations costs than the proposed budget because of the additional preparatory year. Some reduction may be possible if the support staff for headquarters administration is not brought to full complement during the preparatory year. All other headquarters functions require full complements during that year.

(2) The total equipment cost is the same as in the proposed budget, but it has been shifted forward to cover equipment expenditures during the preparatory year.

(3) Grant and consultancy funds would be used in support of recommendations (a) to develop a suitable panchayat agreement, (b) formulate procedures for participatory planning processes, (c) establish social research in pilot areas, and (d) maintain continuing studies of village involvement in social forestry.

(4) The proposal places a publicity officer in the Monitoring & Evaluation Unit. As modified, it would establish a separate Public Affairs Office under the Director. The modified budget is for office staff and operations for six years. Grant and consultancy funds would be used to aid supporting activities by universities and non-governmental agencies, and to draw talents required by the State Policy Committee, of which the office would be secretariat.

(5) The modified budget differs from the proposed because it covers six years rather than five.

(6) Operations costs for the Unit are included in those for headquarters administration.

(7) Grant and consultancy funds would be used for assistance in designing the statewide trial system. They are recorded in the G&C fund for Research.

(8) The modified budget exceeds the proposed because it includes the recommended allowance for rising research standards as well as the costs of full start-up in the preparatory year.

(9) The modified budget exceeds the proposed by the costs of the preparatory year.

(10) The total research cost of equipment is not increased, but is spread over three years rather than the two proposed.

Table 10
(Notes continued)

(11) Grant and consultancy funds would be used to solicit research by outside organizations, including National Institutes, to stimulate needed research by State colleges and universities, and to draw upon expertise in research design and priority assessment.

(12) The modified budget expands funds available for professional and sub-professional staff development, and provides grant and consultancy funds for assistance in manpower development planning and for training initiatives outside the directorate. Neither the proposed nor modified budget allows for costs of teaching staff secondment, the development and operations of educational facilities, or support of permanent teaching staff. This apparent gap in the proposal deserves consideration.

(13) Zonal equipment costs are included in the headquarters budget.

(14) The modified budget includes allowance for addition of the recommended addition of a public affairs officer at the Assistant Conservator of Forests level.

(15) Operations costs for zonal public affairs officers are included in the budget for zonal administrative operations.

(16) The modified budget has higher division administrative staff and operations costs than the proposed because of the pilot divisions' initial year.

(17) The modified budget adds expenditures for one pickup truck in each of the eight pilot divisions.

(18) The modified budget adds Rs.600,000 to the proposal to pay for the recommended participation of social scientists, women and villagers in the planning process.

(19) The modified budget for extension staff is higher than the proposal because of the additional costs of staff for pilot operations and trials.

(20) Modified operations costs reflect the addition of 'pilot divisions' initial year.

(21) Nursery operations and maintenance costs are depicted in Table 13. They are lower than in the proposed budget because of differences in the strategies of expansion. The proposed strategy would establish and operate all of a division's nurseries in its first

Table 10
(Notes continued)

year. The recommended strategy phases nursery development in a division over a period of three years. In addition, the team has assumed somewhat lower seedling production requirements for the anticipated plantation area.

(22) The higher modified budget for school and private nurseries reflect the addition of pilot divisions' initial year.

(23) Differences between proposed and modified plantation budgets are explained by the somewhat larger area planted under the modified scheme, its greater emphasis on multi-purpose panchayat projects, and its higher average intensity in these projects.

(24) The total does not include a contingency allowance or allowance for recommended seed storage facilities. The proposed and modified budgets should have enough flexibility to handle contingencies. Estimates for seed storage facilities are not available.

3. Field activities, including extension staff and operations, nursery and plantation development.

The years of the program are divided into three funding phases. The category, "Grant and Consultancy Fund" is divided in the budget according to the team's recommendations in the last section. Details of "Field Activity" costs are given in Table 17.

Table 11
Proposed MP and Modified Budgets by Type of Expenditure
('000)

Type of Expenditure	Proposed			Modified		
STAFF			77911			84885
Headquarters		6423			8007	
Administration	3175			3810		
Public Affairs	116			139		
Monitoring & Evaluation	1142			1370		
Research & Education	1990			2688		
Zones		5408			5952	
Administration	5408			5408		
Public Affairs	-			544		
Divisions		66080			70926	
Administration	25570			27031		
Planning (add'l)	-			600		
Extension	40510			43295		
OPERATIONS			37540			44480
Headquarters		5000			6180	
Administration	3000			3600		
Public Affairs	-			180		
Research	2000			2400		
Zones		3200			3200	
Divisions		29340			35100	
Administration	16100			17020		
Planning	1800			1800		
Extension	11440			16280		
NURSERIES			68023			52568
Governmental		66023				
Establishment	11880			11550		
Operations & Maintenance	54183			38946		
School & Private		1960			2072	
PLANTATIONS			130810			152042
Establishment	118820			133051		
Maintenance	11990			18991		
SCHOLARSHIPS			1000			3000
GRANTS & CONSULTANCIES			-			4400
EQUIPMENT			29920			30520
BUILDINGS			53400			53400
TOTAL			398604			425300

_____ ('0) _____ on

Organization / Function / Item		Proposed (MP)		Modified	
HEADQUARTERS			18885		28047
Administration		8735		10970	
Staff	3175		3810		
Operations	3000		3600		
Equipment	2560		2560		
Grant & Consultancy	-		1000		
Public Affairs		116		419	
Staff	116		139		
Operations	-		180		
Grant & Consultancy	-		100		
Monitoring & Evaluation		1142		1370	
Staff	1142		1370		
Research		7890		11488	
Staff	1990		2688		
Operations	2000		2400		
Equipment	900		900		
Buildings	3000		3000		
Grant & Consultancy	-		2500		
Education		1000		3800	
Scholarships	1000		3000		
Grant & Consultancy	-		800		
ZONES					9152
Administration		8608		8608	
Staff	5408		5408		
Operations	3200		3200		
Public Affairs				544	
Staff	-		544		
DIVISIONS			371113		388096
Administration		118530		121511	
Staff	25570		27031		
Operations	16100		17020		
Equipment	26460		27060		
Buildings	50400		50400		
Planning		1800		2400	
Operations	1800		1800		
Additional Staff	-		600		
Extension		51950		59575	
Staff	40510		43295		
Operations	11440		16280		
Nurseries		68023		52568	
Governmental Establishment	11880		11550		
Operations & Maintenance	54183		38946		
School & Private	1960		2072		
Plantations		130810		152042	
Establishment	118820		133051		
Maintenance	11990		18991		
TOTAL			398606		425300

Table 13 - NURSERY COSTS ('000 Rupees)

Type of Division	Year							
	Prep.	I	II	III	IV	V	VI	Total
PILOT								
No. of new Central Nurseries	3	3	1	1	-	-		8
No. of new Block Nurseries(1)	-	6	18	14	6	4		48
Establishment Costs (2)	270	510	810	560	240	160		2550
Operations Costs (2)	1090	880	1260	1434	1530	1530		7724
Maintenance Costs (3)	-	105	330	725	1040	1160	1240	4600
School & Private (4)	42	84	98	112	112	112		560
Sub Total	1402	1579	2498	2831	2922	2962	1240	15434
REGULAR								
No. of new Central Nurseries	-	9	9	7	3	-	-	-
No. of New Block Nurseries	-	-	36	54	46	26	(6)	162(168)
Establishment Costs	-	810	2250	2790	2110	1040		9000
Operations Costs	-	344	2066	3710	4131	4131		14382
Maintenance Costs	-	-	315	1350	2675	3700	4200	12240
School & Private	-	126	252	350	392	392		1512
Sub Total		1280	4883	8200	9308	9263	4200	37134
Total (rounded)	1400	2860	7380	11030	12230	12230	5400	52570 or 52600

(1) Establishment costs are estimated at Rs.90,000 for a central nursery and Rs.40,000 for a block nursery.
(2) Operations costs are estimated at Rs.255 per hectare to be planted in the subsequent year. It is assumed that seedlings required in the initial year of a division or block must be obtained from existing nurseries. Cost coverage for them is included here. Whether it should be included in the project may be a matter for discussion. Seedlings for trials are costed under nursery operations for pilot divisions. They amount to Rs.689,000 and might be treated separately.
(3) Maintenance costs are estimated at Rs.35,000 per year for central nurseries and Rs.20,000 per year for block nurseries. They are not charged for the initial year of nursery operations, but are extended into a sixth year to insure necessary continuity of operations.
(4) Approximately Rs.14,000 are allocated per division per year for school and private nursery development.

Table 14 - Continued

PLANTATION COSTS

UNIT TYPE	# Unit-Years	Area/Unit	Area	Cost/Area	'000 Total
Trials			2700	3500	9450
Pilot (1)	8	75	600	3500	2100
Pilot (2)	8	375	3000	2500	7500
Pilot (3)	24	750	18000	2500	45000
Regular (1)	28	-	-	-	-
Regular (2)	28	150	4200	2500	10500
Regular (3)	52	750	39000	1500	58500
	148		67500		133050

Rs.13.31 Kr.

Averate cost/ha = Rs.1971

Table 14

PLANTATION COSTS ('000 Rs.)

Type of Unit Year	Rs. Cost/HA	HA/Year	Prep.	I	II	III	IV	V	VI	TOTAL
			YEAR							
Trials	3500		4200.0	5250.0						9450.0
Pilot Divisions										
Pilot (1)	3500	75	787.5	787.5	262.5	262.5				2100.0
(2)	2500	375		2812.5	2812.5	937.5	937.5			7500.0
(3)	2500	750			5625.0	11250.0	13125.0	15000.0		45000.0
Regular Division										
(1)	-									
(2)	2500	150			3375.0	3375.0	2625.0	1125.0		10500.0
(3)	1500	750			10125.0	20250.0	28125.0			58500.0
TOTAL			4987.5	8850.0	12075.0	25950.0	36937.5	44250.0		133050.0
Average Cost/HA			3500	3105	2516	1989	1831	1756		1971
Maintenance										
1st year Rs.250/HA				356.25	712.50	1200.0	3262.5	5043.75	6300.0	
2nd year Rs. 50/HA					71.25	142.5	240.0	652.5	1008.75	1260.0
ALL PLANTATION COSTS			498.75	4206.25	12858.8	27292.5	40440	49946.25	7308.75	1260.0

148,300

or 14 K ignoring maintenance beyond year V.

(figures rounded to nearest lakh)

Table 15 - PROPOSED MP & MODIFIED BUDGETS
('000 Rp.)

Plan	Prep.	I	II	III	IV	V	VI	Proposed Total	Modified Total	Difference
Proposed										
Staff	-	7500	13600	17600	19600	14600		77900	84900	+7000
Operations	-	3300	6300	8400	9700	9900		37600	44500	+6900
Nurseries	-	7500	14000	15200	16100	15300		68100	52600	-15500
Plantations	-	-	8200	25900	43600	53100		130800	152000	+21200
Scholarships	-	200	200	200	200	200		1000	3000	+2000
Grants & Consultancies	-	-	-	-	-	-		-	4400	+4400
Equipment	-	10800	9900	6100	3100	-		29900	30500	+600
Buildings	-	8400	16800	14000	8400	5800		53400	53400	-
Proposed Total	-	37700	69000	87400	100700	103900		398700	425300	+26600
Difference	+15500	+8300	-500	+100	-5500	-4100	+12700	+26600		
Modified Total	15500	46000	68500	87500	95200	99800	12700	425300		
Modified										
Staff	2900	8700	14000	18100	20400	20800		84900		
Operations	1900	5300	7900	9500	10000	19900		44500		
Nurseries	1400	2900	7400	11000	12200	12200	5400	52600		
Plantations	5000	9200	12900	27300	40400	49900	7300	152000		
Scholarships	100	200	500	800	800	600		3000		
Grants & Consultancies	1000	900	700	600	600	600		4400		
Equipment	3200	10400	8300	6200	2400	-		30500		
Buildings	-	8400	16800	14000	8400	5800		53400		
	Prep.	I	II	III	IV	V	VI	Modified Total		

Differencies between the two budgets are demonstrated and explained in Tables and

'HASE AND FUNCTION
('000 Rs.)

FUNCTION		PHASE			TOTAL
Item	Year	1 Prep/I	2 II/III	3 IV/V/VI	
Administration		30670	68410	42009	141089
Headquarters					
Staff		1270	1270	1270	3810
Operations		1200	1200	1200	3600
Equipment		1560	800	200	2560
Grant & Consultancy Fund		600	200	200	1000
Zones					
Staff		507	2197	2704	5408
Operations		300	1300	1600	3200
Divisions					
Staff		3288	10593	13150	27031
Operations		2070	6670	8280	17020
Buildings		8400	30800	11200	50400
Equipment		11475	13380	2205	27060
Institutional Development		5449	6320	8252	20021
Public Affairs					
Headquarters Staff		46	46	47	139
Zonal Staff		51	221	272	544
Operations		60	60	60	180
Grant & Consultancy Fund		20	40	40	100
Monitoring & Evaluation					
Staff		456	457	457	1370
Project Planning					
Additional Staff		250	300	50	600
Operations		750	900	150	1800
Research					
Staff		816	896	976	2688
Operations		800	800	800	2400
Buildings		-	-	3000	3000
Equipment		600	300	-	900
Grant & Consultancy Fund		900	800	800	2500
Staff Development					
Scholarships		300	1300	1400	3000
Grant & Consultancy Fund		400	200	200	800
Field Activities		25353	81035	157802	264190
Trials					
Extension Staff		1729	2094	864	4687
Seedlings		689	-	-	689
Plantation		-	-	-	-
Establishment		9450	-	-	9450
Maintenance		300	510	-	810
Pilot Divisions					
Extension Staff		1716	4137	4962	10815
Nurseries		2293	5329	7124	14746
Plantation		-	-	-	-
Establishment		4389	21152	29063	54604
Maintenance		56	1279	4845	6180
Extension Operations		990	1650	1760	4400
Regular Divisions					
Extension Staff		1471	9858	16464	27793
Nurseries		1280	13083	22771	37134
Plantation		-	-	-	-
Establishment		-	16875	52125	69000
Maintenance		-	338	11664	12002
Extension Operations		990	4730	6160	11880
TOTAL		61472	155765	208063	425300

Table 17
FIELD ACTIVITY COSTS ('000 Rs)
Modified Proposal

TYPE OF OPERATION	YEAR							TOTAL
	Prep.	I	II	III	IV	V	VI	
TRIALS								
No. hectares	1200	1500	-	-	-	-	-	2700
Field Staff	532	1197	1197	897	598	266	-	4687
Seedlings	306	383	-	-	-	-	-	689
Plantation	-	-	-	-	-	-	-	-
Establishment	4200	5250	-	-	-	-	-	9450
Maintenance	-	300	435	75	-	-	-	810
SUB-TOTAL	5038	7130	1632	972	598	266	-	15636
PILOT DIVISIONS								
No. operating divisions	3	6	7	8	8	8	-	-
No. of hectares	225	1350	3450	4950	5625	6000	-	21600
Field Staff	490	1226	1842	2295	2446	2516	-	10815
Nursery Costs	714	1579	2498	2831	2922	2962	1240	14746
Plantations costs	-	-	-	-	-	-	-	-
Establishment								
@ Rp.3500/ha	788	788	263	263	-	-	-	2102
@ Rp.2500/ha	-	2813	8438	12188	14063	15000	-	52502
Maintenance	-	56	349	930	1410	1654	1781	6180
Extension Operations	330	660	770	880	880	880	-	4400
SUB-TOTAL	2322	7122	14160	19387	21721	23012	3021	90745
REGULAR DIVISIONS								
No. operating divisions	-	9	18	25	28	28	-	-
No. hectares	-	-	1350	8100	14550	19200	-	43200
Field Staff	-	1471	3677	6181	7867	8597	-	27793
Nursery Costs	-	1280	4883	8200	9308	9263	4200	37134
Plantation Costs	-	-	-	-	-	-	-	-
Establishment								
@ Rp.2500/ha	-	-	3375	3375	2625	1125	-	10500
@ Rp.1500/ha	-	-	-	10125	20250	28125	-	58500
Maintenance	-	-	-	338	2093	4043	5528	12002
Extension Operations	-	990	1980	2750	3080	3080	-	11880
SUB-TOTAL	-	3741	13915	30969	45223	54233	9728	157809
TOTAL	7360	17993	29707	51328	67542	77511	12749	264190

Criteria for Future Evaluation of the Program

This report indicate the team's expectations if it were to review the program in five years' time. More precise measures of performance can be derived from it. The following reflect most of the key points it raises.

A. Rates

1. Plantation survival rates show a steady increase over time and maintenance costs show a steady decline.

2. Costs of delivered seedlings show a steady decline.

3. Expected economic returns per hectare of new plantation show a steady rise.

4. The number of directorate-planted hectares per extension worker is increasing.

5. The expected product value of total new hectares planted each year is increasing relative to directorate staff and operations costs.

6. The number of hectares all people and organizations plant in the State are increasing each year relative to the directorate's total variable costs.

7. The number of villages expanding their initial projects is increasing each year.

8. Public seedling requests are increasing each year.

9. Private seedling production is increasing relative to directorate expenditures for the purpose.

10. The number of panchayats assuming full project responsibility and control is increasing. Directorate protection cost/plantation hectare are declining.

11. Turnover rates among the directorate's professional officers are low or declining rapidly.

12. The cost of the State nistar supplt system is declining.

13. Curricula for extension training show significant improvements each year.

14. The number and/or quality of research publications show steady increase.

15. The degree and quality of directorate-university collaboration show steady increase.

B. Targets

1. A set of product distribution models has been tested and is being used successfully in the preparation of project plans and agreements.

2. A social forestry site capability system has been established and is being used in program planning.

3. Project planning techniques have fully incorporated methods for social and economic assessment of site suitability, and they are being applied.

4. Thirty percent of van sewaks, twenty percent of sahayak, ten percent of van vistar adhikari and five percent of Assistant Directors are women.

5. The Monitoring and Evaluation Branch delivers useful analyses of the past year's performance prior to the next year's planting season.

6. There is an effective system of research review and priority assessment.

7. The staff development plan has been fulfilled.

8. Social forestry is being taught in schools, colleges and universities.

9. Social forestry has become part of block development plans.

10. There is an established system of education and follow-up to train members of all village management committees.

11. There is an active State policy committee.

These criteria, while not comprehensive, seem to offer measures of the more critical aspects of program performance.

The Division of Financial Responsibility

The team recommends the following basis for division of financial responsibility between Madhya Pradesh and USAID.

1. The Madhya Pradesh Government and USAID funds will each cover 50% of Administration and Field Activity costs as described in Table 17. USAID will cover 75% of Institutional Development costs. In sum, Madhya Pradesh will thus provide 20.77 crore rupees; USAID will provide 21.76 crore rupees.

2. USAID will cover 100% of equipment costs by loan and will grant funds for 100% of costs of scholarships, grants and consultancies, additional public affairs and planning staff, and for about one-third of initial research expenses.

3. The USAID loan will cover 75% of the costs of the trials and pilot divisions. Madhya Pradesh and USAID will share the costs of regular-division field activities on a 2:1 basis.

4. USAID will cover 75% of all costs during the first phase. In the second phase, USAID and Madhya Pradesh will cover 57% and 43% respectively. Madhya Pradesh and USAID will cover 60% and 40% of third-phase costs respectively.

The results of these distributions are shown in Table 18. They can be summarized as follows:

	Madhya Pradesh	US Loan	US Grant
		(crore rupees)	
Phase 1	1.53	4.27	0.35
Phase 2	6.76	8.49	0.33
Phase 3	12.48	8.02	0.30
Total	20.77	20.78	0.98

The Madhya Pradesh amount exceeds the budget of 20 crore rupees. Part of the difference can be covered during the preparatory year by provision of seedlings from existing nurseries and planting sites already prepared under the scarcity scheme of 1980.

Table 18

FINANCIAL DISTRIBUTION BY FUNCTION, PHASE AND SOURCE
('000 Rs.)
Modified Proposal

Items	TOTAL	SOURCE: Distribution Ave.% MP	SOURCE: Distribution Ave.% USAID	SOURCE: USAID Loan or Grant	PHASE 1: 25% MP	PHASE 1: 75% USAID	PHASE 2: 43% MP	PHASE 2: 57% USAID	PHASE 3: 60% MP	PHASE 3: 40% USAID	Total: 49% MP	Total: 51% USAID	USAID: Loan USAID	USAID: USAID Grant
ADMINISTRATION	141100	50	50		11600 (38%)	19100 (62%)	29000 (42%)	39400 (58%)	30000 (71%)	12000 (29%)	70600 (50%)	70500 (50%)	69500 (49%)	1000 (1%)
Staff, operations, and buildings	110500	64	36	Loan	11600 (68%)	5500 (32%)	29000 (54%)	25000 (46%)	30000 (76%)	9400 (21%)	70600 (64%)	39500 (36%)	-	-
Equipment	29600	-	100	Loan	-	13000 (100%)	-	14200 (100%)	-	2400 (100%)	-	29600 (100%)	-	-
Grant & Consultancy fund	1000	-	100	Grant	-	600 (100%)	-	200 (100%)	-	200 (100%)	-	1000 (100%)	-	-
INSTITUTIONAL DEVELOPMENT	20000	25	75		1300 (24%)	4100 (76%)	1600 (25%)	4700 (75%)	2100 (25%)	6200 (75%)	5000 (43%)	15000 (75%)	6200 (31%)	8800 (44%)
Staff, operations, and buildings	11500	43	57	Loan	1300 (45%)	600 (21%)	1600 (52%)	1300 (42%)	2100 (38%)	3400 (62%)	5000 (43%)	5300 (47%)	-	-
- Part, initial research operations	-	-	-	-	-	1000 (34%)	-	200 (6%)	-	-	-	1200 (10%)	-	-
Equipment	900	-	100	Loan	-	600 (100%)	-	300 (100%)	-	-	-	900 (100%)	-	-
Additional staff, grant & consultancy fund, and scholarships	7600	-	100	Grant	-	1900 (100%)	-	2900 (100%)	-	2800 (100%)	-	7600 (100%)	-	-
FIELD ACTIVITIES	264200	50	50	-	2400 (9%)	23000 (91%)	37000 (46%)	44100 (54%)	92700 (59%)	65000 (41%)	132100 (50%)	132100 (50%)	132100 (50%)	-
Trials & Pilot Divisions	106400	25	75	Loan	-	21500 (100%)	7000 (20%)	29200 (80%)	19600 (40%)	29000 (60%)	26600 (25%)	79800 (75%)	-	-
Regular Divisions	157800	67	33	-	2400 (63%)	1400 (37%)	3000 (67%)	14900 (33%)	73100 (67%)	36000 (33%)	105500 (67%)	52300 (33%)	-	-
TOTAL BY SOURCE		49%	51%	-	15300 (25%	46200 (75%)	67600 (43%)	88200 (57%)	124800 (60%)	83200 (40%)	207700 (49%)	217600 (51%)	-	-
Loan			49%	Loan	-	42700 (69%)	-	84900 (54%)	-	80000 (38%)	-	207800 (49%)	207800	-
Grant			2%	Grant	-	3500 (6%)	-	3300 (3%)		300 (2%)		9800 (2%)		9800
TOTAL BY PHASE					61500		155800		208000		425300		217600	

+ Additional staff inclue the zonal public affairs officers and social scientists and women placed on project planning teams.

Design Team Report
MP Social Forestry Project

ANNEX 1

TECHNICAL ANALYSIS

Mr. Tom Greathouse
Dr. George Belt
Ms. Kathleen McNamara

TECHNICAL FORESTRY

TABLE OF CONTENTS

		PAGE
I.	TECHNICAL ANALYSIS	1
	A. Project Synopsis	1
	B. Pre-Project Design	3
	1. Preliminary Research	3
	2. Alternative Locations for the Project	4
	3. Local Site Selection	6
	4. Species Selection	6
	5. Nursery Establishment and Production	8
	6. Types of Plantations and their relative costs.	11
	7. Improvement of Ground Forage	11
	8. Seed Procurement and Storage	12
	C. Plantation Establishment	13
	D. Post Planting Activities	14
	1. Weeding	14
	2. Research	15
II.	INTEGRATED RESOURCE MANAGEMENT	17
III.	HARVESTING & MARKETING OF PRODUCTION	18
IV.	MANPOWER & EDUCATIONAL SUPPORT	20
	A. Manpower	20
	B. Education Program	23
V.	ATTACHMENTS, TABLES, REFERENCES	31

1. Social Forestry Species & their Products
2. Demands Versus Supplies of Fuelwood & Timber
3. Recommendations for S.F. Research
4. Pattern of Rainfall in M.P.
5. Table 'A' - Plantation Establishment
6. Table 'B' - Plantation Development
7. Table 'C' - Trees & Grass Species - Produce
8. Soil Types
9. Storage of Indian Seeds
10. Institutional Resources for SF Research
11. Proposed Structure of MP. SF Directorate.

I. TECHNICAL ANALYSIS

Project Synopsis

The Madhya Pradesh Social Forestry Project (SFP) is designed primarily to re-establish trees on almost 90,000 hectares of now degraded, formerly productive forest land. The areas to be planted lie within or adjacent to some 15,000 villages in 36 divisions (units) of 29 of Madhya Pradesh's 45 districts (att. No. 2). The plantations to be established during the project will fall into three broad categories:

1. Personal use, involving one to many trees, planted by individuals;

2. Village Plantings of from about 2 hectares per year for common use; and

3. Block Plantations of up to 100 ha to be shared by all the villages in a block (Gram Panchayat).

To provide maximum benefits for villagers, social forestry plantations will contain a mixture of multipurpose species. Most indigenous and some exotic species are important for at least three of the following products: fuelwood, fodder, construction or handicraft materials, fruit, and medicine. Some species also improve soil stability, and fertility, and produce moderation of the local microclimate. The Madhya Pradesh State Forestry Department, (SFD) has demonstrated its ability to grow and distribute seedlings and to advise villagers concerning planting and tending techniques. The SFD has also shown expertise in selecting species which will produce needed products for each area (Att No.1).

Table A (Att.5) illustrates the capacity of the SFD to expand nursery and plantation activities to meet the requirements of this project. Labor is available in the villages to do the physical work. The SFD is making temporary arrangements to train administrative and forest extension officers and assistants. A permanent training institute will be established by this project. All the evidence on the ground - (existing plantations, enthusiasm by villagers for the gahan panchvan (village level) reforestation program, and the eagerness of top as well as field officers of the center forestry office in New Delhi and of the M.P. headquarters) - indicates that the project will be successful.

These plantations will be located in the most critically degraded portions of M.P. where there is now a deficit (Att. No. 2) in annual supplies of either fuelwood or timber or both. Initially seedlings will be produced at 252 nurseries (7 per unit) and provided to the villages by the State Forest Department. Later, the local village leadership (Panchayats) will take over complete management of their unit, including nursery operations. Selection of planting sites will be made by the State Forest Department in collaboration with local Collectors of Revenue, village leaders and private land owners. With rare exceptions, the only available land will be degraded, deforested areas which are not satisfactory for raising agricultural crops. Within the limits of land availability, selection has taken into

account social and environmental impacts, nearness to area of need (villages), soil and climatic conditions and availability of labor and water (1).* Contingent on results of a major evaluation to be made in the latter part of the project's third year, an additional 90,000 hectares may be reforested in a future Phase-II.

B. PRE-PROJECT DESIGN

1. Preliminary Research

The project is fortunate in that the results of Forest Research in India since the early 1900s have yielded data on products to be expected from each of some 70 tree species (4, 5). Research has also helped develop nursery and reforestation techniques which appear to be successful under the harsh site conditions found in Madhya Pradesh in areas available for social forestry (SF) plantations (5, 6). Limited data available regarding adaptability of a number of species to environments in both western and eastern M.P. are sufficient for the project to begin planting in 1982. However, it is recommended that the new Research Unit be activated as soon as possible to establish about 2700 hectares of statistically designed species trials. Such trials should be planted on all major soil types in each of the various precipitation zones of both western and eastern M.P. For widely planted species such as Neem (Azadirachta endica), Sissoo (Dalbergia sissoo) and Siris (Albizzia lebbek) provenance trials are needed to insure maximum production at each site. Meanwhile, all existing trials

* Numbers in parenthesis indicate references listed on page 29.

on sites similar to those to be planted in 1982 should be re-examined before definite seed sowing plans are made. Before large-scale planting of the two "miracle" species, Eucalyptus Hybrid (E. tereticornis) and Koo-Babul (Leucaena leucocephala), more evidence is needed that their long term performance on poor sites will equal that of such species as siris and sissoo.

The State Forestry Department is encouraged to activate the Research Unit of the proposed SF Wing as early as possible in order to (i) re-examine all trials which could yield helpful information for selecting species for 1982 planting and (ii) to install new trials at the earliest possible time. In order to collect and analyze all the data possible prior to the 1982 nursery sowing, it is suggested that the SFD contact other forestry research units in India (See Att No.3) to enlist help in locating and analyzing trials which are five years old or older.

Preliminary work has also been done in the extension field. Evidence is available that the SFD has been successful in creating enthusiasm among villagers for the proposed schemes for re-establihsing trees and fodder crops. However, additional SF extension research is needed to refine techniques. Large scale training of Forest Extension Officers and assistants is required to establish the proposed 11,550 hectares of SF plantations in 1984.

2. Alternative Locations for the Project

a. Although the sites to be planted are believed to be the poorest in their respective area, there seems little alternative. Sites which

are even marginally adequate for production of agricultural crops are being used for that purpose. The remaining degraded sites are the result of cutting the forest, then overgrazing and over cultivating the land. While in some cases poorly suited for the climax species which formerly grew there, the degraded sites can be utilized by other tree and shrub species in the process of rebuilding the soil while providing benefits to villagers.

b. Within the project area some 252 nurseries (7 per division (Unit) in 36 divisions of 29 districts) are planned. If Madhya Pradesh had a more extensive highway and transport system, it would probably be more efficient to consolidate these into one or, at most, four nurseries. However, the lack of roads makes consolidation impractical. Further in view of (i) the desirability of increasing local employment through use of hand labor, (ii) the short planting season of 6-8 weeks which comes in the middle of the monsoon season when transport would be impossible on all but the few paved roads (many villages are not on a road), (iii) the impracticality of constructing tree storage facilities at villages, which means that trees cannot be transported great distances in advance, and (iv) the socially desirable involvement of a maximum number of residents at the most rural level possible, there seems no argument for centralizing nursery production. To the contrary, it is planned to encourage school children and individuals in villages to increase their meager incomes by assuming the responsibility for growing some or all of the trees for village use.

3. Local Site Selection

Within the available areas adjacent to a village, it is both biologicaly and psychologicaly desirable to select an average or better site for the first year's planting. An above average site would help to insure that the initial efforts would be successful and maintain the enthusiasm of the participants. When there is a choice, the official who is to select the site in collaboration with the villagers should weigh the potential productivity of the site versus such variables as: distance to the site (walking time, distance to carry plants, etc.) and the difficulty of managing the area and protecting the trees and ground forage from damage.

Naidu (1) on pages 46-47 has listed the major soil types to be found in each district. A copy of these two pages is given in Attachment No. 8.

4. Species Selection

A. Some species trials have been established in Madhya Pradesh, but only in the Raipur area were pre-1976 trials seen (2). Elsewhere, a few trials were initiated in 1977, but most of them date only to 1979 or 1980. It is proposed that in the first two years of this project that 2700 hectares of new species trials be established.

The design of previous trials reduces their analytical value, but there is ample evidence that with proper care a number of species such as Aonla (Emblica officinalis), neem, and siris can be successfully

established on available sites. With reference to the two most publicized fast-growing species, Eucalyptus tereticornis and Leucaena (Koo-babul), there is no evidence in Madhya Pradesh to indicate that on its harsh sites these species can continue their early rapid growth long enough to merit large scale planting in 1982.

Based partly on results in post-1976 trials, partly on general principles of inheritance of adaptability to specific environments and partly on experience in other tropical areas, it is recommended that during the first three years of the project, at least 80% of each plantation be stocked with indigenous species or with exotic species which have proved their adaptability, over a period of at least 10 years, to the various environmental types (eco-systems) found in M.P.

It is further recommended that the Research Branch of the new Social Forestry Wing begin establishing statistically designed trials using both indigenous and potentially useful exotic species as soon as possible. This could be done as part of the annual plantings around selected villages. As new information is obtained from both old and new trials, species composition of subsequent plantings can be altered as indicated.

The SFD-produced trees now being supplied to villages yield a variety of products: fuel, fodder, small timber, poles, fruit, medicines, handicraft articles, fencing etc. (4, 5). Forestry Department officials have indicated that this policy will be continued so as to meet as many village needs as possible.

Village needs will vary from locale to locale. As the SFD has demonstrated expertise in choosing suitable species for specific sites, no attempt will be made in this document to outline species composition for any village or general area. Instead a list of species which have been planted successfully in the past is given in Attachment No. 3 along with their principal products.

5. Nursery Establishment and Production

a. Establishment and Production

It will be necessary to establish 36 five-hectare nurseries capable of producing 600,000 trees/year each, and 216 one-hectare block level units (6 per division) with capacities of 100,000 trees/year each. This makes a total production capacity of about 42,000,000 trees/year in Madhya Pradesh during the third to fifth years. The reasons for not centralizing nursery production are given in 2b above.

Seedling requirements for the initial years of the project are shown in the table below.

			Seedlings Needed (thousands)		
Year of Project	HA Units	Planting target (HA) in Next yr.	Gahan Pancha-van	Free to Farmers	Total
-1	3	1,575	1,730		1,730
1	15	4,050	4,900	6	4,906
2	25	11,550	13,930	36	13,966
3	33	19,500	24,930	86	25,016
4	36	24,825	33,540	184	32,724
5	36	27,000	38,080	354	38,434
Totals	36	88,500	117,110	666	117,776

These estimates assume that trees will be planted at a 3.5 x 3.5 m spacing and that due to mortality, 25 percent of this number will be needed to replace first year losses. Thus 1375 seedlings must be grown for each hectare planted. Note that nursery production must occur the year before planting, hence production in year one is scaled for the nursery capacity now available in Madhya Pradesh. Finally it should be noted that the nursery production capacity developed under the project will be sufficient to permit continued program expansion after the proposed project termination date.

Costs of establishing Nurseries are as follows:

(Rs.000)

Unit	Number Nurseries/ Unit	Capital Cost	Working Costs	Variable Costs	Total
Central Nursery	1	100	40	135	275
Block Nursery	6	300	150	175	625
Total	7	400	190	310	900

Forest plantations established under the Madhya Pradesh Social Forestry Program begun in 1976 are shown in attachment 5.

b. Seedling Production Methods

The SFD has demonstrated that for all species under consideration they have the expertise to produce healthy plants either in polythene tubes or with bare roots. The big problem will be to train enough personnel to ensure efficient operation of the 252 nurseries when the first seeds are sown at each. No attempt will be made to change nursery production methods from the labor intensive, successful methods now in use.

c. Irrigation at Nurseries

Water supply for the central nurseries will be furnished from tubular wells and pumped to the site. Water for the small block nurseries

will come from natural surface supplies where available, from tubular wells where required. Watering will be done by hand to provide maximum employment at village levels.

Careful consideration must be given to both quantity and temporal availability of water supplies when nursery sites are selected. Failure to insure irrigation requirements could severely cripple production.

d. Fencing of Nurseries

The SFD has found it less expensive and more rewarding to unemployed villagers to use 1.5 x 1.2 m trenches rather than a wire fence to prevent livestock damage to plantations. However, there will be instances where at least a portion of certain nurseries will require wire (e.g., gates over roads, along some roads, etc.). It is estimated that about 4,000 meters (1 Ton) of barbed wire will be needed (Rs.10,000) and 120,000 m of trenching will be required (Rs.360,000) for the 252 nurseries.

e. Other Equipment

Equipment for nursery and planting site preparation have been listed together in Annexes 3A and 3B of the SFD proposal. Since the emphasis is on increased employment, wherever possible manual labor will be used.

Minor building construction will occur at the nurseries to provide quarters for foresters, guards, a watchman and for labor. Nursery expenditures (construction, labor, etc.) are expected to be about Rs.300,000 for each of the 35 Central Nurseries and Rs.110,000

for the Block Nurseries. Total cost will be about Rs. 3,456,000 (about $500,000), spread over five years.

All mechanized equipment for the nursery as well as for the plantations will be scheduled for replacement after four years.

6. Types of Plantations and their relative Costs

In order to meet the various village needs, the following types of plantations will be established. Since costs will vary by site, species, etc., the costs given represent an estimated average:

Type of Plantation	% of Total	Establishment Cost/Ha. Rs.	Maintenance Costs Year 2nd	3rd
Fuelwood, Fodder	75	1,600	280	60
Small Timber, Poles	15	1,700	280	60
Road, Rail, Canals	5	8,100	280	60
Fruit, Medicines, etc.	5	1,700	280	60
			1,120	240

7. Improvement of Ground Forage

It is planned to sow seed of the best indigenous species which formerly occupied the degraded sites. Establishment costs for this work include seeding grass between rows of trees to insure maximum forage yields. The forage will be harvested and taken to the cattle for stall feeding. This will prevent both browse and trampling damage

to grass and other herbaceous cover. Grass yields are expected to be about 1 metric ton/Ha/yr.

8. Seed Procurement and Storage

a. Procurement

The State Forestry Department has said that it seldom has trouble in getting the quantities of seed it needs for nursery production or seed sowing in bunds. Except for acquiring Leucaena seed from the Philippines or other areas, seed is produced locally. If Leucaena proves adaptable to the poor sites and extreme heat (maximum shade temperatures of 120° F (49°C), it will be producing adequate numbers of seed within Madhya Pradesh in 3 to 5 years.

b. Storage

As noted in Attachment No.3, no storage methods have been developed for a number of the most frequently planted species such as neem, mango and sal. Until research can reveal appropriate techniques, there is no point in storing such species of seed. However, other species which can now be stored at ambient temperatures for a year or more would benefit. Seed stored in controlled refrigerated conditions would retain germination vigor longer. Storage of seeds would also have two other major advantages. When seeds of a given species are plentiful, collection is less expensive and germinative capacity, like vintage wine, is at its maximum. Such seed can be stored longer without losing its viability. In addition, storage facilities would also permit collecting seed several years in advance for bamboo (Dendrocalamus strictus), which

only produces seeds every 30 or 40 years, and other species that can be stored at least 2 to 3 years. At present, seed must be moved from whichever area is producing seed in a given year to all other areas where the species will be planted that year. Known genetic principles indicate that seed from the drier parts of the range of the species will not have the same growth potential as seed from wetter, more favorable environments, seed from wetter areas, on the other hand will have a reduced survival potential on dry sites. Movement either way reduces growth rate.

It is recommended that a seed storage facility be constructed or rented in Bhopal or other centrally located city. Since there has been so little experience with this facet of reforestation in India, rental of storage facilities is recommended until the research branch of the new SF wing can determine the requirements for a special structure. It could be built in the 3rd or 4th year of the project.

C. PLANTATION ESTABLISHMENT

Site Preparation will be done by Manual Labor.

In General, this will consist of digging holes 30cm x 30 x 30 at a spacing of 3m x 3 (about 1110 per hectare). A person can dig about 25 holes per day at a cost of about Rs.72/ha. When the costs of filling holes with better soil and the costs of replacing seedlings which died the first year are considered, the cost will be about Rs.100/ha.

At the time of planting, dieldrin will be dusted into the bottom of the holes to prevent termite damage to 60 to 100% of the seedlings.

Dieldrin is registered by the U.S.E.P.A. for

use in this manner. With this precaution, survival rates of 75-90%, a remarkable figure on such sites with an 8-9 months dry season, can be expected in all except in the one in four years when the monsoons fail to deliver even 50% of the normal precipitation. (See rainfall distribution graph, att. 4).

Planting will be done at 2.5 m x 2.5 m spacing. This is a compromise between 2m x 2m and 4m x 4m. If 2m x 2m spacings are used, the annual yield of critically needed ground-forage is significantly reduced. If 4 x 4, full utilization of the site for aerial and ground fodder and for fuelwood production is not realized.

A firebreak is not necessary since the 1.5 m wide trench, which serves as a fence, fills this need. The villagers depend on the forage between the trees, which they cut at no charge, so there is no likelihood that fires will be started intentionally. The presence of a local resident being paid as a watchman (chowkidar) will further discourage fire or other damage to the plantation.

D. Post Planting Activities

1. Weeding

In the plantations weeding and loosening of the soil within the planting hole (30 cm x 30 cm) is done twice the first year, once the second. This will be done by hand. No herbicide will be used since the grass and other vegetation are hand-cut by villagers and used to stall feed their livestock. The forage is free to them for the cutting.

2. Research

The SFD proposal suggests a research and monitoring program which should be an essential element in the program. The program can be initiated utilizing work previously begun at the Forest Research Institute, Dehra Dun, the State Forest Research Institute at Jabalpur and the research demonstration plantations established by the SFD since 1977. The research unit of the new SF wing will have a forester/ geneticist (silviculturist) and a statistician who can evaluate old trials and design new ones. Work could begin by evaluating of the one to four year old plantations in eastern M.P. Then based on these findings statistically sound species and provenance trials should be designed and implimented as part of selected Panchvan (SFD) or Gahan Panchvan (village level) plantings. New trials are urgently needed as a basis for more precise evaluation of the adaptability of various species to the several million acres of degraded sites in India. For indigenous species and for some exotics, provenance trials should also be established so that maximum yields can be obtained from each plantation to increase benefits, including income, to the villagers. Such trials are needed due to the marked difference in ecosystems which occur between east and west M.P., but also to a lesser degree within the two regions. For example, rainfall varies from 700 (west MP) to 1700 mm (east MP). In western M.P. the variation ranges from 1100 to 1700 mm (6). Soil variations can be equally dramatic. The

success of this phase of the project will depend on the ability of the SFD to conduct research with its own staff while drawing on the resources of other Indian or worldwide research units. Institutional resources which could be used are described in attachment 10.

Gaps in existing social forestry research are highlighted in attachment 3. In addition to the topics identified in attachment 3, it should be emphasized that there is considerable need for synthesis of available information. For example there should be:

a) Collection and dissemination of hitherto unpublished data and information on Community Forestry available in countries where Social Forestry is practiced in some form or other;

b) publication of abstracts of research works done in Social Forestry within the country; and

c) review and analysis of applied research already begun by SFD field staff.

Finally conceptualization and planning for a state wide field research program should be an early priority, preferably occurring prior to project initiation.

The potential contribution of women to the forestry profession should not be overlooked. Their talents as administrators, scientific investigators and operational personnel should be considered at all levels and in all disciplines. Authorities the world over recognize the monumental physical and social effort which will be required to overcome past (and present) environmental problems.

First the forests, then the lower forms of vegetation and finally the soils have been degraded, sometimes destroyed. To reverse this trend and raise standards of living will require maximum contributions from the talented citizens of all nations. In India as well as in all other countries, women represent a latent resource. Worldwide, women have been demonstrating their capacity to plan, organize and perform well in top government and industry positions as well as in the home. India, which has taken the leadership in activating the concept of SF, is now in a position to demonstrate to the rest of the world that it is ready to assume leadership in another field: making the most efficient use of all of its latent talent, whether that talent is hidden in village or city or whether the possessor is male or female. This project is one avenue to help accomplish the task.

II. Integrated Resource Management

This project is a model for integrated resource management. It will treat sites so severely degraded that in the dry season they appear almost sterile. Among its objectives are:

1. The restoration of vegetative cover to protect and rebuild the impoverished soil;

2. The improvement of the standard of living of village inhabitants by assisting them to produce for themselves easily accessible, essential raw materials such as firewood, fodder, food, medicine, etc. some of which bring a sorely needed cash income;

3. Employment of hundreds of villagers to supplement poverty-level incomes;

4. Increased opportunities for village women to play a greater role in India's development by making more efficient use of their inherent administrative, sociological and scientific aptitudes; and

5. Training of villagers, men and women, in various phases of reforestation (seed procurement and processing, nursery work, planting and tending of trees, and management of the trees through harvest of their products), in forest extension work (a combination of sociology and forestry), in restoration of soil and plant cover and in techniques for obtaining sustained maximum yields from their lands.

Some villagers must now walk from 5 to 10 km to obtain firewood, or use their already substandard income to purchase wood from sources 20-30 km distant. In general, while food supplies are adequate in bulk, for many villagers they are inadequate in nutrition. This five year project can go far to remedy these deficits in several thousand M.P. villages.

III. Harvesting and Marketing of Production

There will be two major types of forest or plantation harvest. The first will involve annual harvests of forage (grasses and other herbaceous materials). From some trees, beginning in the second or third years, some lower branches will be available for lopping as fodder. The second type harvest will be that of fuelwood as well as other products. Some trees will yield products beginning in the third year; others not until 5 or 6 years.

Preliminary results in trials in M.P. indicate that the first harvest of trees may be made from six year old plantations on some sites. If coppicing is possible, the same root system will produce a second crop in 5 more years. Until information is obtained which indicates otherwise, at least 80% of the seedlings planted will be of species which are indigenous or have adequately demonstrated an ability to do well in M.P. when protected from livestock damage. A list of species with Latin and common names is attached (No. 1). The list indicates anticipated yields by type of product. On the areas to be planted under this project, the SFD plans to turn over management to the Panchayat (Managers for a group of villages) as soon as possible. If the Panchayats accept the responsibility before the sixth year, they will supervise the first harvest of most of the raw materials. If not, the SFD will provide supervision until the turnover occurs. In any event, under the Panchayat-SFD agreement, the villagers will be employed in harvesting the plantation crops and the net receipts will be given to the Panchayats for equitable distribution to the villagers concerned. Raw materials may be obtained free by the villagers for personal use (firewood, forage, fruits, etc.). They will receive payments for any materials excess to village needs which are sold to persons outside of the Panchayat.

Due to lack of transport facilities by villagers, who in some cases live far off the nearest road, marketed materials will have to be moved by the purchasers or through arrangements made by the SFD.

IV. Manpower and Educational Support

A. Manpower

1. Proposal

Under the SFD proposal a Social Forestry Directorate will be established as a new wing of the Forestry Department. The Directorate will be headed by a Director of Social Forestry and two Deputies, one for "Execution" and a second for planning. These officers will supervise the program with a central administrative staff of 35 and a line staff of about 40 joint and Deputy Directors in the field. The Directors in turn have a staff of approximately 2800 including 25 research personnel and 90 officers at the rank of ACF or above. A chart of the proposed line and staff organization appears in attachment 11.

2. Manpower Needs

No specific staffing sequence is specified in the proposal however it is assumed that the central administration staff (35 positions) and the field line officers i.e., 3 Zonal and Deputy Directors and their staffs (about 150 persons as shown in Annex 22 of the proposal) would be required in the first year. In November 1980, 106 Foresters from Dehra Dun were posted to the MP Ranger School at Shivpuri for training in Social Forestry and extension. These individuals would serve as a nucleous for a field effort during the first year. Line officers would be assigned from the SFD ranks and presumably from staff now assigned to the Ford Foundation Project in Bhopal. Additional field staff i.e. (Van Vistar Adhikara, Van Vistar Sahayak) necessary for expansion of the program

during subsequent years will be recruited from ranks of agricultural and rural sociology graduates and subsequent to additional training will be posted to District offices. Similarly Sr. officers from the SFD will be posted to the social forestry Directorate and receive orientation training prior to moving to their new assignments.

3. Concerns in Staff Selection

A fundamental requirement for the success of the project is the ability of staff to effectively communicate and motivate rural v illagers. Many of these villagers will be tribals and because of the traditional role of women as forest workers and in cooking and collection of firewood, a significant position of the target population will be female. Hence having some staff memeber who are the tribals , females or both would enchance the flexibility of the organization in reaching such audiences as well as its creditability as a socially oriented organization.

Additionally careful consideration should be given to the disciplines from which personnel are drawn. While the Directorate must have competent staff professionally trained in forestry, it must also have staff with expertise in the social disciplines, e.g. sociology, economics, extension and communications. The overall goal in terms of staff composition should be a mix of highly skilled persons who (1) as a team, can provide competence in technical forestry and the social sciences and (2) because of their backgrounds are able to relate well to the various client groups which they are to serve.

4. Recommendations on Manpower:

(a) That a firm commitment from the GOMP be obtained on the establishment of the SF Directorate and the posting of required staff as proposed.

(b) That an additional position be added to the central staff to supervise the development and operation of the training program.

(c) That (i) the SFD place early and high priority on obtaining qualified women in staff positions in the SF Directorate. And that if necessary, women candidates be recruited specifically for professional posts by the GOMP and sent to Dehra Dun as candidates for the IFS or sent to other institutions offering comperable training.

(ii) that a similar effort be made to recruit and train women for sub-professional positions.

(iii) that uneducated but skilled women working as day laborers in forest nurseries and on reforestation projects have the opportunity to move into "forman" positions based upon ability and merit.

B. EDUCATION PROGRAM

1. Purpose - the program should provide continuous training to both professional and non-professional staff within the Department. The program should function as a means of education and more importantly as means of program guidance through transfer of ideas and enhancement of communications. The educationalprogram should also provide opportunity for continuing program assessment between the administration, field staffs and villagers.

2. Program Development - As suggested in the manpower description a substantial program to train personnel will be required during the first three years of the project. Subsequently a reduced but continuing program will be necessary to provide for attrition and hopefully for continued communication of new ideas, policies, etc.

Instructional programs must reach three audiences.

(a) Sr. and mid-level professional employees in administrative and research capacities;

(b) Field level personnel with forestry agriculture or social science backgrounds who constitute the basis of the SF extension effort;

(c) Villagers, block employees and Van Sewak, who must ultimately assume responsibility for village and Block level programs.

Modes of instruction and subject matter for each audience will vary but have some common elements.

3. Sr. and Midlevel Professionals

For Sr. and midlevel professionals training can be provided primarily through inservic training in the form of seminars and work-

shops. In cases where specific professional development is needed by individuals formal academic programs should be used. For example, a Sociologist might receive training in forestry or a forest officer might take course work in extension. Travel abroad as well as domestically also could be useful to review related programs, research or attend symposia.

Training at this level, except for formal academic education as mentioned above, might serve the following objectives:

(a) to deciminate information, i.e., inform regarding program goals, philosophies, operational plans;

(b) to provide new direction, i.e., to obtain new ideas or to provide a basis for examining/comparing current methods, strategies, philosophies with those in use in other states or countries;

(c) to motivate by reviewing and acknowledging accomplishments and less successful efforts in a format of constructive criticism. Such sessions can be encouraged as reviews of acknowledged problems where participants are asked to provide examples from their own experience which might be helpful to others;

(d) to instruct formally in new methods techniques. This would normally be in a lecture format but might include field work or discussion groups as appropriate.

4. Extension Staff

Programs aimed at extension staff, after the initial training phase during program start-up, will be similar to that described above for Sr. level personnel. The initial training for personnel new to the

SFD and/or to social forestry will require quite a different approach. To develop an effective cadre of extension workers recruits should have the following personal and professional attributes:

(a) outgoing personality, able to communicate effectively with villagers and understand their problems;

(b) formal training in forestry, agriculture or social sciences; and

(c) initiative and other qualities indicative of leadership and useful in developing extension programs.

An instruction program for extension personnel should be developed which is flexible in terms of subject matter available and duration. A reasonable program must be available for persons with different academic backgrounds and ideally would include both lecture and practicals.

Subject matter might include courses in:

Social Forestry

Communications

Rural Sociology

Psychology

Economics

Extension

i) Teaching methods;

ii) rural development programs;

iii) field problems.

Candidates without a background in forestry or agriculture should have the opportunity for additional course work in these

disciplines. Forestry/Agriculture graduates may need additional study in the Social Science.

Rather than develop a program with a fixed curriculum which all must master, it is recommended that the faculty advisors, in consultation with the student, develop a curriculum from the appropriate subject matter and taylor same, to the students needs. Emphasis in the program should be on practical skills and motivation. After the SF program is underway an intern program should be considered as part of the extension training program.

5. Village and Block level Personnel

The primary objective of the Social Forestry extension program is to train and motivate villagers instilling the ability and the desire to assume responsibility for the paunchvan program. Hopefully their cooperation with the SFD in establishing the paunchvan, the extension training and, not least of all the produce from the paunchvan, will institutionalize the idea of intensive forest cropping for fodder and fuel.

Subject matter for the village/Block level training should include both technical (forestry) and administrative topics. The mode of instruction should rely heavily on demonstrations and discussion, with an emphasis on "learn-by-doing" field activities. Topics for the program would include:

SF Program goals/opportunities/benefits

Community involvement/Motivation

Organization/Planning techniques

Assessment of needs (production)

Selection of site (land availability, soil water)

Selection of species

Nursery methods

Planting techniques

Silviculture/horticulture techniques

Protection needs

Harvesting methods/options

Production measurements

Book-keeping

Alternatives for disposal of products

Communications/PR

6. Resources Available for Program Development

While the need to develop an instructional capability within the SFD is obvious, it is anticipated that such a program would be a core, and would heavily utilize other education resources at the state and the national level. For example the Forest Research Institute, Dehra Dun might provide post graduate courses and continuing education programs for Sr. and Mid level professionals. Similarly Xavier Institute, Jamshedpur and the Indian Institute of Forest Management at Ahmedabad might also have staff and/or programs to contribute. State Agricultural Universities such J. Nehru University at Jabalpur have agricultural extension programs and could develop similar programs for social forestry given appropriate resources. As mentioned earlier, the SFD has initiated a program for extension training at the Ranger School at Shivpuri based

on a curriculum developed in cooperation with Xavier Institute personnel. There are other institutions in the State, e.g. Bhopal University, which have qualified and interested staff which could make a contribution to the program.

7. Recommendations

a) That a training officer and staff be posted to the Social Forestry Directorate with the responsibility for educational program development.

b) That the educational staff within the directorate serve as a management entity coordinating inservice training and having major responsibility for the recruitment and training of S.F. extension personnel.

c) That serious consideration be given to recruitment of a temporary (contract) training officer in addition to the permanent staff recommended above. Because of the large manpower requirement to initiate the extension program during the first 3 years, additional staff would be valuable, and could also serve a supplemental source of expertise.

List of References

1. Naidu, K.K.R.. 1980. Social Forestry for USAID, A Project Proposal. Ford Foundation Social Forestry Project, Madhya Pradesh, Bhopal, India October 1980. TECH. REPORT No. S.F./6/80.

2. Chaturvedi, J.K. 1980. Supportive Research for Plantation Forestry in Madhya Pradesh. Forest Research Institute, Jabalpur, M.P. , India

3. Kaul, M.L.H. 1968. Studies of Indian Forestry Seeds. III: Storage and Life Span. Forest Research Institute, Dehra Dun, India, F.R.I. PUBL. II: 1-8, 1968.

4. Anonymous 1977. Species for Social Forestry. Tech. Bull.No.18, State Forest Research Institute, Madhya Pradesh, India., February 1977. Jabalpur, M.P.

5. Seth, S.K., M.B.Raizada, & M.A.W. Khan 1962, Trees for Vana Mahotsava, F.R.I. 107, Forest Research Institute, Dehra Dun, India

6. GHOSH, R.C. 1977. Handbook on Afforestation Techniques, Forest Research Institute, Dehra Dun, India. October 1977 - 394 PP.

7. Tomar, M.S. & Joshi, S.C. 1977 Vanishing Forests vis-a-vis Energy Crisis in Madhya Pradesh-2000 A.D.

8. Dubey, S.P. & Dwivedi, A.P. 1979 An Approach for Formulation of Plantation Policy in Madhya Pradesh

9. Anonymous 1980 Pilot Project Report, Tirla, Ford Fdn. Soc. for Proj. M.P., Bhopal, September 80 Tech. Rpt. No. SF/4/80 Part 1, Vol 1, P III, 7, 40

10. Anonymous 1979 Policy Issues for Plantation Strategy in M.P. Tech. Paper No. SF 4/79 Ford Fdn. S.F. Proj., Bhopal, 5/79

V. ATTACHMENTS

SOCIAL FORESTRY SPECIES AND THEIR PRODUCTS

Acacia Arabica	Babul	Fuel, small TBR, fodder, gum, tannin, coppices in dry are enriches soil.
Acacia Auriculiformis	Australian Acacia Akashmoni	Fodder, fuel, coppice, enriches soil
Acacia Catechu	Khair	Charcoal, dye (cutch), tannin Fuel, kataa (pans), timber, enriches soil, posts, tool
Acacia Nilotica	Babul	Coppices Fuel, small Tbr, fodder, gum, tannin, enriches soil.
Albizzia Lebbeck	Siris	Handicraft Fuel, small timber, fodder, enriches soil, shade
Ailanthus Excelsa	(Aura) Maharukh	Shade, fodder, pulp, softwood
Anacardi Occidentale	Cashew, Kaju	Gum (insecticide), ink, sand dunes Nuts, shade, fuel crating, stalkedible, oil (termites)
Azadirachta Indica	Neem	Tooth brush, oil, fuel, small timber, fodder
Buchanna Lanzan	Char Chiromsi	Seeds on dessert, soil erosion
Cassia Fistula	(AVAL), Amaltas	Purgative, insect repellent, tannin, handircraft (Hard wood)
Cleistanthus Collinus	Garari	Tannin Fuel, (Fodder) construction,hardy, fire resistant
Dalbergia Sissoo	Sheesham Sissoo	Shade, enriches soil Fuel, fodder, fruit, TBR, small timber, Handicraft
Dendrocalamus Strictus	Bamboo (Manuel)	Construction, poles, pulp, fodder, food, tools, paper pulp
Emblica Officinalis	Aonla, Amla	Tannin Fruit, medicine, coppices, ornamental, tools, construction
Eucalyptus Tereticornie (Hybrid)	Eucalyptus	Timber, fuel, poles, pulp
Gmelina Arborea	Sewan, Gumbar	Timber, poles, fuel, (construction (Teak-like)
Leucaena Leucocephala	Ipil Ipil (Phil) Koo-babul	Fuel, fodder, small timber, pulp, gum
Pongamia Pinnata	Karanj	Oil from seed, shade, fuel, green manure
Prosopis juliflora	Ganao babul	Fuel, pods (fodder), gum, tools, sand dunes stabiliz
Schletchera Oleosa	Kosam (Kusum)	Oil (seed-soap), shade
Salmalia Malabarim	Silk cotton tree Semal	coppices, fuel Match sticks, ornamental, rough lumber, cordage floss

Tamarindus Indica	Imli	Fruit, fuel, seeds (starch), light construction
Terminalia Arjuna	Koha Arjun	Medicine, silkwork food, timber, tannin (no coppice)
Terminalia Tomentosa	Saja	Construction, fodder, silkworm food, medicine, fuel
Tectona Grandis	Teak	Timber, fuel, poles, Thatch
Zizyphus Jujuba	BER	Fuel, fodder, fruit

28

Demands Versus Supplies of Fuelwood and Timber

Studies in 1977 (A) and 1979 (B) revealed that supplies of both fuelwood and timber are deficit in some 19 M.P. district. In another 17 districts one or more divisions has a deficit, even though the district as whole may have a temporary surplus. Since growth is far less than demand, the gap between them widens annually. (See second table showing deficits on districts to be treated in the project.)

Field evaluations by the design team indicated that these studies were accurate. Trees were scarce in the project areas visited. Many of them produce fruit or other food, shade, medicines, fodder, etc. and are not available for use as fuelwood and timber.

The first table illustrates the widening gap between forest production and demand. A second table follows to illustrate the problem.

Production (1980) & Demands (1980,2000)

1 9 8 0		1980	2000
Commodity	Production (000000) Tons	Demand	Predicted Demand
Fuelwood	2.0	21.0	40.0
Small Timber	0.5	2.0	4.0
Fodder	32.0	60.0	60.0
Totals	34.5	83.0	104.0

Demand VS. Supplies (1980) for Fueldwood & Timber
(A, B)

ITEM	DISTRICT	HDQTRS	UNITS (Div.)	CATEGORIES STUDY OF 1977	CATEGORIES STUDY OF 1979
1.	Rajgarh	Bhopal	1	DFT[1]	D50[1]
2.	Ujjain	Ujjain	1	"	"
3.	Ratlam	Ratlam	2	"	"
4.	Shajpur	Ujjain	2	"	"
5.	Rewa	Rewa	2	"	"
6.	Dhar	Indore	2	"	"
7.	Indore	"	1	"	"
8.	Bhind	Gwalior	1	"	"
9.	Datia	"	1	"	"
10.	Gwalior	"	1	"	"
11.	Satna	Rewa	2	DF[1]	"
12.	Bhopal	Bhopal	1	DFT[1]	D25[1]
13.	Mandsavr	Ratlam	2	"	"
14.	Durg	Raipur	1	"	"
15.	Tikamgarh	Sagar	1	"	"
16.	Vidisha	Bhopal	1	DF[1]	"
17.	Khargone	Indore	2	"	"
18.	Sehore	Bhopal	1	"	FEQ
19..	Bilaspur	Raipur	1	"	"
20.	Guna	Gwalior	1	"	"
21.	Morena	Morena	1	"	"
22.	Shivpuri	Gwalior	1	"	"
23.	Sagar	Sagar	1	"	"
24.	Raipur	Raipur	1	"	"
25.	Rajnandgaun	Raipur	1	"	"
26.	Chhatarpur	Sagar	1	"	"
27.	Damoh	Sagar	1	FEQ	11
28.	Dewas	Ujjain	1	"	"
29.	Panna	Rewa	1	+	+

1.

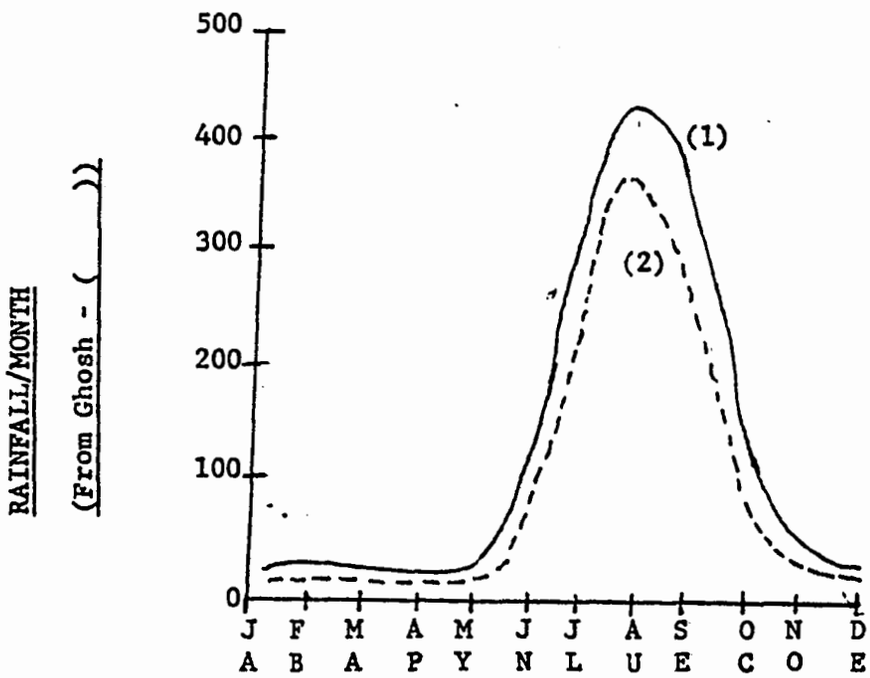
1977-DFT = Deficit in Fuel & Timber	1979 D50: Supply = 50% of Demand
DF = Deficit in Fuel only	1979 D25: Supply = 75% "
FEQ = Fuel Supply = Deamnd. Surplus Timber	1979 FEQ: As for 1977
+ = Surplus Fuel & Timber	1979 + : As for 1977

Att. 4

PATTERN of RAINFALL

1. Eastern M.P. - 1402 mm/yr

2. Western M.P. - 1045 mm/yr



Madhya Pradesh receives over 90% of its annual rainfall in 3 to 4 months. The amount would be more than adequate, if the distribution were yearlong. However, the temperatures frequently reach 120 F (49°C) during the last two months of the day season. Such dry, hot weather superimposed on poor, degraded soils creates a hostile environment.

Attachment No.5*

TABLE 'A'

PLANNED REFORESTATION UNDER VARIOUS SOCIAL FORESTRY SCHEMES TARGETS (Hectares)

SCHEME	1976 - 77	1977 - 78	1978 - 79	1979 - 80	1980 - 81
1. Panchvan	9050	9050	9050	9050	9050
2. Degraded Forest (Centrally sponsored)	700	670	2500	3300	3150
3. Mixed Plantations	800	615	1000	1000	1200
4. Road Side	-	-	-	200	200
5. Van Mahotsav	-	-	-	4500	4500
6. Sowing & Planting	-	-	-	10790	10120

* from SFD proposal chapter I, page 5

Technical factors for suggested investigation during the initial projects period	Possible Research Location	Project Clarification
5. Naked root planting:- trials will be made on the naked root planting of Koo-babul to test its suitability for large scale plantations.	Same as No. 4.	--
6. Collection of statistical data on the height and diameter growth of important species of Social Forestry programs.	Sample plots laid out in the existing plantation of project area and Village plot trials.	Species to be covered: Same as No. 1.
7. Data collection on fuel-wood production from Eucalyptus, Koo-babul, babul, Siris, Prosopis etc.	Sample areas in the plantations in Western, Central, and Eastern part of project area including all agro-climatic zones.	Sample areas in Western, Central and Eastern part of the project districts will be followed from plantations of 2 years, 3 years, 4 years and 5 years, age. Green and dry weights will be recorded.
8. Assessment of leaf-fodder production from Koo-babul, agust, siris, babul, kachnar, Sissoo, Prosopis, Saijan.	Sampling areas in the FD plantations and village plots in Western, Central, and Eastern part of project area including all agro-climatic zones.	Leaf fodder from sample areas in the plantation will be collected at regular intervals and weighed green and dry. Sample areas will be spread over Western, Central and Eastern part of the project area. Sample areas in the plantations in western, central and eastern part of the project area.
9. To monitor effects on soil of fast growing species grown on short rotation i.e. the possibility of nutrient-depletion.	Sample plots to be laid out in FD plantations and Village plots of the project area.	Studies on the uptake, retention and release of major (N, P K Ca Mg, Si & minor elements (B Fe, Cu, Zn, Mn, Me, by plants will be made. Regular soil analysis of samples collected from sample plots of the project no SFD6/1980 will be analysed to give an idea of uptake

Attachment No. 3

Table 1.

Gaps in Existing Research

Technical factors for suggested investigation during the initial projects period	Possible Research Location	Project Clarification
1. Seed testing of important species to determine seed weights; to prepare identification keys of seeds and suggest certification standards for the guidance of seed testing units.	MP Forest Research Institute, Jabalpur. Forest Research Institute Dehra Dun.	Species to be covered: Eucalyptus; Koo-babul(Leucaena leucocephala), agust (Seebania grandiflora), babul (Acacia nilotica), Siris(Albinia Lebbek and A. Proceral, Arjun(Terminalia arjuna), Sissoo(Dalberagia sisoo), Mango(Mangifera Indica), Mahua(Madhica latifolia), Jamun (Syzygium cuminil)Imli(Tamarindus indigal, Kathal(Artocarpus integvifolia), Mulberry (Morus alba), Kanji(Pongamia pinnata), Saijan(Moringa pterygosperma), neem(Azadirachta Indica) and Prosopis(prosopis Juliflora).
2. Nursery trials of such important species as are o be generally used in the project to investigate germinaion %, plant % and the effect of fertilizers on the growth seedlings in the nursery.	Annas Nursery, Jhabua District, and MP and Other Forest Department nurseries.	Species to be covered: -"-
3. Investigations on the size of polythene bags for sing various species of relevance to Social Forestry. orts will be made to determine the minimum acceptable e of polythene bags for raising suitable size of plants.	"	Species to be covered: -"-
4. 'Pindi' plants - investigations will be made to termine the minimum acceptable size of 'pindi' for those pecies which are planted out with the ball of earth.	" and Village trials	Species to be tried: Mango, Mahua, Jamun, Imli, Kathal, Kanji, neem, Sissoo, Jamun, Prospois, Arjun

Technical factors for suggested investigation during the initial projects period	Possible Research Location	Project Clarification
(No. 9 contd.)		of minerals by trees. Analysis of plant parts (root, stem, branch and leaves) will be done for the study of retention of elements by trees. Analysis of littre at regular intervals will indicate the quantum of minerals added to the soil by trees. Ultimately the balance sheet of nutrients will be prepared to find out the extent of nutrient-depletion and suggestion for remedial measures, accordingly.
10. Data collection on the production of mahua flowers and the seeds of Kanji, mahua, neem etc.	FD plantations in the Western, Central and Eastern parts of project area.	To begin with assessment of production of mahua flowers and the seeds of mahua, kanji, saijan and neem will be made from existing trees along roadsides. Later-on when the trees in new plantations have attained the productive age this data will be collected from those trees.
11. Investigation on the new methods of plantation protection involving trial of systems employed in other states.	FD plantations and Village plots in Western, Central, and Eastern parts of project	In the past barbed wire with angle iron/ wooden posts and (at places) stone pillars have been used for fencing block plantations and strips along road/cannal/railway lines; trenches with or without live hedges have also been in use. Individual plants are protected with circular trenches with live hedges. Some plantations which are unfenced are looked after by plantation-watchers only. Investigations will be made to evolve the cheapest method of protection involving

Technical factors for suggested investigation during the initial project period	Possible Research Location	Project Clarification
No. 11 contd.)		trials of systems employed in other states like Gujarat, Punjab and Haryana.
12. Trials on weedicides and insecticides will be arried.	Same as No. 11	
13. Research should be continued into different provi-ces of Eucalyptus spp. to find those that would do well un-er various conditions but such investigation should also e carried out into other species such as: Acacia spp., ıssia spp., Amelia spp., Gmelina spp. and be made to ıd improved provenances and seed sources of these latter ecies, from outside.	MP Forest Research Insti-tute, Jabalpur; Forest Research Institute, Dehra Dun.	
14. Grasses and grass-legume mixtures may be sele-ted and evaluated for various agro-climatic regions in ssociation with fuel cum fodder trees for silvipastoral urposes.		Fenced plantation areas on village land and along road/canal/railway lines will be tar-marked for the purpose. Adjoining untreated area also will be kept under observation.
15. Research on the introduction of legumes n the grass lands/pasture is inadequate. Further work on ntroduction of legumes like Siratro and Stylosanthes spe-es may be intensified alongwith the indigenous legumes. ıigenous Stylosanthes may be tried alongwith exotic ones different agro-climatic regions.	Indian Grassland and Fodder Research Institute (IGAF RI).	

Technical factors for suggested investigation during the intital project period	Possible Research Location	Project Clarification
16. Beneficial effects of tree planting on conservation of soil and moisture. Production of small timber, firewood, fodder and fruit.		
17. Micronutrient requirement of pasture species ay be worked out.		
18. Fertilizer requirement of some pure grass astures have been worked out but we are advocating rass-legume mixture, the fertilizer requirement of such pastures should be worked out. Due importance be given to tree legumes like Leucaena leucocephala h is known to increase the fertility of the soil subsally.		
19. The effect of windbreads in different areas should investigated, including an assessment of the most itable tree species and their effect, if any, on the prinle crops.	On farm trials.	
20. Livestock are allowed in the forest grasslands thout the knowledge of the grazing capacity. As such azing resources may be first evaluated so that the cessary improvement work may be carried out and imals may be allowed as per the grazing capacity.		
21. The effect of trees on the yield of agriculture rops.		

Technical factors for suggested investigation during the initial project period	Possible Research Location	Project Clarification
22. A programme of research should be instigated to examine the most effective live fencing species and their suitability for different areas. Vilayati Babool (Prosopis juliflora) and Israeli Babool (Acacia tortilis) should be investigated.		
23. The suitability of various chemical goat repellants for on-farm use should be investigated; also the suitability of insecticides for incorporation into the soil of the tree (particularly Eucalyptus spp.) seedlings for distribution to farmers.		

TABLE 'B'

Att. # 6

TABLE: PACE & SCALE OF PLANTATION DEVELOPMENT (HECTARES)

	RESEARCH PLOTS		PILOT PLANTATIONS								MODEL PLANTATIONS			
	Aver. of 75ha. per Admin. Unit		Aver. of 75ha. per Admin. Unit		Aver. of 375ha. per Admin. Unit		Aver. of 750ha. per Admin. Unit		Aver. of 150ha. per Admin. Unit		Aver. of 750ha. per Admin. Unit		TOTALS	
PROJ. YR.	No. Units	Ha.	No. Units	Ha.	No. Units	Ha.	No. Units	Ha.	No. Units	Ha.	No. Units	Ha.	No. Units	Ha.
--1	18	1350	3	225	--	--	--	--	--	--	--	--	21-	1575
1	18	1350	3	225	3	1125	--	--	9	1350	--	--	33	4050
2			1	75	3	1125	3	2250	9	1350	9	6750	25	11550
3			1	75	1	375	6	4500	7	1050	18	13500	33	19500
4					1	375	7	5250	3	450	25	18750	36	24825
5							8	6000			28	21000	36	27000
TOTALS	36	2700	8	600	8	3000	24	18000	28	4200	80	60000	184	88500
TOTALS		2700			21,600						64,200			88,500

TABLE - C. TREES & GRASS SPECIES, AND MODEL PLANTING DENSITIES.

GROUP I:	HIGH VOLUME WOOD & TIMBER;		
	Eucalyptus Hybrid	Eucalyptus	1600/HA
	Cleistanthus Collinus	Garari Gumbar	1600/HA
	Gmelina Arborea	Sewan	1600/HA
	Sesbamia Grandiflora		
GROUP II:	FRUIT		
	Mangifera Indica	Mango	600/HA
	Tamarinous Indica	Imli	600/HA
	Emblica Officinalis	Aonla	600/HA
	Zizyphus Jujuba	Ber	30/HA
	Anacardium Occioentali	Kaju	600/HA
GROUP III:	BAMBOO		
	Dendrocalamus Strictus	Manuel	156/HA
GROUP IV:	ALL PURPOSE		
	Leucaena Leucocephala	Koo Babul	1000/HA
	Dalbergia Sessoo	Sheesham	1000/HA
	Prosopis Juliflora	Prosopis	1000/HA
	Acacia Spp.	Babul	1000/HA
	Albizzia Lebbeck	Siris	1000/HA
	Terminalia Tomentosa	Saja	1000/HA
	Pongamia Pinnata	Kanji	1000/HA

B. GRASS SPECIES

Schima Neruosum
Andropogon Spp.
Cenchrus Ciliaris
Chrvsopogon Montanus
Dicanthium Annul: tum
Eremopogon Foveolatus
Panicum Antidotale

Soil

The main soil types found in Madhya Pradesh are alluvium, deep black, medium black, shallow or light black, mixed red and black, mixed red and yellow and skeletal or gravely. The classification of districts according to predominant soil types is shown below:

Soiltype	District included
Alluvial Soils	Gwalior, Morena, Bhind
Deep Black Soils	Narmada Valley (Narsinghpur, Hoshangabad, and part of Jabalpur district)
Medium Black Soils	Raigarh, Mandsaur, Shajapur, Ratlam, Ujjain, Dewas, Indore, Jhabua, Dhar, Sidhi, Shahdol, Damoh, Sagar, Khandwa, Raisen, Sehore, Bhopal, part of Jabalpur and southern part of Shivpuri district.
Shallow Black Soils	The Central Satpuras covering the districts of Seoni, Chhindwara and Betul.
Mixed Red & Black Soils	Rewa, Satna, Panna, Chhatarpur, Tikamgarh, Datia and part of Shivpuri district.
Red & Yellow Soils	Raipur, Raigarh, Bilaspur, Durg, Rajnandgaon, Balaghat and part of Mandla, Surguja and Bastar districts.
Skeletal or gravely soils	The stony uplands of the Vindhyas and Satpura ranges covering part of Shahdol, Mandla, Surguja, Raigarh, Bastar and Jhabua districts

The soil types of Madhya Pradesh are indicated in figure 4.

Attachment 9

Storage of Indian Seeds

The following information came from a publication by MLH Kaul, Dehra Dun, in 1968 (3) who gave as a reference L.V. Barton, "Seed Preservation and Longevity", Leonard Hill Book Store, London, 1961.

I. Seeds Lose viability within 1 month of storage

Azadirachta indica	neem
Mangifera indica	mango
Shorea robusta	sal
CASUARINA EQUISETIFOLIA	

II. Lose viability within 6 months of storage

Ailanthus excelsa

Anogeissus latifolia

Anona squamosa

Phyllanthus emblica

GMELINA ARBOREA

HARDWICKIA BINNATA

TERMINALIA ARJUNA

TERMINALIA TOMENTOSA

III. Lose 25% viability within 1 year of storage

Acacia catechu

Dalbergia sissoo

Terminalia tomentosa

Pterospermum acerifolium

IV. Seeds live well for 1 year in storage

Anacardium occidentale	Cashew
Eucalyptus tereticornis	E. HYBRID
Eucalyptus citriodora	
DENDROCALAMUS STRICTUS	BAMBOO

V. Seeds live up to 3 years at least

Acacia arabica	Babul
Albizzia lebbeck	
Cassia siamea	
Morus alba	Mulberry (silk worms)
Zizyphus jujuba	
Prosopis juliflora	
Tectona grandis	Teak

VI. Seeds that need after ripening of about 6 months

Cassia siamea

Zizyphus jujuba

REFERENCES: (1._____(4)
(2. KAUL (3)

113

Institutional Resources For Social Forestry Research

A. Central Research Institutions

1. Forest Research Institute (FRI), Dehra Dun

Director: R.C. Ghosh

An institute of Social Forest Research to be located at Dehra Dun has recently been approved by the Central Planning Commission of the Indian government and is slated for implementation in the GOI 5th development plan.

Existing activities at FRI of particular interest to SF research is in seed research, handling, and storage. Refrigerated seed storage facilities are available at Dehra Dun and at its regional centers at Burnib at Coimbatore, Jabalpur, and Hyderabad.

FRI at Dehra Dun is authorized to import and export research quantities of seed direct and is empowered to issue phytosanitary certificates. Larget quantities of seed are channelled through the National Bureau of Plant Genetic Resources.

As a result of recent decisions by the Secretary for Agriculture the Institute is preparing plans and estimates for the development of a National Bureau of Forest Genetic Resources. This will incorporate and extend activities under FRI's functions of exploration, collection or other acquisition, evaluation, conservation and utilization of germ plasm. The existin g program in this area is conducted in collaboration with the State forest departments. It includes continuing development of the long established Indian Preservation Plots system which will be

integrated, where appropriate, with the national MAB Biosphere Reserves initiative in which FRI is participating; compilation of distribution maps for Indian tree species; extension of the National Germ Plasm Bank for ex situ conservation of which the work with team at the Indo-DANIDA center in Hyderabad forms a part, and evaluation of germ plasm of tree species potentially suitable for a variety of purposes, e.g., Acacia nilotica and Leucaena leucocephala.

2. Central Arid Zone REsearch Institute(CAZRI), Jodhpur

Director: Dr. H.S. Mann, Head, Division of Plant Studies,
Dr. O.P. Pareek, Junior Silviculturist, and
Mr. K.D. Muthana.

CAZRI collaborates with the Director, Desert Afforestation and Pasture Improvement Branch of the Rajasthan Forestry Department and has contacts with the Forest Departments of Haryana and Gujarat. It operates several field stations representing different degrees of desertification and a range of soil types in Rajasthan and would use facilities at three of them (Pali, Sikaner, Jaisalmer) as well as those at Jodhpur as centres for collection and evaluation of materials. For example, CAZRI has made reconnaissance survey of 11,600 sq.km. of the Central Luni Basin and semi-detailed survey of 14,800 sq.km. of seven development blocks for helping in detailed planning of rational land use; studies on the techniques of afforestation of shifting dunes, raising of shelterbelts and wind breaks, of afforestation of refractory sites with relatively fast growing exotic tree species, of raising

avenue-cum- shelterbelts, or reseeding of natural grazing lands, and of improved conservation practices; and work on standardization of the method of control of desert gerbil.

CAZRI started this year to collect open pollinated seed from selected phenotypes of Prosopis cineraria in different parts of its range in India with a view to establishing progeny tests from which to select superior types for breeding. Stands of Acacia tortlis, A. senegal, Prosopis juliflora and Azadirachta indica, the sources of some of which are known, are established on lands controlled by this Institute in Rajasthan.

Good nursery facilities are operated by CAZRI in Jodhpur where sturdy seedlings are produced in nine months from sowing in metal or plastic tubes. The Institute also operates nurseries at its Pali and Bikaner stations. Good nursery facilities are also operated under the control of State Silviculturists and at FRI and its regional stations. There are no cold storage facilities for seed at CAZRI.

CAZRI conducts short term training courses in different disciplines to persons deputed by the State Governments and instutes and is recognized by universites as a center for post graduate research studies.

3. Indian Grassland and Fodder Research Institute (IGFRI), Jhansi, U.P.
   Dirctor

IGFRI carried out basic and applied research on grasses, grasslands and fodder crops as related to animal nutrition, soil fertility, crop production, and water conservation. Its research orientation is

(i) toward projects having practical application under existing social and economic conditions (2) analysis of problems of weeds in cultivated crops and grasslands and to evolve economic measures for their control (3) to disseminate research findings through training courses.

Special facilities at IGFRI relevant to social forestry projects include: (1) Maintains a large collection of germ plasm of important fodder and forage crops; (2) training in grassland and fodder cultivation on request to candidates sponsored ny Central and State Government agencies; (3) an up-to-date herbarium of grassland vegetation including the temperate grasslands as also of farm weeds.

4. Central Soil Conservation Research & Training Institute (CSCRTI), Dehra Dun.

Director: Dr. K.G. Tejwani, Head, Division of Plant Science
Dr. R.K. Gupta

CSCRTI at Dehra Dun coordinates the research, demonstration and training programs of a group of eight stations (Chandigarh, Agra, Vasad, Kota, Hyderabad, Ootacamund and Bellary, as well as Dehra Dun) concerned to promote integrated land use systems as a means of bringing the 15% of India's land area known as the "wasted lands" into production. Three additional centers are planned. Technology transfer is effected through a series of Operational REsearch Projects of which four are in operation (three in the Himalayas; one at Bellary in South India) and four more (all in the Himalayan region) are planned.

The staff of CSCRTI comprises specialist in a wide range of disciplines in plant science, hydrology and related fields. The Plant Science Division is concerned with grasslands, horticulture and forestry. Although difficulty is experienced in recruiting forestry specialists its staff includes a forester. It is interested in evaluation of introduced collections through its arboretum studies program in which row plots usually unreplicated are used to screen out materials suitable for the degraded lands.

The program of CSCRTI is strongly oriented towards the Himalayan and immediately adjacent regions and to degraded lands and shifting cultivation areas in the dry central areas of India. The possibility of its participation in the evaluation phase of the program either immediately or in later stages, should be explored by the coordinating agency for the project in India.

Both CAZRI and CSCRTI are component establishments of the semi-autonomous Indian Council of Agricultural Research (ICAR). They report through Dr. O.P. Gautam, Director-General, Department of Agricultural Research and Education, to the Secretary for Agriculture.

5. Central Tassar Silk Research Institute (CTSRI), Ranchi, Bihar

CTSRI researches improved methods and species for the production of tassar silk, an important cottage industry associated with social forestry projects. They provide eggs for coccon making, staff training programs, and could develop extension programs for social forestry projects.

6. National Botanical Research Institute (NBRI), Lucknow

NBRI is doing extensive research on the production of gums from various tree species of relevance to social forestry. Their guidance and help will be taken for field trials and training of personnel of Social Forestry Directorate. For the purpose the arrangements have been made with the phytochemistry division of the Institute.

7. Indian Council of Agricultural Research (ICAR) Bhavan, New Delhi. See Timberg report.

B. State Research Institutions

1. MP State Forest Research Institute, Polipathar, Jabalpur

Research undertaken to date which holds particular relevance to SF is the institutes on-going research on water conservation techniques and its effect on growth and survival percentages in Bhata soils. The institute has several monographs relevant to social forestry including "Species for Social Forestry" and "Bhata Land Experiences".

The institute plans to establish a seed storage facility and would be interested in establishing seed test plots for social forestry species.

Other State institutions which should be investigated for participation in social forestry research include:

MP Forest Department Research Department, Bhopal

MP Agriculture University, Jabalpur

MP Department of Agriculture Research, Bhopal

MP Forest Ranger Institute, Shivpuri

MP State Forest Development Corporation, Bhopal

Khana National Park, Mandla

(grass/weed succession research now in progress).

C. Private Institutions

1. Xavier Institute (Center for Management and Labor Studies), Jamshedpur.

Director

The role of XLRI in SF is primarily seen in introducing modern management inputs to this entire process, program and institution of CF. The optimization of land used and forest productivity, of tenurial relationships, the harmonization of government-community interests, the fulfilment of village and forestry needs, expectations and aspirations, the ecological and organizational requirements of CF, all these species must be treated from a total systems viewpoint, as a problem for and management of change. Having been in the field of Industrial and Labor Relations since 1949, and ins Business Management field since 1965, and having proposed to itself specifically social objectives of being relevant and available to environmental betterment and rural development, the field of CF, falls well within the interests and thrust of XLRI."

Problems concerning government-community relations in forestry is analogous, by and large, to the problem situations of labor and industrial relations, and man-environment management. As a management institution XLRI will specifically bring to bear the disciplines of industrial relations, labor welfare, wage and salary administration,

social security, project formulation, organizational behaviour, production and marketing management, economic and financial analytic tools and techniques, research and survey designs, management information systems and feedback to CF program and planning.

Some action research in this field has already been undertaken by XLRI. XLRI is an official consultant to one of the largest industrial houses of India in establishing and running a CF program in a nearby village. Similar requests from other industrial houses are forthcoming. Some of its professors have just finished a research project on the marketing of minor forest produce (lac and tassar) for Singhbhum District in Bihar; four case studies of social forestry based on experiences in Bihar, Madhya Pradesh, Uttar Pradesh and Himachal Pradesh, have just been completed. XILAC, Xavier Institute's Learning Aid Center, started in 1970, is an active department of XLRI, engaged in non-formal adult literacy programs and designs".

2. Indian Institute of Forest Management (IIFM), Ahmedabad, Gujarat

IIFM is primarily concerned with social forestry research and management. Research efforts undertaken by IIFM relevant to social forestry include: (1) economics of trees vs annual crops on marginal lands; (2) nationalization of minor forest produce and tribal unrest in Bihar; (3) some economic and management aspects of non-wood forest products in India; (4) promotion and management of social forestry; (5) marketing of forest products, timber and firewood.

IIFM can serve many valuable functions which include evaluation of organizations which are capable of identifying and organizing social forestry research efforts. Currently IIFM is assembling 20 social forestry case histories which will be the working document for a 1981 fall conference of social forestry experience to date. As a private institution, IIFM may well be selected to evaluate social forestry programs for the GOI. IIFM plans to hold workshops and training programs in social forestry evaluation models.

Many other private organizations which are contributing and which have active programs in social forestry should be investigated for their potential contribution to applied research programs. The Ranchi Consortium, the Bharatiya Agro-Industrial Foundation (Poona), the Association of Voluntary Agencies for Rural Development (New Delhi), the Ford Foundation, C.C. Shroff Research (Bombay), are just a few of the private organizations which should be considered.

References

1. Anonymous, 1980 State Forest Research Institute Brief Note, MP Forest Research Institute, Polipathar, Jabalpur, M. P., India

2. Das, M. C. 1979 Activating Research in Social Forestry, Proceedings, Social Forestry Conference, Dehra Dun. Mimeo

3. Deb Roy, R, B.D. Patil, P.S. Pathak, 1979 Development of Grassland in India with special reference to silvipastoral research and development. Proceedings, Social Forestry Conference, Dehra Dun. Mimeo.

4. Gosh, R.C., Bakhshish Singh, 1976 Some thoughts for rationalization, research, and organization in social forestry projects. Social Forestry Workshop, Gandhinagar, Gujarat, Mimeo

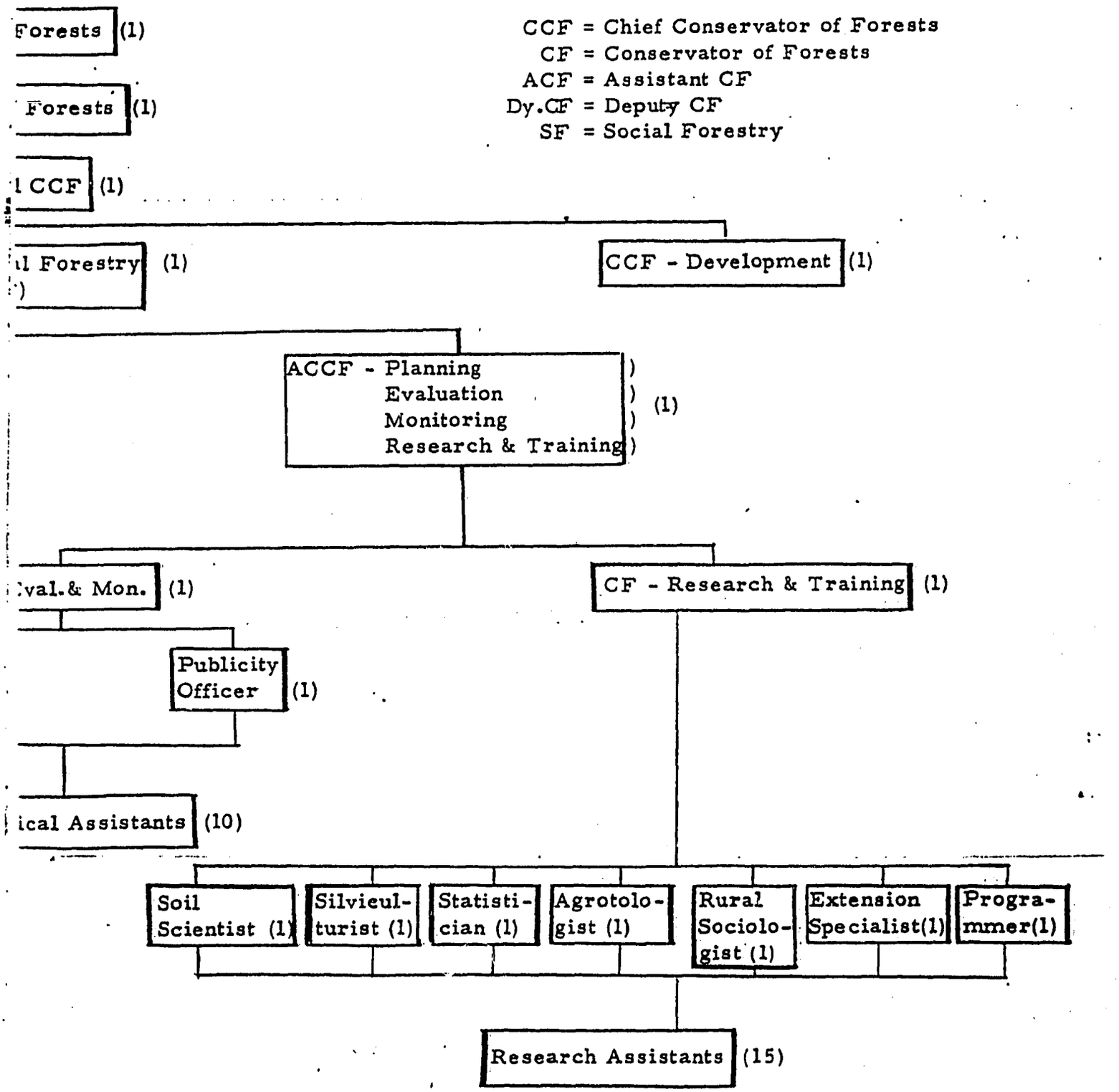
5. Rajagopalan, T.S., R. Satyanarayana, 1976 The Directory of Scientific Research Institutions in India. Indian National Scientific Documentation Centre, New Delhi, India.

6. Tewari, R.N., D.A. Mascarenhas, 1980 Community Forestry: Perspective for management research and training in Proceedings of the Second Workshop in Community Forestry Management for Rural Development. Natraj Publishers, Dehra Dun, India

7. Timberg Thomas, 1979 Report of the Study Team on Research and Development Activities of USAID/New Delhi, November 26-Dec. 25, 1979., USAID/New Delhi

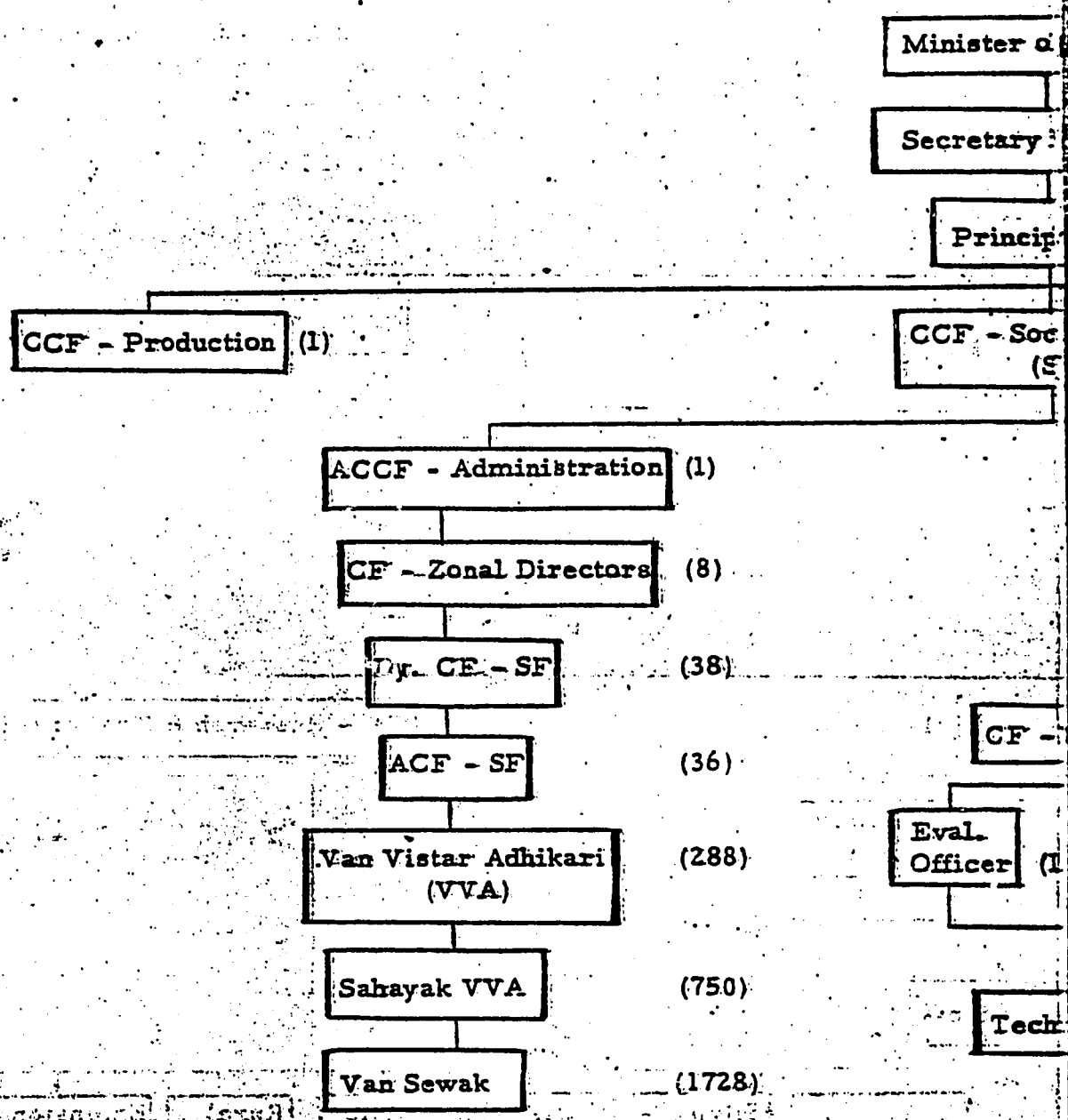
CIAL FORESTRY DIRECTORATE

CCF = Chief Conservator of Forests
CF = Conservator of Forests
ACF = Assistant CF
Dy.CF = Deputy CF
SF = Social Forestry



551

PROPOSED MADHYA PRADESH S



Design Team Report
MP Social Forestry Report

ANNEX 2

ECONOMIC ANALYSIS

Dr. Dan Bromley

I. THE ECONOMICS OF SOCIAL FORESTRY

The appropriate evaluation stance cannot be chosen in isolation from the socio-economic reality of village relations to the land resource. Indeed the essence of social forestry is to reestablish a system of rights and duties which define the relation between people and land. These institutional arrangements have largely disappeared since Independence; the degraded condition of forest and "waste" land are testimony to this institutional lacuna.

A village is not simply a collection of families, it is a set of rights and expectations on the part of the inhabitants with respect to the produce of surrounding land. Some of that land is controlled by the institution of fee simple title as we understand that term. Another quantity of that land is under the "control" of the village, although that control has been of only limited sucesses over the past 30 years. But the practical import of this is that any village (and its residents) have two sources of wealth. The first is privately owned land where the owner controls: (1) who may use it; (2) who may reap the benefits of its use; and (3) who bears the costs of its use. If the owner chooses to share the produce of that land by freely distributing it among the others in the village then few would question his/her right to do so. Similarly, if all the hired labourers are suddenly displaced through mechanised farm work, then again this "right" of the owner is not questioned. It is in this sense that item (3) above is relevant; the owner can impose costs on current labourers by next year refusing to hire them.

The term in Indian society which connotes claims from non-private and non-exclusive government land is nistar. That is, these rights are held by villagers on "public domain" and they represent claims to fuelwood, forage, fodder, dung, etc.

The absence of effective control over these "nistar lands" has meant that pressure on them from increased population has mounted, with the resulting degradation so obvious to even the most casual observer. While the amount of "nistar land" has traditionally been adjusted for population growth, this continual expansion has brought presumptive use rights into conflict with legal rigidities of the contemporary nation state.

With this recognition in mind, the economic evaluation of a social forestry scheme -- which is, above all, a means whereby control over currently non-exclusive lands is to be reestablished -- must proceed in four stages. These four are: (1) Village level analysis; (2) Scale-of-program analysis; (3) social benefit-cost analysis; and (4) program evaluation. Each perspective will be discussed below.

Village Analysis

It is first necessary to evaluate the social forestry program in terms of what it will mean in the daily life of those who comprise 80% of India's population -- rural villagers. The intended products of a social forestry (hereafter S.F.) plantation are grass, fuelwood, small timber, pods, fruit and poles. Each of these products will become available at different intervals in the life of a plantation, and each will contribute to the enhancement of the rural villagers' socio-economic position. An additional product is the awareness of the differential productivity of plantation lands vis-à-vis existing degraded common lands. This "demonstration effect" can be assumed to be significant in creating better management practices over those lands which remain outside of S.F. plantations, though they are still in the public domain. And, as indicated above, perhaps the most important product is a reestablishment of secure claims at the village level concerning resource use rates.

An essential ingredient in the analysis is the arrangements which evolve to manage the new village asset. Several management options are discussed elsewhere in the report ranging from complete panchayat control to complete government control. Within these there are numerous possibilities for sharing in the economic benefits of a plantation. If the government insists on one level of cost sharing (in the form of cost recovery) there will be different degrees of interest and commitment from the panchayats than if a different level is enacted. Similarly, the distribution of benefits within the village will also be crucial to the long-run viability of any plantation. The planted area may be divided into one strip per family, the produce may be harvested by the panchayat and then be given away or sold. Or, various villagers may "contract" with the panchayat to take some fraction of the total. Finally, there can be no system of control, in which we may safely assume that the new village asset will be liquidated (wiped out) in a period of something less than 5 years.

While a detailed evaluation of all of these institutional possibilities is beyond the scope of this evaluation, some general results will be presented.

Scale of the Program Analysis

While the village-level analysis will focus on the size and nature of plantations as they relate to individual (or groups of) villages, the second level of analysis will focus on the number of plantations which can be effectively established and managed over the long run.

These two perspectives are usually blurred in traditional benefit-cost analysis -- this is especially true in irrigation projects. In irrigation schemes, the scale is determined by such physical parameters as available water, irrigable hectares, or the physical location of the reservoir. With scale thus determined, the analyst proceeds to determine if the benefits exceed the costs for that predetermined scale.

The scale of a social forestry program is likely to be determined by things other than physical availability of lands. This is not to say that land availability near any particular village will not be constraining, but in the five year program here being evaluated, land suitability for planting is clearly available for any possible scales being seriously considered. The more constraining variables are seed production and distribution, labour during planting times (which usually coincide with agricultural plantings and/or harvests), village willingness/ability to participate, and logistic and managerial abilities of the Madhya Pradesh Forestry Department.

We suggest that the initial determination of scale be based on two factors. The first of these is the speed with which the government can locate and survey suitable land in an ecological sense. A more difficult variable concerns the relations with villages/panchayats over the allocation of lands to a S.F. plantation. While we are confident that the forestry department can do a good job in the former area, the evaluation of villages will not be so easy. This issue is discussed elsewhere in the report. When these two initial conditions have been established, it will be possible to turn attention to the issues of seed production and distribution, nursery requirements and labour availability.

Social Benefit-Cost Analysis (SBCA)

From the synthesis of the above two perspectives, it is then necessary to turn to an assessment of the S.F. program from two remaining vantage points: (1) the government of Madhya Pradesh and (2) the Central Indian Government.

This perspective accords with the more traditional benefit-cost approach. The beneficial and adverse effects of the S.F. program will be considered from both perspectives. Moreover, it is at this level that a summary discussion of the various types of beneficial effects will be discussed. Here we mean that, in

addition to the traditional categories of direct and indirect effects, and the "stemming-from" and "induced-by" effects, the beneficial and adverse effects will be grouped according to whether or not they can be treated quantitatively or qualitatively. For those in the former category a further breakdown exists depending upon whether they can be expressed in monetary terms, or must be left as mere physical descriptions.

Several examples will help to clarify this level of the analysis, with more details provided below. There are estimates which indicate that the state Government in Madhya Pradesh receives approximately 18% of total revenue from the forestry sector, and that this source contributes about 58% of total non-tax revenue to the State Treasury. Hence, taxes from the production of wood from forest land is not insignificant to the Government of Madhya Pradesh.

In light of this importance, any attempt to enhance the value of the State's forested area will redound to the immediate benefit of the Government. Discussions with the Forest Department personnel in Bhopal indicate that current harvests are destined for the following uses: (1) industrial timber uses - 26%; (2) poles - 6% and (3) fuelwood - 68%.

However, according to the officials, only about 25% of the cut is best used as fuelwood, while the remainder is better suited as timber for construction purposes. The price differential is in the order of 5-6 times which means that only $1M^3$ of timber wood is 5-6 times as valuable when harvested as timber than it is when harvested as fuelwood. If only 25% of the wood now cut as fuelwood could be harvested instead as commercial timber the government would realize a significant increase in tax revenues.

An illustration of the Central Government's interests in a S.F. program can be found in the current litigation involving the States of Rajasthan and Madhya

Pradesh. Traditional grazing patterns bring migrant herds through the western part of Madhya Pradesh twice each year. As population has increases -- and so the number of livestock -- the conflicts over forage have become intense. The State of Madhya Pradesh established a grazing fee of Rs.5 per head of livestock for this right of passage, whereupon the Government of Rajasthan obtained an injunction from the Supreme Court remanding the fee to Rs. 1 per head. The case is still to be resolved, but the litigation highlights the intense pressure that exists over increased resource scarcity.

To the extent that a S.F. program begins to alleviate the severe forage/fodder deficit in western Madhya Pradesh, some of these conflicts can be reduced.

Program Evaluation

This final perspective combines the three prior analyses to present a picture of the program from an investment point of view relevant to a donor agency -- specifically A.I.D.

Here the attention will focus on the extent to which program benefits will accrue to the A.I.D. target groups. Alternative sharing arrangements at the village will have an important influence on the extent to which the benefits are socialized, or more pointedly, spread evenly among all sections of the population, even if they are not concentrated in the hands of the least advantaged within the village.

It should be obvious that there is no institutional arrangement which can be decreed in Washington and enforced in India such that village "elites" do not also share in the new asset value; programs can only be designed such that the bulk of the benefits indeed flow to the least advantaged. However, this discussion cannot leave unsaid something of the economic condition of the so-called "village elites." As documented elsewhere in this Report, Madhya Pradesh is one of the 4-5 poorest states in one of the 10-12 poorest nations in the world. Moreover, the rural

villager in Madhya Pradesh can hardly be considered wealthy by most any standard, even if, by birth, political or economic acumen, or strength, he seems to have acquired the appelation of an "elite." More will be said on this below.

A. VILLAGE ANALYSIS

The population of Madhya Pradesh is currently estimated to be about 50 million, of which an estimated 28% live in villages of less than 200 persons, 40% live in villages of 200-499 persons, and an additional 23% live in villages of 500-990 persons. Thus, we find 91% of the population of Madhya Pradesh in villages of less than 1000 persons. This compares to the national proportion of 78%. Elsewhere in the report there is a more detailed discussion of other socio-economic parameters for the State.

Of immediate relevance are two statistics -- per capita income and average size of private holdings, both of which are pertinent to social forestry. While private holdings average 2.3 hectares for the Nation as a whole, in M.P. such holdings average 4 hectares, the 4th highest among all of the states. In spite of these larger than average holdings, per-capita income is only 77% of the national average (Rs.896 versus Rs.1163). At current exchange rates, annual per capita income in the State is approximately $114. It is estimated that 5.5% of the population is landless, as against a national average of 8.5%.

Hence, we find a state of 71,000 villages containing approximately 90% of the 50 million population. In the North and West, wheat, millets, cotton and very little rice are grown. In the East it is predominantly rice culture, with some small grains and pulses. The land is not overly productive by India standards and hence larger than average holdings are quite consistent with per-capita incomes which rank 5th lowest among all of the states. Irrigation is not prevalent, with less than 10% of the cropped area receiving water, compared to a national average of 24%; this statistic ranks Madhya Pradesh as the lowest in the country.

As of 1972, Madhya Pradesh had the second largest population of cattle in the nation. The breakdown by type is presented in Table I.

Table I

Livestock population in Madhya Pradesh, 1972.

Type	Numbers in Millions	%
Cattle	26.4	65
Buffalo (Carabao)	5.8	15
Goats	6.2	16
Sheep	1.0	3
Horses	0.2	TR.
Other	0.4	1
	40.0	

Source: Project Proposal on Social Forestry, Forest Department, Madhya Pradesh, Bhopal, October 1980, p. 12. (hereafter referred to as "Project Proposal.")

These numbers imply approximately 5 head of livestock per family in the State though there is a significant variation by region. For instance in the East there are approximately 4 head per family, while in the West that number is over 6. Moreover, in the East carabao are more important than cows, largely because of the predominance of rice culture.

The geographical area of Madhya Pradesh is approximately 44.3 million hectares. With a 1980 human population of 50 million -- and an estimated livestock population of the same magnitude — we find a population density for each of 1.1 per hectare. Or, put differently, there are 2.2 persons/livestock per hectare in the State. These densities for various official classes of land are shown in Table 2. As these classes may no longer correspond to actual use, the numbers are only roughly indicative.

Table 2

Densities of People and Livestock by Land Class in Madhya Pradesh (1980 Est.)

	Millions of Hectares a/	People per Hectare b/	Livestock per Hectare c/
Forest	15.64	3.2	3.2
Not Cultivable	2.32	21.6	21.6
Pasture/Grazing	3.09	16.2	16.2
Tree Crops/Groves	0.20	250.0	250.0
Waste	2.02	24.8	24.8
Fallow	1.63	30.7	30.7
Sown Area	19.32	2.6	2.6
	44.22		

a. Source: Project Proposal, p.9, data are for 1976-77.
b. Assumed 1980 population of 50 million.
c. Assumed 1980 population of 50 million.

The growth in livestock numbers has paralleled that of the human population, and is now at a level where the densities are about 20 head per hectare of pasture/grazing land and waste land. Forest densities of livestock are considerably less, but much of the forested area is too far from the bulk of the villagers. Hence, the grazing pressure is largely confined to waste land, and pasture/grazing land.

The composition of the livestock population is changing, with the population of sheep having doubled over the past 25 years, with goats increasing by 41%. During that same period cattle population increased by only 23%.

Considering only cattle and carabao for the moment, the minimum forage requirement can be set at between 7 and 10 kg per day (dry weight). If a midpoint is taken of 8.5, that would mean 280.5 million kg of forage must be provided daily to these animals. This forage comes from a combination of forest duff, agricultural wastes, and grazing lands. While the proportions are unknown, the range condition of the state reflects this pressure.

Turning now to rural energy needs, precise data are difficult to obtain. However, several independent estimates place national per capita use of

non-commercial energy (essentially fuelwood, dung and agricultural wastes) at approximately 500 kg per annum (wood equivalents). With an average of 6 persons per family this means that a typical family must obtain 3000 kg (or 3 tonnes) of wood equivalents each year. If all of this were purchased at market rates -- which of course it is not -- it would cost Rs.75 per person, or approximately 10% of per capita income.

But the problem is more than the cost of fuel, it is essentially a scarcity problem. It was estimated by forestry officials that per-capita energy use in Madhya Pradesh is lower than the national average, and that the composition is biased in favor of dung and agricultural wastes. While many nations strive to reduce per-capita energy use, it is well to point out that in village India such a reduction merely means that fewer meals are cooked; there is no energy profligacy in a rural household.

We thus have a situation in which many families can obtain, perhaps, only 3/4 of the national average of total cooking fuel (perhaps some are at only 1/2 of the national average), and the proportion of dung in this fuel mix can often approach 50-65% by weight. While dung is an ideal fuel for cooking certain foods (ghee, milk), it is not a desirable fuel in the current proportions, nor is its deflection from manuring desirable in an individual or a national sense; Madhya Pradesh has the lowest chemical fertilizer consumption and foodgrain yields per hectare of any state in India.

Although reliable data are not available for India conditions, we might assume that a cow (or carabao) produces 5 kg of dry dung per day, and that over a one year period that would total 1825 kg of dung. If each family owns only 4 such livestock, that would total 7,300 kg of dung which would be available for manuring. To the extent that a good share of this is burned rather than returned

to the fields it is not difficult to see the opportunity cost in terms of lower yields. For instance, at the following percentages, it is clear that a significant amount of nutrient matter is available yet is not dissipated.

N: 1.7% x 7300 = 124 K of N

P_2O_5: 1.0% x 7300 = 73 K of P_2O_5

K_2O: 1.0% x 7300 = 73 K of K_2O.

Yet another aspect of burning dung is the inordinate time which must be devoted to its collection and preparation for burning. The dung is ordinarily mixed (by hand) with approximately 10% (by weight) agricultural waste (which could be used as livestock feed). This mixing, shaping, stacking, drying, and restacking is an onerous task, and one that falls inordinately to women and children. To the extent that wood gathering and stacking is a more desirable pastime than dung collection and mixing, then increased fuelwood supplies would provide an added (qualitive) beneficial dimension.

Another issue concerns the role of forests in the diet of many rural residents. Those diets are now devoid of many of the vitamins which are found in various fruit species. Additionally, fruit provides an important source of revenue to many. Thus the current degraded forests and the general lack of fruit trees in proximity to villages represents an important deficit.

Finally, the need for small timber and poles for domestic and agricultural construction is pronounced. A S.F. program would alleviate much of this shortage as well.

To provide a definitive evaluation of a S.F. program it would be necessary to have detailed data on specific plantation sizes and attributes, their proximity to certain villages of known socio-economic circumstances, and the particular institutional arrangements which would govern both the management of the new

asset, and the distribution of the benefit stream from that asset. Of course such detail is not available and so one must assume a different evaluative stance. Specifically, one can only assume a certain plantation scenario vis-à-vis a certain village situation. The contrived nature of such an approach should not be allowed to detract from the heuristic value in following this path. That is, given other data problems concerning yields, harvesting frequency, the affects of drought etc. it should not be assumed that a "typical" village is any more artificial than that approach followed in most benefit-cost studies. Nor is it appropriate that this approach should bear the blame for disparities discovered in subsequent comparisons between the project's claims and actualized effects on the ground. Benefit-cost analysis is, at bottom, a series of presumed futures, with "typical" situations forming the basis for extrapolation; such is the case here.

THE MODEL PLANTATIONS

The first step in the analysis was to synthesize two model plantations for Western Madhya Pradesh, and two for Eastern Madhya Pradesh. These will be referred to as models I and II (for the West), and models III and IV (for the East). The variations represent the differing ecological conditions as between the two regions, and different species mixes reflecting likely preferences by villagers.

With respect to fuel deficits, the Madhya Pradesh Forestry Department has compiled statistics on probable serious deficits in forest resources. There are 16 districts in which forest resources are not expected to last beyond 20 years. These districts (and the number of years until complete extinction at current use rates) are: BHIND (3), UJJAIN (4), SHAJAPUR (5), RAJGARH (7), BHOPAL (7), GWALIOR (8), INDORE (10), RATLAM (10), DATIA (6), DHAR (11), MANDSAUR (14), VIDISHA (16), DURG(9), REWA (13), SATNA (17) and TIKAMGARH (10). Of the 20 crucial

districts, only the final 4 are in the Eastern part of the state. This deficit situation encompasses all forest products, not just fuel wood and hence models I and II are designed to be heavy on the multiproduct species. This assumption is consistent with virtually all panchvan schemes observed on the field trips.

There are a large number of tree species under consideration by the M.P. Forestry Department, and an equally large number of other possible candidates. At this early stage it is impossible to specify the exact species composition of any future plantation. The approach followed here, therefore, has been to construct "composite plantations" which will likely represent the ultimate species mix for the two regions as a whole, although no plantation will contain these particular species in the precise densities modeled here. Yet, for State (or region) averages it is believed that these 4 composite plantations are an accurate forecast of what will exist at the end of the 5-year development stage.

Another assumption concerning species relates to the densities per hectare at which various species will be planted. Here, data from the M.P. Forestry Department, and the World Bank appraisals for Gujarat and Uttar Pradesh were consulted, and then correlated with other findings from government agencies in India. These densities are, of course, also a function of the purposes for which a particular plantation is being established. If grass is a high priority then densities of more than 1100 trees per hectare will diminish grass yields. If, however, maximum fuelwood per hectare is desired then certain species should be planted quite close together. An average density for each selected species was chosen and retained throughout the four models; this greatly simplified the subsequent calculations. Finally, tree species were grouped into 4 categories depending upon their growth characteristics and/or their primary product. This is shown in Table 3.

Table 3

TREES AND GRASS SPECIES, AND MODEL PLANTING DENSITIES

A. TREE SPECIES

GROUP I:	HIGH VOLUME WOOD & TIMBER		
	Eucalyptus hybrid	Eucalyptus	1600/HA
	Cleistanthus collinus	Garari/Gumbar	1600/HA
	Gmelina arborea	Sewan	1600/HA
	Sesbania grandiflora		
GROUP II:	FRUIT		
	Mangifera indica	Mango	600/HA
	Tamarindus indica	Imli	600/HA
	Emblica officinalis	Aonla	600/HA
	Zizyphus jujuba	Ber	30/HA
	Anacardium occidentali	Kaju	600/HA
GROUP III:	BAMBOO		
	Dendrocalamus strictus	Manvel	156/HA
GROUP IV:	ALL PURPOSE		
	Leucaena leucocephala	Koo Babul	1000/HA
	Dalbergia sissoo	Sheesham	1000/HA
	Prosopis juliflora	Prosopis	1000/HA
	Acacia spp.	Babul	1000/HA
	Albizzia lebbeck	Siris	1000/HA
	Terminalia tomentosa	Saja	1000/HA
	Pongamia pinnata	Kanji	1000/HA

B. GRASS SPECIES

Schima neruosum
Andropogon spp.
Cenchrus ciliaris
Chrysopogon montanus
Dicanthium annulatum
Eremopogon foveolatus
Panicum antidotale

To complete the economic analysis, planting costs were employed based on M.P.F.D. experiences -- such costs were computed on a per-tree basis. The other major cost elements are fencing, and maintenance and protection. The major form of fencing in the S.F. program is to be cattle-proof trenches as opposed to wire fence. Although perhaps less secure (and durable) than wire, the trenches do have much to recommend them. Firstly, they are very labor intensive; to the extent that unemployment exists, and if labor costs are covered by external funds, then net national (and State) income goes up accordingly without representing a transfer of employment away from other public-sector jobs. Secondly, the full cost of fence is retained within the State rather than leaking out to purchase wire, posts, etc. Having agreed on the form of the fence, it became necessary to assume a certain plantation size before per/hectare costs (and hence benefits) could be calculated. As will become clear below, per-hectare costs of trenching vary by a factor of 10 depending on whether one assumes a plantation size of 1 hectare or 100 hectares. In order to reduce the number of variables in the models, all benefit-cost calculations in the 4 models were made assuming fencing costs for a 10 hectare plot. Subsequent calculations will illustrate the effect on net present value (NPV) for various plantation sizes. But it warrants mention that because of this 10-hectare size assumption, net present values per hectare are slightly over-estimated in the model plantations if plots of less than 10 hectares are planted, and these values are underestimated for plantations of a size greater than 10 hectares. This effect is illustrated in Figure 1.

The final cost component is that of a chowkider (guard). The practice is to have one chowkidar for a plantation, almost regardless of its size. That is, a 2 hectare plot has a chowkidar, as does a 75 hectare plot. It was assumed here that a chowkider would watch the 10 hectare plantation, as well as perform minimal

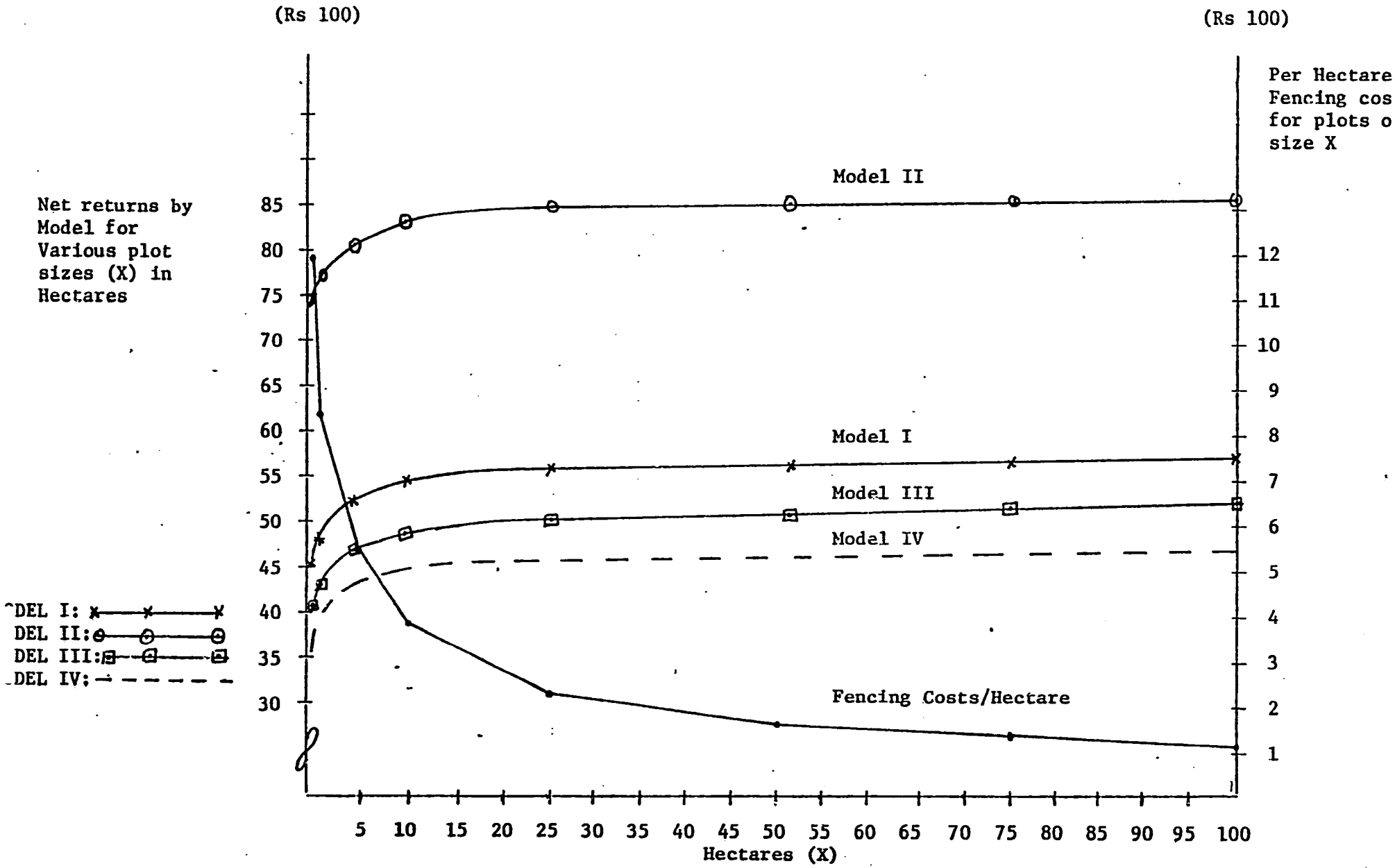


Figure 1: Per hectare net present value of four models as a function of plot size (left axis), and fencing costs per hectare as a function of plot size (right axis) (i = 10%).

maintenance. For this an annual expense of Rs.1800 was employed (Rs.5/day). Then, as with fencing, 1/10 of this amount was used as the annual cost of the 1 hectare model plantations. As with fencing, this assumption will have a slight distortion on the net present values of those plantations other than 10 hectares in size. Such distortions are, however, minimal.

The planting and survival information (assumed at 80%) is shown in Table 4. From this the next step is to calculate frequency of harvests, and periodic yields of the various products. Two general types of plantations were first assumed, a small timber plantation, and a mixed product plantation. Data on yields and harvesting frequencies were compiled and adjusted for presumed planting densities. In all cases, yields were selected on the low side. Yield and harvesting data for these two general plantations are presented in Figures 2 and 3.

When turning to physical and economic yields from tree plantations the computations become somewhat complicated. Unlike most agricultural crops which are harvested after 6-9 months, most tree products are harvested only after 5-8 years. As seen in Figures 2 and 3, the bulk of the yields occur at 5 year intervals, with most of the timber coming at the end of 30 years when the initial plantings are liquidated. Of course the coppicing of trees at more frequent intervals is possible for small timber production, although that has not been included here in order to place more productive emphasis on fuelwood. Intermittent yields of this sort can be annualized to present a general picture of "annual" production. The same can be done for the value of such production, though convention discourages such annualizing because of the time-value of money. That is, to spread the undiscounted income received in year 30 over the 30 year life of the project introduces a distortion in the annual value of production in those early years. The discounted value of that 30th year harvest

Table 4

	MODEL I			MODEL II			MODEL III			MODEL IV		
	Species Composition %	Number Planted per Hectare	Number Harvested per Hectare	Species Composition %	Number Planted per Hectare	Number Harvested per Hectare	Species Composition %	Number Planted per Hectare	Number Harvested per Hectare	Species Composition %	Number Planted per Hectare	Number Harvested per Hectare
GROUP I	20%			20%			30%			50%		
Eucalyptus	(40%)	128	102	(40%)	128	102	(40%)	192	154	(40%)	320	256
Cleistanthus	(30%)	96	77	(30%)	96	77	(30%)	144	115	(30%)	240	192
Gmelina	(30%)	96	77	(30%)	96	77	(30%)	144	115	(30%)	240	192
		320	256		320	256		480	384		800	640
GROUP II	5%			20%			10%			5%		
Mangifera	(20%)	6	5	(20%)	24	19	(20%)	12	10	(20%)	6	5
Tamarindus	(20%)	6	5	(20%)	24	19	(20%)	12	10	(20%)	6	5
Emblica	(20%)	6	5	(20%)	24	19	(20%)	12	10	(20%)	6	5
Zizyphus	(20%)	1	1	(20%)	1	1	(20%)	1	1	(20%)	1	1
Anacardium	(20%)	6	5	(20%)	24	19	(20%)	12	10	(20%)	6	5
		25	21		97	77		49	41		25	21
GROUP III	10%			10%			30%			15%		
Dendrocalamus	(100%)	16	13	(100%)	16	13	(100%)	47	38	(100%)	23	18
		16	13		16	13		47	38		23	18
GROUP IV	65%			50%			30%			30%		
Acacia	(25%)	162	130	(25%)	125	100	(20%)	60	48	(20%)	60	48
Prosopis	(25%)	162	130	(25%)	125	100	(20%)	60	48	(20%)	60	48
Albizzia	(15%)	98	78	(15%)	75	60	(20%)	60	48	(20%)	60	48
Leucaena	(15%)	98	78	(15%)	75	60	(20%)	60	48	(20%)	60	48
Dalbergia	(10%)	65	52	(10%)	50	40	(10%)	30	24	(10%)	30	24
Terminalia	(5%)	32	26	(5%)	25	20	(5%)	15	12	(5%)	15	12
Pongamia	(5%)	32	26	(5%)	25	20	(5%)	15	12	(5%)	15	12
		649	520		500	400		300	240		300	240
GRAND TOTALS		1010	810		933	746		876	703		1148	918

→ = Harvest annually at indicated yield
S = Poles/Tree
K = Kg
F = Fodder/Tree
W = Wood/Tree
T = Timber
E = Edible Fruit

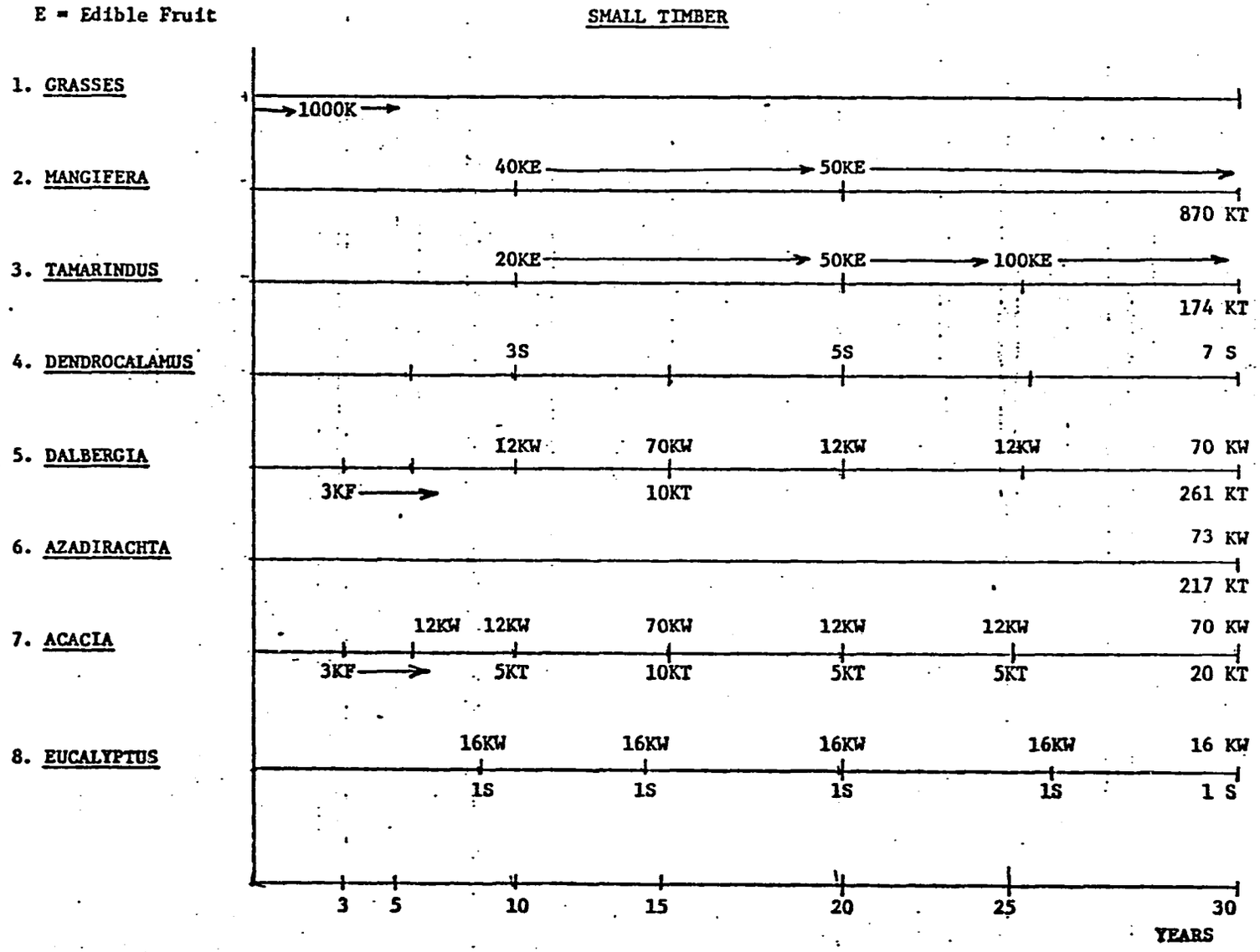


Figure 2

→ = Harvest annually at indicated yield
K = Kg.
F = Fodder/Tree
W = Wood/Tree
G = Grass/HA
P = Pods/Tree
T = Timber/Tree
E = Edible Fruit

MIXED PLANTATION

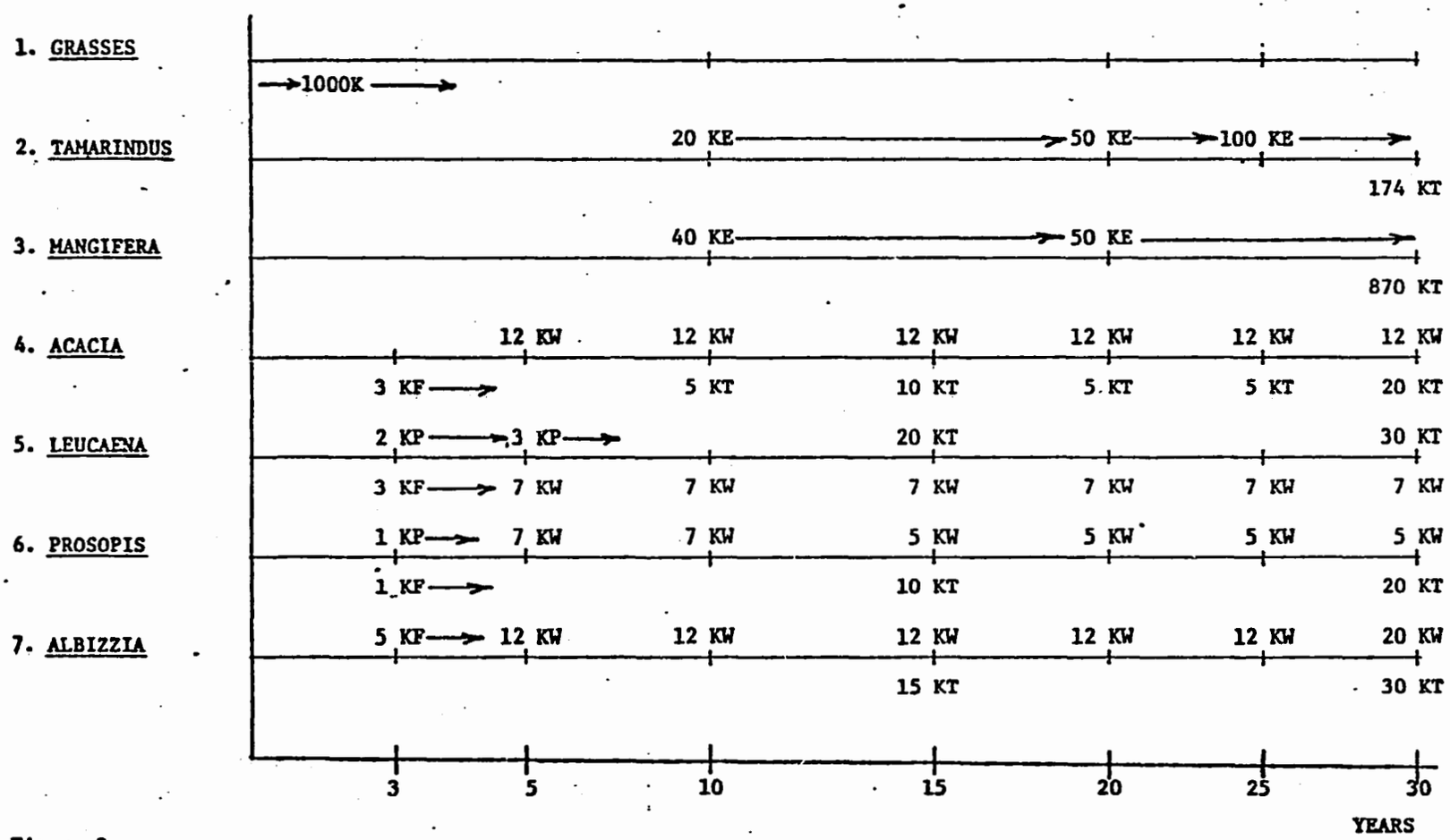


Figure 3

can be averaged over all years, but to do so introduces confusion with other annual net present value figures.

In what follows, we have attempted to show several things. Firstly, the total lifetime production of each product in the four models is shown. Secondly, that product is multiplied by an assumed price so that total lifetime value is shown. For crude comparisons this lifetime value (gross) is annualized (undiscounted) and also shown.

From these statistics it is possible to obtain a quick glance of the product mix, the value of that mix, and the relative (though crude) productivity of each model over its life time. It should be borne in mind that as plantations spread over the State, each with a different initial and final period (years 1 and 30), the harvests will be rotated in such a way that the sort of comparisons discussed here become more appropriate. That is, in any one year, harvests will be occuring on a complete mixture of age stands.

The results of this crude comparison of plantation production and lifetime value -- along with product mix -- are shown in Table 5.

The ultimate test of the economic value of any plantation is found in computations of net present values; this is particularly the case when each alternative (model) is similar in terms of establishment and maintenance costs. Were we comparing investment A which costs Rs.1000 with investment B which cost Rs.1,000,000 the net present value of each would need to be augmented with their respective benefit-cost ratios, plus their internal rate of return. But here we can be content with net present value calculations, and comparisons of the annuity value per hectare of each plantation. The annuity value represents the net annual returns from a project, and this also represents the economic loss if the project is <u>not</u> undertaken. The practical importance of the annuity value

TABLE 5. LIFETIME YIELD, TOTAL VALUE OF YIELD, AND PRODUCT SHARE OF VALUE, FOUR MODEL PLANTATIONS, MADHYA PRADESH.

MODEL		GRASS (Rs 0.10/K)	FODDER (Rs 0.04/K)	FUEL (Rs 0.15/K)	TIMBER (Rs 0.40/K)	FRUIT (Rs 0.50/K)	PODS (Rs 0.50/K)	POLES (Rs 2.00 Each)
I	Lifetime Yield	30,000K	42,525K	62,140K	55,105K	20,520K	10,036K	1,475 Each
	Value of Yield	Rs 3,000	Rs 1,701	Rs 9,321	Rs 22,042	Rs 10,260	Rs 5,018	Rs 2,950
	Share of Value	6%	3%	17%	41%	19%	9%	5%
II	Lifetime Yield	30,000K	31,465K	52,540K	61,528K	74,420K	7,720K	1,475 Each
	Value of Yield	Rs 3,000	Rs 1,259	Rs 7,881	Rs 24,611	Rs 37,210	Rs 3,860	Rs 2,950
	Share of Value	4%	2%	10%	30%	45%	5%	4%
III	Lifetime Yield	30,000K	20,825K	45,862K	35,290K	39,770K	5,280K	2,490 Each
	Value of Yield	Rs 3,000	Rs 833	Rs 6,881	Rs 14,116	Rs 19,885	Rs 2,640	Rs 4,980
	Share of Value	6%	2%	13%	27%	37%	5%	10%
IV	Lifetime Yield	30,000K	20,202K	70,662K	28,328K	20,020K	5,280	3,470 Each
	Value of Yield	Rs 3,000	Rs 808	Rs 10,599	Rs 11,331	Rs 10,010	Rs 2,640	Rs 6,940
	Share of Value	7%	2%	23%	25%	22%	6%	15%

TOTAL VALUE OF YIELD MODEL I — Rs 54,292
TOTAL VALUE OF YIELD MODEL II — Rs 80,771
TOTAL VALUE OF YIELD MODEL III — Rs 52,335
TOTAL VALUE OF YIELD MODEL IV — Rs 45,328

in a social forestry setting is that we are comparing mutually exclusive uses of a piece of land. For land currently in dryland pasture but being considered for a social forestry plantation, the annuity value of the forestry project is directly comparable with the current annual net revenue attributable to the pasture in its current use. In this respect also the annuity value of a social forestry plantation can be used as a guide in site selection; the annuity value of the plantation on a per hectare basis sets the upper bound on net returns from possible sites in their current use. That is, any current use which exceeds the forestry annuity value is better retained in its current use. The annuity value is calculated as:

$$A = \sum_{i=1}^{n} \frac{NPV}{\frac{1}{(1+r)^i}} \div \text{Hectares} = A/\text{Hectares}$$

The denominator in this formulation is nothing but the sum of the discount factor for the appropriate rate of discount (r) for the life of the plantation (n). This can be found by simply summing the discount factors over n years in a table entitled "Discount Factors" or "Present Worth of an Annuity."

The economic situation for each of the model plantations is presented in Table 6.

As the final step in the village level analysis it is necessary to relate these model plantations to the economic condition of village India. Here again, heroic assumptions are necessary in that no village situation can truly be described as "typical." Nonethesell, it is possible to demonstrate some general impacts on villages of presumed size.

We start by assuming that 24 hectares of Model I are planted near a village of 400 persons (67 families) in the West. In the East, 48 hectares of Model III are planted near a village of 800 persons (133 families). We can then imagine

TABLE 6. ECONOMIC SUMMARY, FOUR MODEL PLANTATIONS.

	WEST				EAST			
	Model I		Model II		Model III		Model IV	
A. COSTS:								
1. Initial Costs								
a. Seedlings @ Rs 0.55	Rs 556		Rs 513		Rs 482		Rs 631	
b. Planting @ Rs 0.64	Rs 646		Rs 597		Rs 561		Rs 735	
c. Fencing @ Rs 400/HA	Rs 400		Rs 400		Rs 400		Rs 400	
2. Recurring Costs								
a. Protection/Maintenance @ Rs 180/HA/Year	Rs 180/year		Rs 180/year		Rs 180/year		Rs 180/year	
B. RETURNS IN PRESENT VALUES (Rs)	10%	15%	10%	15%	10%	15%	10%	15%
1. Gross Present Value	8,704	4,529	11,483	5,556	8,027	4,088	7,928	4,261
2. Initial Cost	-1,602	-1,602	-1,510	-1,510	-1,443	-1,443	-1,766	-1,766
	7,102	2,927	9,973	4,046	6,584	2,645	6,162	2,495
3. P.V. of Recurring Costs	-1,724	-1,226	-1,724	-1,226	-1,724	-1,226	-1,724	-1,226
4. Net Present Values	5,378	1,701	8,249	2,820	4,860	1,419	4,438	1,269
5. Annuity Values per Hectare	571	258	876	429	516	216	471	193
6. Internal Rate of Return	22%		24%		20%		19%	

that each plantation is managed on a sustained yield basis so that rotations allow an annual offtake. For the 2 models, we would have the following general rotations:

Grass:	Every Year
Fodder:	Every Year
Fuelwood:	Every Sixth Year
Timber:	Every Fifteenth Year
Fruit:	Every Year
Pods:	Every Year
Poles:	Every Sixth Year.

To simplify matters, we might ignore the timber harvest and imagine a six-year rotation for fuelwood and poles, plus an annual harvest for the other four products.

This means that in a 24 hectare plantation we would harvest 100% of the area (24HA) for grass, fodder, fruit, and pods, plus 1/6 of the area (4HA) for fuelwood and poles. For the 48 hectare plantation we would harvest 48 hectares annually for grass, fodder, fruit, and pods, and 8 hectares for fuelwood and poles. The results of these harvesting assumptions for the two models are shown in Tables 7 and 8.

The nature of the village and the agreements struck will influence the way in which the products from a village plantation will be distributed. For instance, the panchayat may choose to manage the plantation exclusively for revenue generation and sell all produce. This scenario seems quite unlikely. A more probable situation will be to market some of the product, and to retain the balance within the village for local needs.

TABLE 7. ANNUAL PRODUCTION AND VALUE FROM 24 HECTARES OF MODEL I (ON 6-YEAR ROTATION AND EXCLUDING TIMBER)

PRODUCT	ANNUAL YIELD PER HECTARE	HECTARES HARVESTED ANNUALLY	GROSS ANNUAL HARVEST	GROSS ECONOMIC VALUE	PRODUCT SHARE OF ANNUAL VALUE
Grass	1000K	24	24,000K	Rs 2,400 @ 0.10/K	14%
Fodder	1418K	24	34,032K	Rs 1,360 @ 0.04/K	8%
Fuelwood	2070K	4	8,280K	Rs 1,242 @ 0.15/K	7%
Fruit	680K	24	16,320K	Rs 8,160 @ 0.50/K	46%
Pods	335K	24	8,040K	Rs 4,020 @ 0.50/K	23%
Poles	50 Each	4	200 Each	Rs 400 @ 2.00 Each	2%
				Rs 17,582	100%

TABLE 8. ANNUAL PRODUCTION AND VALUE FROM 48 HECTARES OF MODEL III (ON 6-YEAR ROTATION AND EXCLUDING TIMBER)

PRODUCT	ANNUAL YIELD PER HECTARE	HECTARES HARVESTED ANNUALLY	GROSS ANNUAL HARVEST	GROSS ECONOMIC VALUE	PRODUCT SHARE OF ANNUAL VALUE
Grass	1000K	48	48,000K	Rs 4,800 @ 0.10/K	11%
Fodder	690K	48	33,120K	Rs 1,325 @ 0.04/K	3%
Fuelwood	1530K	8	12,240K	Rs 1,836 @ 0.15/K	4%
Fruit	1320K	48	63,360K	Rs 31,680 @ 0.50/K	70%
Pods	175K	48	8,400K	Rs 4,200 @ 0.50/K	9%
Poles	80 Each	8	640 Each	Rs 1,280 @ 2.00 Each	3%
				Rs 45,121	100%

Recall that we assume that Model I (West) is located on the lands of a village containing 400 persons (67 families), and Model III (East) is located in a village of 800 persons. Further, let us assume that the following distributions are effected for Model I (Table 9), and Model III (Table 10).

In this simple calculation, which ignores the timber harvest at 15 and 30 years, we see that the sort of village plantations envisioned in the project could be expected to have an important impact on individual villagers. The product from 24 hectares of Model I (West) situated in a village of 67 families would provide both village revenue, and important commodities for direct consumption. The significance of this to each family is highlighted in the final column of Table 9. For instance, each family could obtain 2 1/2 months of fodder for 2 cows/carabao, plus protein supplement for that same period. Additionally, the fuelwood could be expected to match 15% of current wood use. This would have several important implications. If wood is gathered in the forest this reduces pressure on an already strained resource, plus alleviates the need for as many trips. Alternatively, if wood is purchased from a government supply depot this would permit a savings of money which could be used for other things. Finally, it may be possible to reduce the extent of government fuelwood distribution programs, with an accompanying saving in national financial resources.

Table 10 shows a similar summary for Model III in proximity to a village in the East.

There are two remaining (and related) issues to be discussed at the level of the village, both of which have a profound impact upon the success of a social forestry program. The first of these is the matter of the type of contractual agreement which exists between the government of Madhya Pradesh and the village/panchayat. The second is the willingness of the village to dedicate its lands to social forestry.

TABLE 9. MODEL I (WEST) ON 24 HECTARES OF VILLAGE LAND, 67 FAMILIES.

PRODUCT	ANNUAL HARVEST	% SOLD IN MARKET	VILLAGE REVENUE	AVAILABLE FOR VILLAGE USE	ANNUAL PRODUCT PER FAMILY	COMMENTS
Grass	24,000K	0	0	24,000K	358K	Will feed 2 cows/carabao for approximately one month.
Fodder	34,032K	0	0	34,032K	508K	Will feed 2 cows/carabao for approximately 6 weeks.
Fuelwood	8,280K	0	0	8,280K	124K	Represents approximately 14% of current annual wood use. Permits substitution for 23% of current dung use. 234K of dung can be diverted to manuring.
Fruit	16,320K	50%	Rs 4,080	8,160K	122K	Provides 2/5K fruit per week for each family member.
Pods	8,040K	0	0	8,040K	120K	Will feed (as protein supplement) 2 cows/carabao for two months.
Poles	200 Each	75%	Rs 300	50 Each	0.75 Each	
Income			Rs 4,380			Revenue to Panchayat.

TABLE 10: MODEL III (EAST) ON 48 HECTARES OF VILLAGE LAND, 133 FAMILIES.

PRODUCT	ANNUAL HARVEST	% SOLD IN MARKET	VILLAGE REVENUE	AVAILABLE FOR VILLAGE USE	ANNUAL PRODUCT PER FAMILY	COMMENTS
Grass	48,000K	0	0	48,000K	361K	Will feed two carabao for approximately one month.
Fodder	33,120K	0	0	33,120K	250K	Will feed two carabao for approximately 3 weeks.
Fuelwood	12,240K	0	0	12,240K	92K	Represents 13% of current annual wood use. Permits substitution for 13% of current dung use. 174K of dung can be diverted to manuring.
Fruit	63,360K	50%	Rs 15,840	31,680K	238K	Provides 3/4K fruit per week for each family member.
Pods	8,400	0	0	8,400K	63K	Will feed (as protein supplement) two carabao for one month.
Poles	640 Each	75%	Rs 960	160 Each	1.2 Each	
Income			Rs 16,800			Revenue to Panchayat

To assess the nature of the contract as it influences village interest in social forestry, consider again Table 9 (Model I). The sample contract indicates that the harvested produce of a plantation will be placed at the disposal of the village, minus harvesting costs and (an unspecified) royalty payment. Then, the balance will be sold and the proceeds split evenly between villagers and government. This means that of the market value of Rs.4380 in Table 9, we must subtract harvesting costs and a royalty payment. Assume average harvesting cost of Rs.50/hectare for all products, and a 5% royalty on the total value of the product (Rs.17,582 in Table 7). Total harvesting costs for 24 hectares are Rs.1,200, and 5% of 17582 is Rs.879. The sum of this financial obligation to the government is Rs.2,079. If this must be paid out of the 50% village share of the auctioned produce, then the village gains only Rs.111 in revenue for the allocation of 24 hectares to social forestry. This is Rs.5/hectare. Of course the village gains use of the produce not sold, but the terms of the contract may be too severe to elicit much interest on the part of many villages.

Finally, we come to the economics of land use in a village as it influences village participation in social forestry. As land is taken out of its current use to be put into social forestry the amount of remaining land which can be used as it formerly was begins to shrink. And, we know that as an asset becomes increasingly scarce, it also becomes increasingly dear. One of the major elements in the acceptance of social forestry at the village level concerns this balancing of net returns to land in the two alternative uses.

Those lands with the lowest economic value in their current use (and also of high potential value in social forestry because of site capability) will be the first to be selected by the village and the government for plantations. But as the fraction of village lands so dedicated increases, the remaining lands

become increasingly scarce. As this value increases, then the scale of expansion at the village level will be controlled by the ever decreasing differential between the two annuity values. Ultimately a point will be reached at the village level where the two annuity values are brought into equality and social forestry ceases to be a viable alternative land use. This is illustrated as H* in Figure 4.

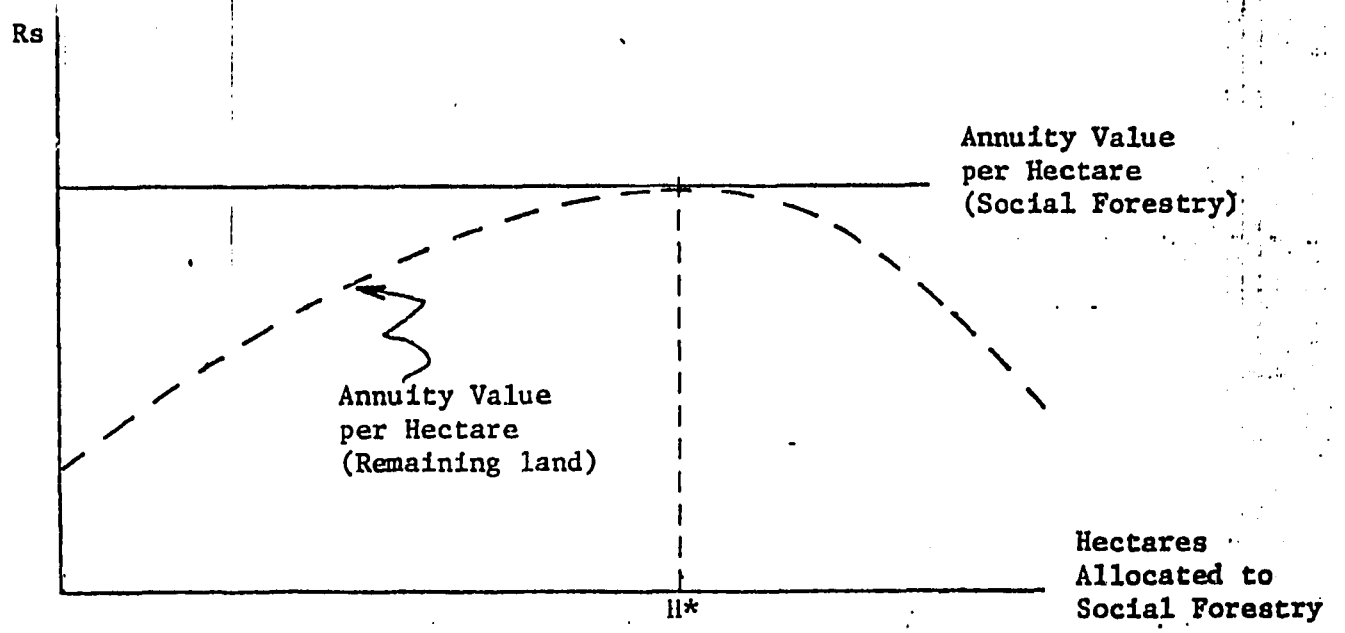


Figure 4

During the early stages of social forestry the increase in the value of remaining land will be rather rapid. However, as the plantations become productive the produce will replace that which has been lost and eventually the value of those remaining lands will return to their former level, if not actually below their former value; this will depend on the way in which these remaining lands are cared for.

Summary

The analysis of social forestry at the village level indicates a considerable potential for improving several aspects of rural life. The fruit products will

make possible an improved diet as well as provide much needed income to villagers. The grass and fodder from the plantations could contribute as much as 15-20 percent of livestock needs. It is possible that a similar percentage of fuelwood needs could be met, permitting the diversion of a much greater quantity (by weight) of valuable dung to cultivated fields. Fuelwood has almost twice the heat value per kilogram as does dung, and hence .53K of wood will displace 1K of dung. This magnitude of dung saved for manuring could have an important impact on agricultural yields. Timber production has played a rather minor role in the model plantations but it should not be overlooked that the market value of this product is 3-4 times that of fuelwood. To the extent that timber was excluded from Tables 7-10 we have underestimated the full impact at the village level.

Before leaving the village level analysis the issue of "pure" fuelwood plantations must be addressed. Given the concerns for rural energy supplies in India the obvious question becomes one of the feasibility of plantations created for the sole purpose of providing a maximum harvest of fuelwood. To explore this consider Model V. Here, in contrast to the earlier models, only Group I and Group III species are planted (Table 11). The yield, value of product, and product share of value from Model V are shown in Table 12. The economic summary for this fuelwood Model is in Table 13.

As with the previous four models it is useful to relate the product from such a plantation to a village situation. As in Tables 7 and 8, assume that 24 hectares of Model V are planted near a village of 400 persons (67 families) in the West, and that 48 hectares of Model V are planted near a village of 800 persons (133 families) in the East. Each plantation will be managed on a sustained yield basis, with fuel and poles harvested every sixth year from a given area of land. Additionally, bamboo poles are available every tenth year.

TABLE 11.

	MODEL V		
	SPECIES COMPOSITION %	NUMBER PLANTED PER HECTARE	NUMBER HARVESTED PER HECTARE
GROUP I	90%		
Eucalyptus	(40%)	576	460
Cleistanthus	(30%)	432	346
Gmelina	(30%)	432	346
		1440	1152
GROUP III	10%		
Dendrocalamus	(100%)	16	13
		16	13
GRAND TOTALS		1456	1165

TABLE 12. LIFETIME YIELD, TOTAL VALUE OF YIELD, AND PRODUCT SHARE OF VALUE, MODEL V, MADHYA PRADESH.

	Fuel (Rs 0.15/K)	Poles (Rs 2.00 each)	Total Value
LIFETIME YIELD	92,160	5955	
VALUE OF YIELD	Rs 13,824	Rs 11,910	Rs 25,734
SHARE OF VALUE	54%	46%	

TABLE 13. ECONOMIC SUMMARY, MODEL V.

A. COSTS

1. Initial Costs

a. Seedlings @ Rs 0.55 x 1456	=	801
b. Planting @ Rs 0.64 x 1456	=	932
c. Fencing @ Rs 400/HA	=	400
	Rs	2,133

2. Recurring Costs

a. Protection and Maintenance: Rs 180/HA/YR

B. RETURNS PER HECTARE (PRESENT VALUES)	10%	15%
1. Gross Present Value	5231	2920
2. Initial Costs	-2133	-2133
	Rs 3098	Rs 787
3. P.V. of Recurring Costs	-1724	-1226
4. Net Present Values	Rs 1374	-Rs 439
5. Annuity Value	$\frac{1374}{9.42}$ = 146	$\frac{-439}{6.58}$ = -67
6. Internal Rate of Return	13%	

TABLE 14. ANNUAL PRODUCTION AND VALUE FROM 25 AND 48 HECTARES OF MODEL V.

	24 HECTARES (West)		48 HECTARES (East)	
	FUEL	POLES	FUEL	POLES
ANNUAL YIELD PER HECTARE	3072K	198 each	3072K	198 each
HECTARES HARVESTED ANNUALLY	4	2.4	8	4.8
GROSS ANNUAL HARVEST	12,288K	475 each	24,576K	950 each
GROSS ECONOMIC VALUE	Rs 1,843 @0.15/K	Rs 950 @2.00 each	Rs 3,686 @0.15/K	Rs 1,900 @2.00 each
PRODUCT SHARE OF ANNUAL VALUE	66%	34%	66%	34%

This means that in a 24 hectare plantation an annual harvest from Group I species could occur on 4 hectares, and bamboo poles could be harvested on 2.4 hectares. On the 48 hectare plantation an annual harvest of Group I species could occur on 8 hectares, while bamboo poles could be harvested from 4.8 hectares. The results from these two harvesting assumptions are shown in Table 14.

The implications of Model V for the two villages can be described as previously done for Models I-IV. As in Tables 9 and 10, the fuelwood implications are predicated upon the following assumed current fuel use per family:

TABLE 15.*

	WEST		EAST	
	(Kgs)	%	(Kgs)	%
WOOD	900	40%	720	30%
DUNG	1020	44%	1356	55%
AGRICULTURAL WASTES	390	16%	390	15%
TOTALS	2310		2466	

*For conversion to equal heat value assume that 1Kg of wood equals 1.89Kg of dung, and 1.08 Kg of agricultural wastes.

These results are shown in Table 16. Comparing the results with those from Tables 9 and 10 reveals that the pure "energy" plantations of the assumed sizes would meet approximately 20-25% of current fuelwood consumption. This gain over the mixed plantations would come at the expense of grass, fodder, pods, and fruit.

This issue of the appropriate type of plantation will need to be resolved on a village-by-village basis. Where local conditions permit, the choices of the

TABLE 16. MODEL V ON 24 HECTARES OF VILLAGE LAND IN THE WEST (67 FAMILIES) AND ON 48 (HECTARES) OF VILLAGE LAND IN THE EAST (133 FAMILIES).

	WEST 24 HECTARES 67 FAMILIES		EAST 48 HECTARES 133 FAMILIES	
	FUEL	POLES	FUEL	POLES
ANNUAL HARVEST	12,288K	475 each	24,576 K	950 each
PERCENT SOLD IN MARKET	0	75%	0	75%
VILLAGE REVENUE	0	Rs 712	0	Rs 1,424
AVAILABLE FOR VILLAGE USE	12,288K	119	24,576K	238
ANNUAL PRODUCT PER FAMILY	183K	1.8 each	185K	1.8 each
VILLAGE INCOME	0	Rs 712	0	Rs 1,425
COMMENTS	Represents approximately 20% of current annual wood use. Permits substitution for 34% of current dung use. 346K of dung can be diverted to manuring.			Represents approximately 26% of current annual wood use. Permits substitution for 26% of current dung use. 348K of dung can be diverted to manuring.

villagers should dominate in plantation composition. If harsh conditions rule out certain preferred mixtures then "second best" alternatives must be considered.

B. PROGRAM SCALE ANALYSIS

The pace and extent of project expansion over the five-year period envisioned in the Project Proposal holds important implications for the economic viability of the program, as well as for its integration into other activities at both the State and village levels. The crucial factors in this expansion will be the location of suitable plantation sites, the proximity of these sites to village panchayats with management interests and skills, the willingness of panchayats to allocate lands to plantations, the ability of the Forestry Department to obtain adequate seedlings, and the ability of the Forestry Department to orchestrate the formidable logistical problem.

A slightly revised program of expansion is shown in Table 17. This is one which we consider feasible to implement. However, the analysis of scale will depend on factors (such as those listed above) which cannot be evaluated at this time. It is clear that there are a large number of hectares suitable for plantations in an ecological sense. The degree of village cooperation required to permit this expansion to occur will depend upon the nature of the contractual obligations. In the absence of that specific information, no further discussion of scale is possible.

TABLE 17. A PROPOSED PROGRAM OF EXPANSION

	RESEARCH PLOTS		PILOT PLANTATIONS						MODEL PLANTATIONS					
	AVERAGE OF 75 HECTARES PER ADMINISTRATIVE UNIT		AVERAGE OF 75 HECTARES PER ADMINISTRATIVE UNIT		AVERAGE OF 375 HECTARES PER ADMINISTRATIVE UNIT		AVERAGE OF 750 HECTARES PER ADMINISTRATIVE UNIT		AVERAGE OF 150 HECTARES PER ADMINISTRATIVE UNIT		AVERAGE OF 750 HECTARES PER ADMINISTRATIVE UNIT			
PROJECT YEAR	NUMBER OF UNITS	TOTAL HECTARES	NUMBER OF UNITS	TOTAL HECTARES	NUMBER OF UNITS	TOTAL HECTARES	NUMBER OF UNITS	TOTAL HECTARES	NUMBER OF UNITS	TOTAL HECTARES	NUMBER OF UNITS	TOTAL HECTARES	TOTAL UNITS	TOTAL HECTARES
-1	18	1,350	3	225	-	-	-	-	-	-	-	-	21	1,575
1	18	1,350	3	225	3	1,125	-	-	9	1,350	-	-	33	4,050
2			1	75	3	1,125	3	2,250	9	1,350	9	6,750	25	11,550
3			1	75	1	375	6	4,500	7	1,050	18	13,500	33	19,500
4					1	375	7	5,250	3	450	25	18,750	36	24,825
5							8	6,000			28	21,000	36	27,000
TOTALS	36 UNITS	2,700 HECTARES	8 UNITS	600 HECTARES	8 UNITS	3,000 HECTARES	24 UNITS	18,000 HECTARES	28 UNITS	4,200 HECTARES	80 UNITS	60,000 HECTARES	184	88,500
HECTARE TOTALS		2,700	21,600						64,000					88,500

C. SOCIAL BENEFIT COST ANALYSIS

Any expenditure of public-sector funds for investments in projects such as social forestry sets into motion a whole chain of beneficial and adverse effects, the nature and extent of which can only be imperfectly measured. Indeed, there is a benefit-cost analysis of benefit-cost analysis where the economist is aware of the marginal benefit of yet one more assumption and subsequent calculation. As assumptions become evermore tenuous, and/or as reasonable impacts ripple through the system, it soon becomes prudent to ignore subsequent effects. This will become obvious in the following discussion.

In the evaluation of the Madhya Pradesh social forestry program we will be concerned with both direct and indirect benefits and costs, and with those which are expressable in monetary terms, and those which can only be expressed in non-monetary terms. There are three broad classes of direct effects, and four broad classes of indirect effects. As for the former, we have gross benfits which accrue to the direct beneficiaries of the project, associated costs which must be incurred by the direct beneficiaries in order to recieve the benefits of the project, and finally project costs. Concerning the indirect effects we have four kinds: indirect effects stemming from the plantations; indirect effects induced by the plantations; indirect effects induced by consumption by the direct beneficiaries; and indirect effects induced by planting and maintaining the project. Net indirect benefits in these four only exist to the extent that the gross beneficial effects exceed the gross costs.

We now treat each of the categories in more detail.

Direct Gross Benefits

At the village/panchayat level, we will treat all households as our basic unit of analysis. Obviously it would be superior to use the individual family as the basic unit but that would require precise knowledge concerning the distribution of benefits among individual families -- a level of detail clearly absent for the present. With the village being the basic analytical unit, the direct gross benefits are those effects which make the village as a whole better off. We have seen that the four model plantations are capable of generating approximately Rs.600 (as an average) of net returns per hectare at a discount rate of 10%. This is arrived at by imputing shadow prices to the various products arising from the respective plantations.

It is unlikely that all of the produce from the plantations will be sold, but instead a significant fraction of it may be consumed directly. This is particularly the case for grass, fodder, fuelwood, and pods. Alternatively, fruit, poles, and timber are likely to be marketed. Regardless of the ultimate disposition of the product, we may safely impute shadow values to it on the grounds that if it is consumed rather than sold it represents an income loss of the magnitude of its market value. Hence the gross benefits to a village are the economic value of the plantation's products.

There are some non-monetary benefits which will also accrue at the village level. One of the more important of these will be the improved nutritional composition of the typical diet -- especially if much of the fruit is consumed rather than sold. Even if some of it is sold and other nutritious foods purchased with the revenue diets will improve.

Another direct non-monetary benefit would be the vitalization of the village as an economic decision unit. At Independence control of much of the resource

base was transferred to something called "the government" with a corresponding decline in village management. Social forestry would revive the tradition of village management of a valuable natural resource. This should also enhance the concept of village identity and cohesion which may have been threatened by the gradual deterioration of village assets and the irresistable urge to get at least a little of the ever-decreasing forage available for livestock.

The final non-monetary direct benefit can be considered to be the protection of the land included in a plantation, and other lands downstream from same. We must be careful not to double count by including here those benefits which are already captured in the per-hectare annuity values. This category of beneficial effects comprehends those which go beyond the mere market-valued gains from social forestry. Erosion control is one obvious category, as are the benefits arising from protection as a wind break.

The second category of direct effects are referred to as associated costs. There are a number of expenses which must be incurred in order that the gross benefits can be realized. It is the difference between gross benefits and associated costs which gives rise to net direct benefits.

One major item in associated cost would be the expense which must be incurred to protect the plantation once it is established. This involves a chowkidar and in the calculations presented in the village analysis these costs were netted out to arrive at the net present values and the annuity values. Yet another expense would be any required maintenance which must be performed annually to keep the plantation productive. As with the chowkidar, this expense has been subtracted from the gross benefit figures presented in the earlier discussion on village level analysis.

An important item which must be included in associated costs is the opportunity cost of using the land as a plantation rather than it in its former use.

This figure was not included in the earlier village level calculations and hence the annuity values listed there overstate the net economic gain from social forestry. It is not an easy matter to determine this economic opportunity cost. A lower bound would be the economic return (annuity) in its current use. This is a lower bound for two reasons. Firstly, the open grazing land provides both time and space utility to the village, in addition to its form utility which we would capture in our normal economic calculations. Put in slightly different terms, the land has its use value, and its exchange value. The former represents what the villager would gain from its productivity toward the sustenance of livestock ignoring its place in the annual grazing cycle. The latter (exchange) value represents what the villager would require by way of compensation to be denied its use. This value reflects the probable cost of purchasing a replacement for the lost land. Consider the following illustration. One hectare of degraded range land may produce forage worth only Rs.50 annually -- this is its use value. However, if denied access to it, villagers may be required -- during certain times of the year -- to purchase forage to sustain their livestock. If that necessary forage would cost Rs.200 then this represents the minimum that the villagers would accept to be denied access to the land; this is the exchange value of one hectare.

The final monetary associated cost is the necessary repayment obligation of the village to the Forest Department. Note that this does not affect the economic desirability of the project from the social perspective for an entry in the associated cost account is offset by an equal entry (only a negative amount) in the project cost account. Of course repayment is central to a village's perception of its gains from a plantation, and also from the government's perspective.

As discussed previously, the sample contract indicates a 50-50 split of the proceeds after harvesting costs have been deducted, along with an unspecified royalty payment to the government. Depending upon the level of this royalty payment it is quite easy for a social forestry project to be unprofitable from the village's point of view, and quite attractive to the government.

Consider the following example of how the proposed contract might affect villages. It is stated that the harvested proceeds will be placed at the disposal of the villagers minus harvesting cost and royalty. Assume the following:

Rs.550	Produce value
- Rs. 50	Harvesting
- Rs. 55	10% Royalty
Rs.445	

If the village chooses to utilize Rs.225 of this in direct consumption, that leaves Rs.220 worth to sell. If the proceeds are split 50/50 then the village realizes an additional Rs.110. Finally assume that the current land use is grazing which has an annuity value only 1/2 of that were it to be devoted to social forestry. This must be subtracted from the village's calculations to determine its net position. This is shown below for both government and the village:

INCOME OR VALUE TO:

Village		Government	
Rs.225	Consumed Product	Rs. 55	Royalty (10%)
Rs.110	Sale Proceeds	Rs.110	Sale Proceeds
335			
- Rs.275	Opportunity cost of land use	RS.165	NET GAIN
Rs. 60	NET GAIN		

Are we really to suppose that villages will enthusiastically donate land to social forestry for a net gain of Rs. 60 per hectare?

This question can be evaluated in light of the final consideration in associated costs -- albeit a non-monetary cost. This pertains to the loss of "freedom" which

villagers might feel in turning over grazing land to the government. This is more than income loss; it is a loss of individual discretion in resource management. Of course to be offset against this is the social cost which such individual behavior has wrought; the degraded range.

Turning finally to project costs, we encounter the usual types of expenditures for seeds, planting, fencing, nurseries, protection, maintenance, and overhead. These direct costs reflect the actual cash outlays of the Madhya Pradesh government, regardless of the ultimate contributor (such as A.I.D. or the villages via repayment). It is important that all costs be shown in this account, with subsequent reimbursements deducted in a separate account. The earlier discussion about repayment obligations by villages is pertinent here.

We now turn to a discussion of the indirect effects from a social forestry program. In the monetary account we find the possibility for new village, state and national income to be created through the establishment of forest-based cottage industries. A second example can be found in the enhancement of the local milk production which increases value added at regional (or local) milk processing facilities. In both instances, the purchase of forest products from the villages represents costs to these related sectors, and the source of income to the villages (which we have earlier referred to as direct gross benefits). The existence of a positive value-added figure in those economic sectors utilizing new forest resources represents a net gain to income in the locality. To the extent that this does not reduce the price of existing forest products or milk products -- and thereby reduce incomes of other producers -- then the State and the Nation gain by this full amount.

An example of a non-monetary indirect effect is to be found in the offsite enhancement of watershed protection. It may or may not be possible to impute a

monetary value to the reduced siltation of streams and reservoirs. If the economic life of a reservoir is extended by 10 years than it is clear that the present value of that deferred expenditure is an indirect monetary benefit.

All of these indirect effects carry the appelation "indirect benefits stemming from the project."

The second class of indirect effects arises because of a positive difference between gross benefits and associated costs. That is, when the project leaves villagers with increased net income over and above necessary expenses (chowkidar, maintenance, royalty payments, etc.) there is new income in the village which will be spent on a variety of consumer goods, or education for children, or for travel to the regional capital. When this new expenditure results in a net income gain to respective suppliers (over and above <u>their</u> associated costs) then we have net indirect benefits induced by consumption.

The third category of indirect effects arise from the associated costs which must be incurred by the direct beneficiaries (villagers) in order to realize the gross income. These costs would be wages to chowkidars, maintenance people, and those who harvest the produce. There are net indirect benefits induced by the plantations to the extent that these workers lose less by giving up their former jobs than they gain in this new employment. Assume that these personnel were formerly working for Rs.4.50/day in the agricultural labor force, but are now paid Rs.5.00/day in the employ of village panchayats. Their income goes up by Rs.0.50 per day and this represents a real income gain to the locality, the State and the nation rendered possible by the establishment of a more valuable resource.

The final category of indirect effects are referred to as net indirect effects induced by the project. One example is the labor cost component. As in the above category there is a potential gain in net national income if the new wage exceeds

the former wage; and if people would have been otherwise unemployed their opportunity wage is zero. In this instance the full wage payment is a net gain. A second possible source of national (or regional) gain is the value added which is created in private seed supply firms from a social forestry plantation.

There are in addition to the above, two redistributional issues which now warrant discussion; they both apply to most cost categories.

Firstly, if the S.F. program causes wages to be increased (as we assumed above) then it is quite likely that employers in the locality will be forced to pay their existing workers something more in order to prevent their flight to tree planting etc. These other workers clearly gain by the fortuitous conditions which brought such a large government program to Madhya Pradesh. We must assume that existing wages would increase slightly, and that this would come out of the pockets of owners of capital who also hire labor, or else it will be passed on to consumers. At any rate, this represents a small income transfer toward workers and away from consumers and entrepreneurs. In a State such as Madhya Pradesh we should not ignore this possibility.

The other redistribution concerns income payments to workers in a S.F. program. It is clear that incomes in Madhya Pradesh will go up as all of the anticipated labor is actually employed. What is not so clear is whether or not incomes somewhere else in India fall as a result of this. That is, if the Indian government reduces public sector jobs in another state (or even elsewhere in M.P.) by an amount exactly equal to the wage bill in S.F. then net national income in India remains unchanged.

This is unlikely since A.I.D. funding will underwrite some of the labor cost, we might expect employment (and incomes) elsewhere to be largely unaffected.

By way of summary, these various types of benefits and costs are illustrated in Figure 5. A final talley of the gains and losses is a rather demanding undertaking, but given the favorable benefit-cost assessment of the village-level plantations there seems little chance that the overall program benefits would not be comfortably positive. It is possible to present a general picture of the social benefit-cost picture for the first five year program, even ignoring the indirect effects. To do this we must hypothesize a mix of the various models developed earlier. Ignoring the pure fuelwood model (V), we assume the mix depicted in Table 18. Here, it is assumed that the 85,800 hectares in the five-year program are allocated to the four plantations as shown. The aggregate value excluding government overhead costs of the program is Rs. 221,670,000 net of all other costs including an assumed value of current land use. For the 85,800 hectares this averages out to Rs. 2584 per hectare. To compute the net annuity value for a discount rate of 10% we compute:

Rs. 2584 ÷ 9.42 which yields Rs. 274 per hectare. This represents the net economic value per hectare generated annually by social forestry. The internal rate of return for the composite shown in Table 18 would be the weighted average (by area) of the four models. This is approximately 22%.

TABLE 18.

	MODEL I	MODEL II	MODEL III	MODEL IV	TOTALS
Percent of Plantation Area	40%	10%	30%	20%	
Hectares	34,320	8,580	25,740	17,160	85,800
Total Production Value (Gross present value) Rs. @ 10% interest	2.9872×10^8	0.98524×10^8	2.0661×10^8	1.3604×10^8	7.39894×10^8
Present Value of recurring costs	0.59167×10^8	0.14792×10^8	0.44376×10^8	0.29584×10^8	1.47919×10^8
Net Value	2.39553×10^8	0.83732×10^8	1.62234×10^8	1.06456×10^8	5.91975×10^8
Initial Costs	0.54981×10^8	0.12956×10^8	0.37143×10^8	0.30305×10^8	1.35385×10^8
Opportunity cost of foregone production	0.97057×10^8	0.24264×10^8	0.65071×10^8	0.48528×10^8	2.3492×10^8
Aggregate Value Net of Initial Costs and Foregone Production	0.87515×10^8	0.46512×10^8	0.60020×10^8	0.27623×10^8	2.21670×10^8

208

FIGURE 5. DIRECT AND INDIRECT BENEFITS AND COSTS FROM SOCIAL FORESTRY

DIRECT EFFECTS	MONETARY	DIRECT GROSS BENEFITS New Income or Reduced Costs	DIRECT ASSOCIATED COSTS Chowkidar Village Maintenance Foregone Income from Plantation Lands Harvesting Costs Village Cost Obligations →	DIRECT PROJECT COSTS Seeds Planting Fencing Nurseries Overhead Maintenance Protection Possible Transfer (Offset) Minus the cost savings from Reduced Wood Depot Needs.
	NON MONETARY	Better Diet Village Identity Strengthen Panchayat Land Protection	Loss of "Freedom" to Graze Planted Lands	

		INDIRECT BENEFITS STEMMING FROM PLANTATIONS		INDIRECT BENEFITS INDUCED BY CONSUMPTION		INDIRECT BENEFITS INDUCED BY PLANTATIONS		INDIRECT BENEFITS INDUCED BY THE PROJECT	
INDIRECT EFFECTS	MONETARY	BENEFITS Gross Value Added in Forest Products Industry	COSTS Purchases by Forest Products Industry	BENEFITS Gross Income to Suppliers of New Household Purchases	COSTS Purchases by Household Suppliers	BENEFITS Income to Chowkidar	COSTS Foregone Chowkidar Income	BENEFITS Labor Income	COSTS Foregone Wages
		Value Added in Dairy Sector	Costs of Purchased Milk from Farmers			Income to Harvesters	Foregone Harvester Income	Higher Induced Wages in Other Sectors	Higher Induced Wages in Other Sectors
						Income to Maintenance Workers	Foregone Income to Maintenance Workers	Income to Private Seed Producers	Factor Costs in Private Seed Sector
	NON MONETARY	Watershed Protection							
		If B > C then have net indirect benefits from Plantations.		If B > C then have net indirect benefits induced by Consumption.		If B > C then have net indirect benefits induced by Plantations.		If B > C then have net indirect benefits induced by the Project.	

D. PROGRAM EVALUATION: A SUMMARY

A.I.D. guidelines for project evaluation draw a distinction between projects which produce revenue, and those which do not. As is obvious, social forestry in India has the potential to fall in either (or both) category. The approach was taken here to shadow price all produce from social forestry regardless of whether or not it would be sold. The economic feasibility of social forestry of the scale envisioned by the Indian government seems beyond any question. Even the least-profitable plantation model (V--pure fuelwood) has an internal rate of return of 13%; the model with 20% fruit (II) has an internal rate of return of 33%. The more probable plantation models are in the neighborhood of 20% IRR.

The proposed social forestry program is consistent with A.I.D. program imperatives in the following ways:

1. It is directed towards the poorest segment of one of the poorest states in one of the poorest nations in the world.
2. The beneficiaries will be--inordinately--the landless, women, and children.
3. Dietary improvement is an integral part of the program.
4. The program is directed toward solving crucial rural energy shortages.
5. The program is highly labor intensive and relies upon village labor experiencing high seasonal unemployment.
6. An important ingredient in the program is the explicit attention to the revitalization of village control over land use, and the enhancement of the village panchayat; indeed, this is the essence of social forestry.

Design Team Report
MP Social Forestry Project

ANNEX 3

SOCIAL SOUNDNESS ANALYSIS

Ms. Zarina Bhatty
Dr. Malcom O'Dell, Jr.

TABLE OF CONTENTS

		Page
1.	Introduction/Synopsis	1
2.	Madhya Pradesh: A Social and Economic Profile	3
3.	Project Proposals	9
4.	Equity for Project Viability	14
5.	Panchayats, Participation, Equity and Growth: Institution Building through Social Forestry	16
	a. Why Participation ?	16
	b. How can Participation be developed ?	17
	c. Equity and Participation: Why not let the Forest Department do it ?	19
	d. Equity and Participation: Oligarchy or Democracy ?	21
	e. Can Panchayats do the job ?	23
	f. Panchayats and Social Forestry: Experience to Date	25
	g. The Agreement between Government & Panchayats: A Further Issue of Equity	32
6.	Block Development Institutions: Coordination and Capacity	34
7.	Voluntary Organizations	37
8.	Women in Social Forestry	41
	a. Extension	41
	b. Recruitment	44
	c. Nurseries	45
	d. Women and Panchayats	47
	e. Mahila Mandals	48
	f. Communications	48
	g. Education	49
	h. Children	49
9.	Socio-Economic Research for Program Success	52
10.	Conclusions	56

APPENDICES:

1.	Comparative Statistics	57
2.	Basic Facts on Villages, Blocks, & the Panchayat System	59
3.	Statutory & Revenue Status of Panchayat	61
4.	Issues and Question for Sociological Research	63
5.	References	69

212

1. Introduction/Synopsis

1.1 This analysis examines the Madhya Pradesh Social Forestry Project proposals and assesses the likelihood that the project will fulfill its potential in social terms. It addresses the social and cultural feasibility of the project, its capacity to spread benefits widely and equitably, and its handling of potential socio-economic costs to the target population.

1.2 The analysis begins with profiles of the social and cultural environment of Madhya Pradesh, noting the magnitude of the state, its population, and problems, including those particularly affecting women, its cultural and historical diversity, the extent of rural poverty and its parallel traditions of hierachy and democracy. From these are derived some criteria for assessing the overall viability of the project, including its provisions for equity and local participation. The project is judged to be viable in its basic scope, ability to reach small villages, and provide for equity at the national, state, and district levels and within households. In terms of capacity for ensuring active public participation, particularly in the context of social, cultural, and historical diversity, specific project provisions did not measure up to intentions. Detailed analysis on (i) the role of the Panchayat system and (ii) the role of women in Social Forestry each concluded that long term project viability will depend heavily upon both of them. Since it is likely that project implementation will be well underway before the proposed research and training program is

functioning, concern is indicated that crucial information related to defining effective modes of participation under different circumstances will not be available in time for planning purposes. The analysis concludes with suggestions for a decentralized series of pilot implementation schemes and action-oriented research to begin prior to project implementation. Utilizing students and/or faculty from local institutuions, and backed by existing Social Forestry staff and consultants as appropriate, the pilot implementation and research projects would aim at answering questions of immediate utility in project planning and development. Appendices contain social and economic statistics, Panchayat statutes, and research issues.

2. Madhya Pradesh: A Social and Economic Profile

2.1 Madhya Pradesh is the largest state in India. It is a rural, agricultural state marked by severe poverty and underdevelopment, a diverse historical and cultural heritage, and has a social and political system which is characterized both by traditional hierachical and modern democratic structures. It is a land of contrast where everything from forests to deprivation is on a large scale.

2.2 The state covers approximately 443,000 km^2, of which one-third is forest -- the largest area of any state in India in both absolute and relative terms. Forest degradation is also the greatest in India and in the past quarter century nearly 2.2 million hectares have been denuded or converted to other uses. The state has a population of approximately 50 million people, up from 40 million in 1971.

2.3 The state is oriented to the land. Eighty-four percent of the population live outside urban areas. Sixty-five percent cultivate their own land and 30% are landless agricultural laborers. Seventy-two percent depend on agriculture and forestry for most of their income. There are as many cattle in Madhya Pradesh as there are people. The people live in 70-75,000 villages, two-thirds of which have less than 500 persons. Villages are defined units of land as much as communities. They have traditional "nistar" rights which allow their residents to draw upon nearby forest land for their subsistance fuel and timber requirements. The work of gathering fuel for household use or for sale is largely confined to women for whom "headloading" is a major social and economic activity.

2.4 Madhya Pradesh is poor and development is lagging behind the nation as a whole. Its growth rate of foodgrain production, infrastructure development index, area under irrigation, and Physical Quality of Life Index are all the lowest in the nation. Overall agricultural yields stand at 633 kg/ha compared to the India average of 895 kg/ha, while rice production -- despite having the Chhattisgarh "rice bowl" -- stands at 744 kg/ha compared to 1167 kg/ha for the nation. Madhya Pradesh receives the lowest level of per capita public assistance for industrial development among major states.

2.5 As elsewhere in India women face particular hardships. This is reflected in the fact that contrary to most places in the world, their life expectency is lower than for men at 51 years compared to 53. In Madhya Pradesh there are only 930 females for every 1000 males and the ratio has been actually declining during the past half century, reflecting high female mortality and low levels of nutrition. Child mortality is the third highest in India. Only 11% of all women, and 6% of those in rural areas are literate compared to a statewide literacy rate of 22%, itself lower than the all-India average.

2.6 The state has a rich cultural and historical heritage marked by great diversity. The heartland of India, its population reflects the waves of migrants and invaders that have swept into the area over the past several thousand years. Parts of the state were under the rule of dozens of independent Princes while other areas came under direct British rule during the past two centuries. Other areas have remained almost untouched, their people living much as they did

a millenium ago.

The state is predominantly Hindu but contains large numbers of Muslims as well as significant numbers of Christians. There were 8.4 million tribal people in the largest number state in 1971, of any state and among the top states in relative terms as well.[1/]

2.7 Social relationships are dominated by the caste system, although the democratic tradition which has grown since Independence is based upon consensus-reckoning egalitarian structures with deep roots. Under the caste system social groups are governed by a well defined code of conduct which dictates both interaction between castes and the location of their dwellings and sphere of activities. Harijans, the untouchables, are usually found in a separate area on one end of the village while tribal people will be gathered on another. Those in the middle and higher castes will be found around the village center. Harijans are generally not allowed to use the same water source as others.

2.8 Democratic and bureaucratic structures characterize politics, development and administration. Madhya Pradesh is divided into Districts, each headed by a State Government appointee known as the Collector. Districts are further subdivided into a total of about 460 development Blocks. At the Block level there is an elected, statutory body, the Janpad Panchayat, which oversees development activities through an executive Block development staff which includes extension personnel, normally in the agriculture, veterinary, cooperatives, education, and social welfare fields. The

---

1/ Tribal development is an important concern of the proposed project but is also dealt with directly under the Forest Departments Tribal Sub-Plan which receives special funding.

typical Block is further subdivided into an average of over 30 statutory Gram (village) Panchayats, each of which serves about 5 small settlements. There are about 16000 such Panchayats for Madhya Pradesh's 70-75,000 villages. Village Panchayats are popularly elected and have between 10 and 25 members, with two seats being reserved for women and least one seat set aside for tribals or harijans with additional members according to their relative numbers. Panchayats, while formally introduced after Independence, are derived from the 5 man council which have administered many villages, advised the headman, and resolved local conflicts for centuries. While autocracy and a hierarchical social structure have characterized much of Indian society for two millenia, Panchayats are an innovation introduced during the past generation which now aim at developing both grass - roots democracy and local participation in rural development.

2.9 In sum, the State of Madhya Pradesh is enormous in terms of size, population and problems. It is poor and oriented almost exclusively to the land, including the forests. Its people reflect great cultural, historical, and religious diversity and live in large numbers of small settlements. Social and political relationships are characterized by both hierarchical and democratic traditions. Women face particular disadvantages and, together with the large tribal population, have particularly close associations with the forests. In this context it would seem appropriate for a forest development program that hopes to take such factors into account to have several characteristics:

(i) It should be framed on a large scale to correspond to the magnitude of the problems involved. (ii) It should be flexible, having the capacity to adapt strategies to unique and varied circumstances. (iii) It should be particularly applicable to small villages. (iv) It should strive for maximum equity, the involvement of women and disadvantaged groups. (v) It should reinforce post-Independence efforts to bring democracy and participation into development efforts but expect also to utilize traditional leadership and structures. In the following section the project proposals are summarized and subsequently analyzed within the context of these social, cultural, historical, and economic issues.

3. Project Proposals

3.1 The goals of the Social Forestry Project and the commitment of the staff on the ground are exemplary. The project is also built around concern for local participation and equity among village groups. The means of ensuring these, however, are not clearly specified in project documents.

3.2 The project are clear of Social goals. First and foremost, the interest is to provide local people with their nistar requirements (2.3), including fuel, fodder, food, and timber, from both their own lands, and new plantations located in close proximity to their villages. Another goal is the improvement of "the economic status of rural poor by generating appropriate employment opportunities, including self employment, particularly for tribals and other weaker sections of the society ....." Ensuring "the adequate and effective participation of the community in developing and husbanding of the forest and fodder resources for the overall good of the nation" is also a goal. This latter theme is repeated often in the proposal and there is little doubt of the Department's intentions.

Three main elements of strategy are proposed to achieve these social and economic goals: surveys and research, nursery development by schools and private persons, farm forestry, village plantations (Panchvans), and an extension service. The extension service will require development of a new cadre, some 3000 strong, whose training will include socio-economic, communications and motivational subjects in addition to a technical forestry subjects. This is to be taught at

220

both existing foresty schools and a new training institute to be established under the project. The proposals further suggest that a number of committees "to ensure public participation in the program" will be established at the State, District, and Panchayat levels. No further procedures, approaches, or tactics are specified. Job descriptions for project headquarters and District level staff include "coordination...surveying and mapping site potential...assessing motivation and preparedness of villagers to participate...select areas for greatest success...popularize tree planting... support communications and extension...evaluate returns to communities...and work out social and economic problems in the area". Village level forest workers are charged with "raising plantations...providing technical assistance to villagers, and obtaining people's cooperation in the maintenance of the plantations". In sum, the project proposes to develop nurseries, farm forestry, and plantations in villages with the active participation of the local people by developing a new extension service. The extension service will be backed by a socio-economic research program and various committees, to motive villagers, secure their cooperation, and "work out social and economic problems".

To motivate people and work out social and economic problems is a monumental task. Where an extension service operates with clear means, specific tactics, proven methods, and carefully documented experience in dealing with social and cultural diversity within its own environment,it can succeed. Where it relies simply on "motivation" or "persuasion", its chances of failure are great. Some villagers, communites,and key officials are already convinced of the need for social

forestry and can be counted on to participate willingly in the early stages of this project. They have been waiting in the wings for the opportunity this project presents them. Many more remain unconvinced, unwilling, and suspicious. They will not be persuaded by rhetoric. They require proof of success and persuasion by their fellow villagers and colleagues more than by extension agents.

It is essential that specific procedures for developing participation within the complex social, cultural, historical and economic panorama of Madhya Pradesh be specified to the maximum degree possible. These, if they are to be successful, must match the already proven procedures mastered by the Forest Department for the technical establishment of nurseries and plantations. Technical research programs are on the ground to develop and select species and methods for dealing with diversity in soil, climatic, and biological conditions. Similarly, socio-economic research programs must be developed to push the horizons of knowledge forward as the Social Forestry Program develops. Methods proven within one socio-economic context cannot be expected to bear fruit in a different context any more than mangoes will bear fruit in a desert.

Information on appropriate methods of developing local participation in a particular setting are no use if a program prematurely initiated in that area has already gone on the rocks. It is extremely likely -- given both hectarage targets and physical development capacity already proven on the ground -- that implementation will proceed apace using only ad hoc approaches to participation, while the time consuming task of establishing a solid program in socio-economic research

and training will lag behind. The result can well lead to great initial enthusiasm and initial success built on those already waiting anxiously for social forestry programs, followed by mounting resistance, a drop in participation, dissillusionment and drop in staff morale. Retooling and starting again, armed with new approaches backed by solid research, will be slow and discouraging. In fields like agriculture, which operate on short range time horizons, this can result in a loss of a crop in one season. But with the next rains a new crop and new approaches can be instituted. In forestry, which looks far ahead to a crop that takes a decade or more to reach maturity, such setbacks can wipe out years of effort. One year of neglect--or one herd of goats in a single day--can destroy a village Panchavan that has taken village land, resources, and cooperative effort for years. And it will take more than persuasion and motivation to get a new Panchavan started in that village ever again.

It would be unfair to the Forest Department to conclude that no thought has been given to these issues. Indeed, a number of ad hoc approaches to developing participation as well as a pilot project research program are underway. From this initial experience it seems clear that village Panchayats, and perhaps Block Development institutions, may play important roles. And in two districts--one in eastern and one in western Madhya Pradesh--extensive survey work is underway. The following sections will review these institutions,

223

programs, and approaches to participation and socio-economic research. From these and additional suggestions presented, it is argued that specific techniques and models for developing local participation, (built largely around the Panchayat system,) be piloted under different conditions in different parts of the State (prior to full-scale project implementation) and that these be subjected to careful socio-economic scrutiny in an effort to seek the most successful approaches applicable under different conditions.

4. Equity for Project Viability

4.1 Equity in social forestry is more than an issue of social justice. Project viability and long term success will depend upon it. There are several levels at which the issue of equity may be addressed: within the world, nation, state, district, village, and household, and between rural and urban areas. On most but not all of these levels, this project provides for an equitable distribution of project benefits. First, India is one of the world's most disadvantaged nations and the transfer of resources represented by this project helps address this imbalance. Second, within the nation Madhya Pradesh has been demonstrated to be on the low end of almost all conventional scales of wealth, income, access to resources and assistance, social services, education, and health. (24,25) Third, the districts selected for initial attention within the state are among the poorest and suffer the greatest deficit in forest resources. Fourth, in a nation and state where urban incomes are consistantly higher than those in rural areas, the project is unequivocably oriented toward the villages.

Fifth, within the household those who collect cowdung, fetch wood from long distances, and cook the meals, are the women who are in a particularly disadvantaged position in terms of health, education, welfare, and social status (2.5). This project has the potential of shifting significant resources to disadvantaged women in rural areas in the most deficit portions of one of the poorest states in India.

4.2 The remaining and most vexing level at which equity is vitally important is within the village. Will those individuals or

socio-economic groups within the village - on whose support a viable social forestry program depend very heavily - receive adequate benefits to both offset any costs they may incur through loss of access to land for grazing or other purposes ? Or will some groups monopolize the benefits at the exclusion of others ?

4.3 If village elites dominate the village Panchayat structure, or if fuel and fodder distributions implemented at the village level favor the better-off, neither social justice nor project viability will be served. Those who see themselves as the loser in the game will have no difficulty in undermining the development, maintenance, or protection of a village forest. The denudation of vast tracts of standing forest since Independence stands as mute testimony to the power of those who see it in their benefit to invade the forest. Thus, equity within the village is not only a social issue but one that reaches to the core of the social forestry program and its chances for long-term growth and development.

The structure of village Panchayats, therefore, as well as the agreements they make with Government and those they make within the community for the distribution of project costs and benefits, are at the crux of answering these questions of equity and viability. It is therefore appropriate to analyze the broader issue of participation and the specific potential of the Panchayat system for satisfactorily handling these issues. The following sections seek to do this.

5. Panchayats, Participation, Equity and Growth: Institution Building through Social Forestry

a. Why Participation ?

5.1 If villagers see the new Panchyans in any way incurring costs that outweigh the benefits that will accrue to them, then fences will disappear, trenches will be bridged, saplings will be destroyed by man or beast, and encroachment upon shrinking forest reserves will continue unabated. More precisely, the reasons why local participation is deemed essential are that it can promote development, protection and management if village forests, and assist in the equitable distribution of project costs and benefits, aids in local conflict resolution, and provides linkages to local and outside people and institutions. These are elaborated as follows:

1. Development: Participation by men and women and their village institutions can relieve the Forest Department of routine planning and organizational tasks. If adequately handled by village Panchayats, the Department would be left to concentrate on those technical areas where it has the comparative advantage.

2. Protection: With the support of local people, including for example, Panchayat provision of a local forest "watchman" and the general support of men and women to keep cattle and goats under control, social forestry programs run minimal risks of destruction.

3. Management: Village institutions can supervise routine management of woodlots and see to their general maintenance and upkeep, again allowing the Department to focus attention on more technical management matters.

4. Equitable Distribution; Costs and Benefits: Village institutions and officials can take responsibility for seeing that no particular families or groups are either unduly burdened by loss of access to land used for social forestry or take more than their fair share of the plantation's output in fuel and/or fodder.

5. Conflict Resolution: Local issues, including arbitration of claims are often best dealt with at the local level. Those adversely affected by plantation development, or whose benefits do not exceed their costs, such as the loss of free grazing,need a hearing at the local level where the issues are better understood and more easily resolved than if the Department becomes involved.

6. Developing Linkages: Village, Block and District institutions not only can facilitate contact and understanding between villagers and the program, but can liase with other institutions, organizations, and departments. This can occur at the Block, District and State levels.

b. How Can Participation be developed ?

5.2 Project proposals are vague on specific strategies for developing participation, although a number of ad hoc efforts are on the ground in Madhya Pradesh. Among these, the involvement of local Gram (village) Panchayats appears likely to play an important role in the future although the amount of authority to be given Panchayats by the Department is not known. Furthermore, some pilot efforts have been made to involve school, colleges, civic and voluntary organizations. Before turning to the analysis of the most important of these - the

Panchayat - a brief review of other strategies already attempted will be useful in setting the stage for large scale program expansion. These different approaches provide for varying degrees of local participation in project planning and project management, and through public education and motivation. Contacts with local villagers and institutions have been made directly by the Department, through local District, Block, or Panchayat officers, and through the public media. A short description of several of these approaches to developing local participation follows.

1. Bal-Prasanga: Under this program for school children, piloted under the leadership of the Collector in Ratlam District, it is proposed that every child in the district plant and look after a fruit tree, usually planted within the village Panchavan. Nameplates are being prepared to be placed near each sapling and for transfer to the tree when fully grown. These trees will belong to the child who planted them and legal certificates, patta, have been given to those children who have planted trees. In order to ensure good care in the long-term awards have been proposed to be granted annually or bi-annually and carry with them credits within the school curriculum.

2. Memory Lanes: The Ecological Society in the city of Indore, established in 1978 has planted a large number of shade bearing ornamental trees among city streets in the memory of deceased persons. Families of the deceased subscribe to the scheme for a fixed fee and are provided with a sapling, metal tree-protector, and name plaque. Other towns in Madhya Pradesh are taking up similar programs and proposals have been made for extending this program to villages.

229

3. Leprosy Center Plantation: Under the sponsorship of the Sehore Rotary Club and with the support of the Department, a plantation has been established on the grounds of a local Leprosarium. The one hectare plot has been planted with mango, to be supplemented with Morus alba - a plant suitable for silk culture. The fruits and silk production will provide both rehabilitation training and income for patients. Other interested civic organizations are expected to be coming forward during the project period.

4. College/Institutional Plantations: A number of colleges, universities, training institutes, and municipal authorities in towns across the state have taken up planting trees to provide shade, fruit, fuelwood, and a pleasant environment. Normally, seedlings and technical advice are provided by the department while site development and protection is provided by the institutions concerned. The project proposals suggest expansion of this scheme.

c. Equity and Participation:

Why not let the Forest Department do it ?

5.3 Much has been made in some literature about the domination of Panchayats by local elites and their perpetuation of a rigid and hierarchical caste-based social system. The Forest Department has indicated that Gram Panchayats may be their main mechanism for developing local participation. If Panchayats are seriously flawed, should not other alternatives be examined? The most reasonable alternative is for the social forestry program, through its proposed

extension service, to deal directly with the villagers themselves, bypassing the Panchayat for all but formal purposes. This approach would give the Department maximum control of program development. It could also ensure that program costs and benefits are equitably distributed according to need. Benefits could be provided to the poorest, most disadvantaged groups, such as tribals, scheduled castes, and women. Such an option has been considered by some, both inside the Department and outside, and must be analyzed in terms of its potential for actualizing control, and ensuring equity, as well as for its overall administrative feasibility. On each of these criteria success is judged unlikely.

First, program control no longer depends upon the quasi-policeman role played by the traditional Forest Guard. Villagers' cooperation must be voluntary and based on trust and mutual respect or no Panchavan will survive.. Even without having to overcome the Department's "Police" image, an entirely new cadre will have its hands full to establish its own credibility. By having to work directly with all segments of the society,Department staff will be stretched thin as they struggle to cope with social and cultural issues they are least well equipped to handle. Thus even direct control will depend upon local institutions capable of handling complex community dynamics.

5.4 Second, in order to ensure equity, Department staff will have to be immune to the same pressures which are behind the hierarchical structures they would wish to bypass. Should they not have the support of local elites,the very projects which they hope will benefit the dis-

advantaged may be jeopardized. Thus, those the project might wish to bypass will be crucial to its success.

5.6 Finally, in terms of administrative capacity, the program hopes eventually to bring fuel and fodder closer to all villages in the state while protecting reserved forests in the vicinity of those villages. Such a massive extension effort will therefore be trying to reach some 70-75,000 villages under some 16,000 Panchayats or Gram Sabhas . Even should the Department obtain the approximately 3000 staff it is requesting under this project, a target it hopes to achieve by year five, it is difficult to imagine how that staff could meet the demands that would be on its shoulders. Even a staff twice that envisioned, and twice as experienced and well trained as that proposed, would face a mammoth task: one extension worker would have to cover almost three Panchayats and over a dozen villages and see that all issues of management, protection, and distribution were properly handled. Under such circumstances, even if the basics of protection or management could be assured, issues of equity could not be given adequate attention. Thus, any existing patterns of oligarchy would be carried over unchecked to the Social Forestry arena. It is likely that concerns like these have led the Department to consider working through Panchayats.

d. Equity and Participation:

Oligarchy or Democracy ?

5.7 In depending almost exclusively upon local Panchayats for participation, is Social Forestry being opened up to domination by elites at the expense of the rural poor ? It was with such underlying questions

that two Cabinet commissions have been appointed since Independence to study and make recommendations on the Panchayat system, although their concerns went far beyond forest issues to the whole arena of rural development in a context of democracy. Noted the Ashok Mehta Committee on Panchayati Raj Institutions in 1978:

> .... there has been disappointment with the working of (Panchayats) which is traced, in stronger or milder terms, to a number of inadequacies and failures.... (including domination) by economically or socially privileged sections of society, ... the emergence of oligarchic forces yielding no benefits to weaker sections....political factionalism....(c)orruption, inefficiency,..-- all these have seriously limited the utility of Panchayati Raj for the average villager. (Mehta 1978:7)

5.8 Armed with arguments such as these, the commissions studied Panchayats in greater depth than this team could possibly have done if it had no other task. And when all the evidence was in, they both came down unequivocally in strong support of the institution. Panchayats, they argued, could neither be held responsible for, nor be expected to change in a few short years an authoritarian, hierarchical social system that is rooted in centuries of tradition. Both democracy and rural development would be served, it was argued, by devolving real decision-making authority to Panchayats and providing them with the resources necessary to bring about village level development. Some excerpts from the 1978 report:

> Panchayati Raj should not be singled out for criticisms, failures, and pitfalls which are not particular to it alone....

> The democratic process cannot just stop with the State level.... The poor suffer from many handicaps, but their asset is their large number. Democratic institutions.... provide the forum for the assertion of this strength....

237

> The involvement of rural women in the development process has always been regarded as an integral part of the total development of the village community.... The Panchayati Raj has added another dimension to (this) role....
>
> Part of the disappointment arises from the syndrome that (Panchayats) have not been assigned significant functions and tried continuously and with zest....developmental programs (are) not channeled through them....

5.9 Thus the bottom line of this analysis in the context of Social Forestry is that, while imperfect, Panchayats are the correct mechanisms through which development efforts should be channeled, and that by so doing, they can be strengthened and helped to become better able to institutionalize democratic decision making and management in rural areas. Social Forestry, not only can benefit from working through Panchayats, but Panchayats can also benefit from the experience gained in managing the complex social and economic issues of equity which village Panchavans put before them. The issue that remains, therefore, is whether Panchayats are administratively up to the enormous challange that this Social Forestry program provides them.

e. Can Panchayats do the job ?

5.10 By comparison with some other states, village Panchayats in Madhya Pradesh are not particularly strong. This can be an argument for either strengthening them by using them, or bypassing them for better means. At issue here, however, is not their relative strength compared to other States, but their overall ability to take on the important role set aside for them in Social Forestry. What is the situation and experience of Panchayats in Madhya Pradesh ?

5.11 To begin with village Panchayats cover over 97% of the rural population in every corner of the State, including the Tribal areas where the Mehta commission noted the existence of some additional traditional organizations at the tehsil/block level of particular effectiveness. (Mehta 1978: 230). All Panchayat members are democratically elected by secret ballot, and at least two places are reserved for women as well as seats for at least one or more representative of scheduled tribes or castes, according to their proportion in the village's population. The 16000 Panchayats each cover a cluster that averages about 5 villages (Mehta 1978: 203-301).

5.12 Each Panchayat has a Patwari who maintains a register of vital statistics and land holdings and collects land revenues on behalf of the State. Most Panchayats also have a Sachib (secretary), Chowkidar (watchman), and occasionally additional paid staff to see after the collection and disbursement of local revenues, record keeping for business and expenses, and minor issues of law and order. Most Panchayats have a bank or Postal Savings account as well as a credit account held at the Block level. Panchayats, as statutory bodies, have the power to sue and be sued, enter into contracts, and raise local taxes and fees from a variety of sources. Their local revenues averaged Rs.2500 in 1972/73 and were estimated by the team to be running around Rs.5000 during 1980. Supplemental grants and revenues from other sources for locally initiated or State sponsored development projects brought their total budgets up to about Rs.19000 in 1968 and perhaps

Rs.25000 during drought years of 1979/80 when special funds were channeled through them for labor-intensive public works including roadside and village plantations. While misuse of funds and innefficiencies most certainly exist, the Mehta commission found them neither excessive nor unexpected in relation to most other departments and institutions. While the Forest Department itself was refreshingly frank about abuses within their own ranks, no cases of Panchayat misappropriation or corruption were mentioned to the study team. Projects satisfactorily handled by Panchayats and specifically seen by the team included not only several dozen well-constructed Panchavans, but schools, minor roads, tank repairs, community halls, and guest houses. Several fish farming projects completely managed by local Panchayats and yielding them annual revenues between Rs.3000 and 10000 were witnessed and reported to be going on well. Neither Forest Department staff nor senior revenue officials at the District, Zonal, and State level saw problems in giving Panchayats management, protection, and fiscal responsibility for Social Forestry projects, provided the necessary funds were channeled through them during the early years of project development. Given the enormous constraints under which all rural development activities function in India, it is unlikely the project could realistically find any better means of achieving its objectives of developing a major program to provide fuel and fodder to rural Madhya Pradesh with the active participation of the local people.

f. Panchayats and Social Forestry:

Experience to Date

5.13 From the foregoing analysis it appears that, although far from

236

perfect, Panchayats can provide a framework for local participation in rural development. The next question is, "how will they fare specifically with relation to social forestry" and in particular "how will they deal with the issue of equity"? In answer, it is best to look at how Panchayats are being involved to date in the pilot projects underway. This participation of Panchayats has taken several forms which may provide clues as to how they may be involved in the future. These have included project planning, site selection, Panchavan development, management and protection, and distribution of benefits. In all but the last of these, participation has been generally minimal - with the notable exception of a few villages which have been given major responsibility for all aspects of their projects. In the case of distribution of benefits, the majority of Panchayats have been actively involved. Analysis will focus on both of these areas, as they deal with the two basic issues of capacity and equity in concrete terms.

A. Panchayat Management of Panchavan Development

A Question of Capacity

5.14 Under the pressure of a recent drought emergency that made it imperative to provide cash incomes to villagers in areas of crop failure, the Government of India provided special "scarcity works" funds for labor intensive budget under this program, took the opportunity to accelerate Panchavan development across the state. To increase public participation and take an administrative burden off the Department, arrangements were made in some districts with the local Collector (senior government officer and representative of Revenue Department) for funding to be channelled through Panchayat organizations rather than

through the Forest Department as is normally the case. Under these arrangements, Panchayats had almost complete responsibility for hiring and managing local labor for Panchavan construction, maintenance, and protection. Under nominal Department supervision, village labor teams dug peripheral cattleproof trenches, dug pits, planted seedlings, watered young plants, and provided a local chowkidar to keep out stray livestock and mischief-makers. Beyond this supervision, however, the hiring, payment, and general management of local work forces was left to the local Panchayat, and usually to the Sarpanch (Headman). The Forest Department in turn has paid the expenses incurred on a receipt-reimbursable basis after inspecting to ensure that work was completed, or at various stages in development. Abuses and mismanagement appear to have been minimal and expansion of this approach is being considered. Such an approach takes an administrative burden off the department potentially accelerating Panchavan development. Increasing levels of local participation are also assured. Providing an opportunity for strengthening the Panchayat system as envisioned by the Mehta Commission. It is strongly recommended that this approach be pursued further and its results carefully monitored. Specific provisions and funds for this purpose should be provided in the project proposals and agreements.

B. Panchayats and Distribution of Benefits:

A Question of Equity

5.15 The equitable distribution of benefits of all Social Forestry projects, as well as any costs they might impose on any sections of the community, will have a crucial bearing on participation and long term

success. Those who see costs hitting them unequally or see benefits that disproportionately favor others are unlikely candidates for project supporters. Costs can include inconvenience, deprivation of grazing rights, disruption of a water or grass regime, or loss of opportunity to cultivate land needed for household survival but over which rights may not be secure. Benefits beyond fuel, food, or fodder, may include employment opportunities, during project development or secondary employment based on plantation produce. Most arrangements relating to project benefits are being left to local Panchayats to sort out. These generally focus on access to grass during the plantations' early years, but are indicative of future trends for fuelwood distribution. A variety of approaches have emerged including:

1. Open Access: Some village Panchayats, particularly where there are no great shortage of fodder, allow cutting of grass on a first-come-first served basis after it has reached maturity. This provides for administrative simplicity and the possibility that those with the greatest need might get more than others. It also leaves open potential for those with the greatest power in the village to take the lion's share. Even under regimes where grass is in good supply, certain groups may face an absolute deprivation without having the necessary influence to assure their success.

2. Permit from Sarpanch: Other Panchayats leave distribution to the discretion of their Sarpanch (Headman), a perfectly satisfactory arrangement where leadership is enlightened and the procedure finds the approval of all parts of the community. As above, there is potential for distribution according to need. In other cases, particularly where

oligarchy and fear characterize Panchayat functioning, such arrangements are open to inequity.

3. Panchayat Cuts and Gives to Villagers: A number of Panchayats have hired local laborers to cut and stockpile grass, using Panchayat revenue from other sources. Produce is then distributed according to criteria agreed in Panchayat or the discretion of the Sarpanch. Given the need for Panchayat participation since its funds are involved, risks of elitist manipulation are reduced but not eliminated.

4. Panchayat Cuts and Sells to Villagers: Under procedures similar to those just described, grass is stockpiled and either sold for a nominal amount to cover cutting charges, or auctioned off on a bid basis to raise funds for other Panchayat activities. In some cases a mixture of these two approaches is also used where villager's needs are met at nominal cost and the balance sold in auction. As above, equitable access depends on how the Panchayat functions. Costs to the householder are higher than in the first two cases cited, where no cutting charges are involved, but may be outweighed if Panchayat involvement and market forces reduce the effects of favoritism or influence.

5. Forest Department Cuts and Gives to Villagers: Free distribution has proved valuable in winning villager's confidence in areas where grass is relatively in good supply. While local participation is less where the Department assumes direct responsibility for distribution, some Panchayats are reluctant or unready to take up such

duties. Such an approach may be useful in demonstration terms to show how grass production on waste lands can improve dramatically with protection. It can also impose an administrative burden on the Department and is open to elitist manipulation.

6. Forest Department Cuts and Sells to Villagers: Where grass is in great demand, and Panchayats unsuited or unwilling to take distribution responsibility, villagers often are quite pleased to obtain grass near home at nominal cost rather than travel far or pay substantial prices. The risks of manipulation are reduced and the Department receives some revenues to offset their costs. Local participation is minimal.

7. Plantation Divided into Plots for Each Household: Under Panchayat direction, plantations have been demarcated into strips, one for each family. This gives all villagers equal access. It also allows them to cut their own grass and use it or sell it as they might choose. It does not readily allow maximum distribution to those in greatest need, particularly if they are poor. It provides for maximum equity, however, encourages the participation of those who are most disadvantaged, and allows market forces to determine onward redistribution from those with minimal requirements to those needing more than their share of grass.

5.16 Conclusions: Each of these examples -- and there may well be others -- has different implications for equity and management and reflects differing social and political forces.* The issue here is not to assess and make recommendations on the system most desirable but to

---

* An economic analysis of distribution options is presented in.....

point out several crucial issues:

- First, that nowhere does the project proposal deal with the underlying issues of distribution, and particularly how disadvantaged groups might be affected.
- Second, very little is really known about such arrangements and less still about the equitable distribution of costs associated with social forestry.
- Third, experimental diversity in the early stages of project development is desirable.
- Fourth, villagers should have a full opportunity to carefully discuss all such alternatives before selecting the one suitable to their unique situation.
- And finally, careful monitoring of distribution systems is essential to success in social forestry if local support is to be assured in the long term.

5.17 Any distribution agreement to operate within a village, should be submitted for final approval to a village meeting called by the Panchayat. Projects would only begin after the approved agreements had been signed by all Panchayat members in order to ensure consultation with females and weaker sections who have the most at stake. While equity is desirable of course, in terms of social justice, here the very future of social forestry is at stake. How all segments of the community see the benefits will determine their support of the program.

g. The Agreement between Government & Panchayats: A Further Issue of Equity

5.18 Ad hoc agreements in the field generally indicate that the Forest Department will assume all direct costs for the first few years of each village Panchvan. Responsibility for assuming such costs will later shift to the village Panchayat, after adequate benefits accrue - in terms of fodder and/or fuel to justify the modest recurring costs of maintenance and protection. It is generally understood that all the products of the plantation, and any profits earned, belong entirely to the villages.

5.19 The draft agreement in the project proposals, however, paints a very different picture. It is ponderous and complex legal document that will be intimidating to and misunderstood by local villagers and their Panchayats. Its provisions go counter to both social justice and understandings already in effect. At the core are provisions that 50% of all proceeds beyond village needs must be returned to the Forest Department and that in any and all matters of dispute the Forest Department has the final word. Villagers might reasonably be expected to pay some maintenance and protection costs, and even, perhaps, some development costs if profits allow. But to share profits on a 50-50 basis will jeopardize the chances for local participation and decrease opportunities for ensuring equitable distribution of benefits. Project cost/benefit ratios are sufficiently favorable not to require such cost recovery. Furthermore, giving final authority on any disputes to one party in a joint agreement is contrary to the

basic concept of a legal agreement. It is too soon for villagers to appreciate the potential productivity of a village Panchvan. Anxieties and mistrust are likely to be introduced and participation and local support reduced when villagers feel that the project is hardly their own, but simply an extension of state Forest Lands--with their history of controls--into their own village area. Clearly the Forest Department is correct in assuming that legal security and clear responsibilities must be given the villages and that villages can be expected to share some of the costs of Social Forestry projects once their viability and profitability is assured. While the proposed agreement is still only a draft, it is urged that every effort be made to make the final agreement as simple and straightforward as possible, even to the discomfort of some legal experts. It must be an agreement which will secure rights and responsibilities for both parties in a context of mutual respect and trust and with an absolute minimum economic burden on the villages.

5.20 Wide discussion about the form of agreement between Panchayats and Government, perhaps in the form of a research project, must be initiated with villagers, Panchayat, Block, and District officials across Madhya Pradesh. This could be carried out under the supervision of a committee representing Panchayat, Revenue, Forest, and Justice Departments. The resulting document would then be submitted to the Cabinet for approval.

6. Block Development Institutions:

Coordination and Capacity

6.1 While primary linkages between the Social Forestry program and rural people will occur at the Panchayat level, the proposal suggests Block level linkages as well. An office manned by a Forest Extension Officer, as well as a nursery, are to be established at Block headquarters. While no duties beyond nursery management are suggested in the proposals, passing reference is made to a Block level coordination committee with which the extension staff will work, and which is to serve to ensure the participation of the local people.

6.2 The Block structure is the focal point of most rural development efforts in rural India. It is the lowest administrative level for the majority of Government programs and is relatively well staffed with administrators and professional extension staff, the most senior of whom is the Block Development Officer (BDO) supported by extension officers typically in agriculture, veterinary cooperatives, education & social welfare sectors. Here, too, is located the Janpad Panchayat, the highest tier in the Madhya Pradesh Panchayat system. The Block Development Officer is the ex-officio executive officer of the Janpad Panchayat and is administratively jointed to this representative body. In technical terms he and his staff are part of the cadres of their respective departments. The Block Development Officer is technically responsible to the District Collector who represents the State Government and especially the Revenue Department. Village level workers (Gram Sewak/Sewika) are responsible to the Block.

There are approximately 460 blocks in Madhya Pradesh, each serving an average of village Panchayats and almost 160 villages. Janpad Panchayats function in all but a handful of Blocks and incomes from local taxes and revenues totalled over Rs.10 million ($1.3 million) in 1972/73, or an average of about Rs.23,000 per Block. While figures are not available for the total disbursements channeled through the Blocks, estimates of local officials indicated that a typical Block normally handles between Rs.100,000 and 150,000 annually. During the drought this figure jumped five times to between Rs.500,000 and 700,000 ($90,000) in many Blocks. These funds are used largely for minor public works including buildings, roads, wells, and tanks. Staff are paid by their respective departments. In Block headquarters visited by the team there was an average of half a dozen technical staff with an equal number of supporting staff. In addition there was one village level worker for about two village Panchayats or for each 15-20 villages.

Under decentralization efforts of the past decade, extension staff once directly under respective departments have been shifted over under the Block organization. Agricultural officers queried in the field indicated that, while there were some problems in their own shift into the Block structure, these have been worked out and the end result seems to serve both their departmental and broader development interests reasonably well. Forestry staff have remained seperate and it is proposed that they remain administratively independent under this project.

Consideration has been given to putting Social Forestry staff within the Block structure, a move favored by Block and District organizations.

Some Forestry staff also believe that the long terms interests of program integration required to bring about the close involvement of the entire Block level structure in Social Forestry may be served by putting that program within the Block structure. The consensus, however, is that building up a new extension service within the Forest Department and simultaneously integrating it into the Block machinery would place an undue burden on the infant organization and delay crucial communications and project implementation. From the perspectives of participation, the diffusion of innovation, and integration, bringing Social Forestry into the Block system is probably desirable in the long run. During the early years of this project, however, it appears wise to follow the proposal for a separate structure. Once functioning smoothly, serious thought can be directed to a phased shift-over. It is recommended that such consideration be given now in project documents and plans spelled out with supporting rationale.

7. Voluntary Organizations:

7.1. Major attention in the analysis of participation thus far has been focussed upon the village Panchayat and Government institutions at the Block level. Proposals mention, however, and pilot project in the field demonstrate, that there is a role for voluntary organizations in Social Forestry. This role is valuable for several reasons:

a) Increase diffusion and acceptance: Voluntary organizations are in contact with individuals and groups which may not be reached by Departmental programs or extension efforts. They can either promote Social Forestry activities on their own or bring interested parties into contact with the program.

b) Increase program credibility: Among some sections of society the Forest Department and Government in general are inevitably viewed with some suspicion open to misunderstanding. Voluntary organizations can bridge such communication gaps with information and guidance among those with whom they have built up trust.

c) Recruit staff: Through their networks and training institutions voluntary associations can help identify people, including women, with the experience and interest appropriate to Social Forestry, Voluntary organizations, particularly those working with people--skills vital to the success of Social Forestry.

d) Contact women: A number of voluntary organizations work particularly with women. Their expertise and the trust they have developed with rural women can provide a link with Social Forestry. The special issue of women in Social Forestry is examined in detail in the following section (8.1 ff) but, in brief, it can be stated that women not only can be prime beneficiaries of Social Forestry programs but also crucial to program viability and success.

7.2. In the preceding analysis (5.2 ff), examples were given of preliminary efforts to involve voluntary organizations, including Rotary Club support of a plantation at a leprosy sanatarium and a local civic group's promotion of planting trees on a "memory lane." Some other possibilities which might yield fruit include the following:

1) National Service Scheme (NSS): This national semi-voluntary program for student projects in deprived areas has already taken up a few small social forestry projects with some success. There is interest among some NSS officials to expand these. The exposure of students to the problems of forestry will both create greater awareness and provide potential recruits to the service who have experience and training in social service.

2) Sarvodaya Organizations: A number of service organizations are working with the rural poor. Among these the Kasturba Trust/Kasturba Gram, inspired by Gandhian philosophy has extensive activities and training programs in the state. These can be both a medium for forestry activities and source of trained personnel.

3) Civic Clubs: Two such organizations have already been mentioned but there are many more which could be brought into the support of the program, such as the Lions and Round table Clubs, and local enviornmental organizations.

4) Religious Organizations: Hindu, Muslim, and Christian outreach missions have great credibility among their followers and can serve as a vital link between the department and local people. Some of these have particularly strong links with tribal people where program acceptance may require considerable sensitivity and trust.

7.3 As the styles and modes of operation of these institutions vary widely according to their impetus and purposes, no set procedures can be proposed for involving them in Social Forestry. It might be appropriate, however, if a provision were made within the Social Forestry directorate for a public affairs liason officer whose job it would be to provide linkages with such voluntary organizations, together with universities, the media, and general public. Funds to support voluntary action could be channelled through his or her office. The committees proposed at the village, Block, District, and State levels could provide for representation from non-governmental organizations with the public affairs liaison officer serving as the link.

Social Soundness

8. Women in Social Forestry

8.1 The 'invisible' contribution of women in forest economics is enormous. Women are the chief consumers of forest products, they control the consumption of fuel, fodder and food. It is women who use firewood for fuel, it is women who use forest produce for food, it is women who take cattle for grazing. Women also contribute substantially towards the household budget by collecting honey,extracting oil from forest products, making handicraft articles and marketing them. Women are also the major headloaders of wood. A large part of the labor force in forestry activites is provided by women. They work at plantation sites, digging trenches, digging plant holes, planting and watering trees. Social forestry means forestry for the people and by the people. Women are fifty percent of the people in Madhya Pradesh. Full participation of women in social forestry programs is absolutely essential for the success of the proposed project.

a. Extension

8.2 It is recognized in the project proposal that of the basic elements of social forestry - development of forest and people's cooperation - the latter is more complex and relatively more difficult to achieve. It is also the latter which is more important in ensuring the success of the proposals. Cooperation is required, in protecting

252

plantations from illegal grazing and unauthorized cutting of trees, in trusting the forest officials, in understanding the program, and in equitable distribution of the benefits. To achieve this, an effective medium of communications is to be created. It is proposed to have a large extension service. Who is going to man this extension service? Who has more at stake in forest development?. Through whom will the benefits of forestry flow? It is women who have so much more at stake, because it is they who need the firewood. As the saying goes 'one can starve with a full granary if there is no fuel to cook' and women know this saying well. It is women who walk for miles and miles to bring wood to cook, and it is women who look after the welfare of the family and take care of the cattle. If women do not cooperate, the project will not succeed. Can any planner leave women out of the planning for development? It goes without saying that women's participation is crucial to the fulfilment of social forestry objectives.

8.3 It has long been recognized in the developing countries that women make excellent social workers, excellent motivators because they communicate well with children, with old people. In traditional Indian society where women do not mix with men and always keep a distance from men for the sake of modesty, women always communicate better with women. Thus, if women's cooperation is to be achieved, women extension workers are essential.

At the plantation sites a very large number of women are employed. It is common and very colorful sight to see women draped in their bright saris, some hiding their faces with their Pallavs (the sair end) (probably the newly married ones), others sitting with their back hiding a bundle (probably breast feeding the new born baby), all quietly and rather shyly, digging, planting, watering, and yet bursting into quick chattering and subdued laughter the moment the male supervisor moves away from hearing distance. The sound of his approaching steps creates a hush again, Pallavs are drawn longer, conversations become softer, and giggles stop. The Ranger or the Forester who gives them instructions and supervises their work is often frustrated, "these women they do not listen properly, 'why don't they ask when they do not understand a particular instruction', are often repeated complaints. But if the daughter-in-law carried on a conversation with the Ranger or the Forester in order to fully grasp the instruction, wouldn't she be scolded by the mother-in-law for being 'shameless', for 'chirruping away with the young stranger'. If the Forester or Ranger were a woman, the story would be different. If it were a lady Forester or lady Ranger, it would be so much easier for these women workers to get their instructions, to know exactly how much to water which plant, how deep to dig for which variety. The work place would be so much livelier too. One need not be uncomfortable for long hours for want of going to the toilet. A lady Ranger would understand so much better why on certain days young Kanta becomes slower in her work. A lady Forester can tell them how important it is that

they protect plants, and teach their neighbors and children, too, to protect trees, to plant wherever possible, because then, before very long, they may not have to go such long distances to collect firewood. If women workers are to be fully effective, women supervisors are essential.

b. Recruitment

But can these women and girls be found for extension work, for recruits to the posts of Rangers or Foresters? The Principal, at Shivpuri Forestry Training School, sees the possibility of admitting girls to his courses. He is ready to convert one wing of the hostel for women students. Educated tribal girls - from the villages close to forest area who often remain unemployed for they cannot compete with the city bred sophisticated girls - will lap up the opportunity to be employed. To be employed nearer home, on a job where they would help restore forest for their tribesmen, their village men, would be a great opportunity - an opportunity to help their mothers, their neighbors, who have been walking miles for firewood, for berries, for food in times of scarcity.

The Principal of Kasturba College for Home Science, which has a majority of rural girls on its rolls, complained that her students do not get jobs after finishing their course. She will be happy to recommend

them for the job of Van Sewikas. 'You see these tribal girls make good development officers, they still have a feeling for the community, and they are so accustomed to the forest, they are so much more in tune with nature, with trees'. The Principal of Hawa Bagh College, Jabalpur, where a substantial number of students come from tribal areas, has the same complaint, 'no jobs for my students'; 'you see these rural and tribal girls do not like going to distant places for jobs, it is better if they are absorbed locally'. Mrs. Guha, the Director, Rural Health Program, advises 'take local girls, they understand local problems better, they communicate better with the villagers.'

One obvious problem in hiring women is the need for special accommodations. If they must be hired for the program to be successful, then it will be worthwhile to set aside funds for officers' accomodations for quarters for female staff. This will solve one practical problem as to why women may hesitate joining the service: the unavailability of accomodation in rural areas.

c. Nurseries

Experience has shown that the pace of development has been very slow when all sections of population have not been included in development programs. Experience also has shown that women have been displaced when new opportunities arise that replace traditional functions, and when specialized training is given for special jobs. The loss of women's

support, skills and resources is the result. Forestry programs in Madhya Pradesh cannot afford to lose the support that women have to offer or render them as losers when their contribution is so vital to the village economy and program success.

Plants are like babies that need tender care and sustained protection to nurture and grow. Women have been engaged in raising Government nurseries. The proposed project has on its agenda the establishment of private nurseries at the village and block levels. Raising nurseries requires some technical knowledge and training also. Let that training be shared by women who have always shared the labor of raising nurseries. It may be seen that private nurseries do not move only into the male hands, displacing women from work they have done well under more difficult conditions. Some encouragement for women to raise private nurseries may yield better results, more saplings, more work for women, better food for the family. Further, studies have shown that with the additional income that women bring into the family, the family's nutritional standards improve. The benefits of her employment can have a direct impact on health, welfare, and productivity.

Every village has its share of widows, abandoned women, and sick or visually handicapped women with no one to look after them. Seeds can be given to such women and they can raise tiny nurseries by the side of their huts. The Forest Department can buy the saplings from

them. They need not beg, need not be a burden on others. Each extra sapling, each extra tree is a help. The effect would be to identify the department as interested in the most urgent needs of the community, proving its sincerity.

Madhya Pradesh has some very dry areas, where water is precious, where even drinking water is scarce, how can one water trees? Women fetch and handle most of the water for cooking, washing utensils, washing clothes, and bathing children. Growing consciousness about trees among women can teach them to divert all water into plants - no water wasted.

d. Women and Panchayats

Major decisions regarding the villages are taken at the Panchayat. Every Panchayat has a minimum of two women members. These members often feel it is the men's job to take decisions, but they also understand that there are matters in which they, the women, have more insight. If women are central participants in the Social Forestry program, they will be able to make significant contributions to the program with the benefit of their perspective. Female extension workers can also motivate the women Panches to take a more active part in the village Panchayat, and thus become an integral part of village decision-making.

Both the Panchvan and Gahan Panchvan schemes will require the consent of the village. It is important that Panchayat decisions to take up these schemes are unanimous and not dictated by the powerful few. Women may be

more forthcoming in agreeing to give away land to the forest department since they suffer more when there are scarcities of fuel, fodder and food. They may appreciate the importance of forests more than men. Women being more 'around' the house, can help in keeping an eye on village plantations. They know more what is happening in other households. They can quickly detect if any family has cheated the Van chowkidar, by quietly taking cattle in or stealing fruit.

e. Mahila Mandals

There is a provision for Mahila Mandals (women's clubs) in the Block structure. But for want of funds as well as lack of will, many villages do not have these Mahila Mandals. In Madhya Pradesh they are practically non-existent. But the provision is there and they can be established with the help of the Gram Sewikas. These mandals can become a vehicle for advancing social forestry. If women feel shy to sit in the Panchayat and argue with men, their opinions can be articulated in the Mahila Mandals and conveyed to the Panchayat. The proposed project can specify a certain amount of money for supporting Mahila Mandal forestry projects. Each village with a population of one thousand and above may have one such mandal.

f . Communications

The publicity of the Forest Department shows good intentions, but as yet the schemes are rather poor. In order to invite cooperation and take the message to the village level to each section of the village

population, a great deal of face to face talking is required. It is particularly important because of the history of strained relationships between the villagers and forestry officers. To some extent the work of persuasion can be accomplished through the appeal of the mass media, through audio-visual publicity. The Hariyali-Khushiyali radio program is a noble effort in this direction. The frequency of the programs may be increased and at least once a week the program may be focused on women's concerns. To its credit, it does have a women on the program. Through her the programs can be directed towards women's participation and the value of their participation in Social Forestry.

g. Education

The Forest Department has rightly planned to involve students in social forestry programs. Plantation drives are taking place in schools and colleges. Students are also involved in roadside plantations through the N.S.S. More women go into teaching than any other job. Social Forestry programs for schools and students may be assigned to women teachers who can plan and implement them with their understanding of the educational process.

h. Children

Women discipline children. Part of the child's discipline is to protect nature, look after trees, both as an economic asset and as a measure of beautification. In one district there is a scheme to motivate

each girl and boy between the ages of ten and fourteen tc plant a tree and nurture it to maturity. Women may assist these young people to look after the trees. Women may even assist them to choose the needed variety. Women themselves may be requested to plant a tree at the birth of each child on the pattern of 'Memory Lane'. Plant the tree, name it after the child, nurture it, and leave it for the child to reap the fruit.

The proposals include the establishment of a special Social Forestry Research Institute in Madhya Pradesh. Research can help plan social forestry more adequately. This is another area where women's contribution is vital. Women have shown their mettle in the fields of education, research and training. Part of the research which will be carried on in the Institute will be of a socio-economic nature, surveys of the village social structure, demographic peculiarities, occupational and income distributions, economic and social stratifications. Women - with their advantage of having access to the household - can collect better and more detailed and reliable data than men. Wom en have an eye for domestic details, sense relationships, and pinpoint problems quickly. Women already are employed in research and their role may be strengthened.

It was found during our visits to the State that forest officers were open in their attitude towards taking women into various levels

of management which hitherto have been confined only to men." Three girls," they informed us proudly," have been admitted to the Dehra Dun Institute of Forestry." A token number of women at the top may not directly help the success of this project, but it will certainly boost morale and will create an atmosphere of partnership between men and women in forestry where it has long been missing. It will also provide more justification for including women at lower levels of management which ultimately will help in decision making by taking women's need into consideration. Women's inclusion into managerial posts will in the final analysis promote the national goal of assimilation of women as equal partners and contribute to a successful Social Forestry program.

9. Socio-Economic Research for Program Success

9.1 A strong program of applied social and economic research to complement the ongoing technical research relating to Social Forestry will be an important ingredient in the long term growth of the project and it's ability to develop new and better solutions to problems encountered as the program grows. The social, cultural, economic, and historical diversity present in Madhya Pradesh has been described, as have the complex and sometimes contradictory patterns of social control, mobility, and decision making implicit in the caste system and national commitment to grass-roots democracy. This diversity and complexity must be taken into account when planning for local participation in the same manner as must the state's varied ecological conditions in selecting species and silvicultural techniques. The future success of Social Forestry programs will depend on developing modes of participation suitable to these sodio-economic conditions. Research can help program development and growth in several ways:

a. Diagnose the broad needs and interests of people, socio-economic groups, and villages and the relationship between forestry and those needs.

b. Diagnostic: to identify both the broad needs of households, socio-economic groups, and villages and the specific needs related to forestry (e.g. species, site, and plantation size preferences).

c. Analytic: to assess different modes of village participation and management, both existing and proposed, and the relative commitment of villagers and groups to those different modes.

d. Evaluative: to determine the distribution of project costs and benefits and their impact on different sections of the community.

These are three crucial areas that will impinge upon project success. They are described in more detail in Appendix 4.

9.3 As part of the planning of this Social Forestry Project the Department, with Ford Foundation assistance, has sponsored detailed survey work in one district each in both eastern and western Madhya Pradesh. These surveys, already documented in a three volume report on all villages in one western development Block, provide extensive data for project planning. The information includes figures on:

a. Population
b. Livestock/grazing/grass fields
c. Villages/services/facilities
d. Land use/holdings
e. Agriculture/crops/implements
f. Fuel/timber/consumption/collection
g. Land Waste (available for social forestry)
h. Site suitability - technical
i. Cottage industries
j. Farmers adoption/interested in plantation/forestry

While this data will be valuable for project planning, it produces both too much and too little information. Too much in the sense that its

264

exhaustive investigations cannot be replicated extensively; and too little in that it inadequately assesses the crucial issue of participation. Only the last category of information, "farmers adoption and interest in plantations/farm forestry", addresses this issue. From informal interviews conducted with only 75 of the areas' 5757 households it is revealed that 4% showed interest in planting trees on their own land while between half and two-thirds expressed interest in a village plantation. None of the 75 families reported having ever planted any trees on their own land. From this modest attitudinal survey has come valuable information. Perhaps it would be appropriate to consider sacrificing the detail implicit in the larger study of demographic and technical data in order to work with villagers to plan their own forestry projects. A number of less ambitious case studies relating directly to villager's attitudes and readiness to plan, manage, maintain, and harvest fodder and wood from a village plantation could have immense payoffs for project planning and in motivating communities and ensuring their participation. Specific issues that might be addressed are reviewed under the above discussion on Panchayats (5.1). Examples include:

a. The proposed agreement between villages and Government: local attitudes and concerns (51.8).

b. The distribution agreement for project benefits: attitudes to different options; impact of options on different groups. (5.15)

c. Panchayat experience with previous development projects and lessons for plantation development (5.10).

d. Community and group preferences for species, site location and size.

Given this need for timely information as well as urgency of piloting and monitoring a variety of approaches to participation, it is suggested that the two be linked under a modest pilot program to begin prior to project implementation. Funds would be needed to allow each zone or district slated for year one implementation to start a series of test projects. Local students and/or faculty in the social sciences, extension, or agriculture from educational institutions located within or near the zones/districts would be engaged on a short term basis during vacations - or as part of M Sc/M Phil thesis projects - to conduct appropriate mini-studies in the villages concerned. Participant observation techniques which would enable the researcher to live in and gain in-depth insights into the community dynamics and attitudes would be particularly appropriate, although simple surveys might be conducted during the latter part of the researcher's stay in the village to test specific hypothesis. Research questions, geared to the crucial action issues of participation for program development would be worked out between local forestry officials in the zone/district and the researcher. The program would be overseen by the existing Social Forestry Project staff supplemented by short term social science consultants from local or outside institutions as appropriate. Such a socio-economic research program - if applied and action-oriented - would complement that suggested the discussion of technical forestry issues.

10. Conclusions

10.1 This analysis opened with a social, cultural, historical, and economic profile of Madhya Pradesh that noted the magnitude of the state and its programs including those particular to women, its diversity, poverty, and differing traditions of hierarchy and egalitarianism. From these characteristics were derived criteria for examining the socio-cultural feasibility of the proposed Social Forestry Project. Those criteria included scope adequate to the problems, flexibility to adapt to varied and unique circumstances, applicability to small villages, provisions for equity and the involvement of women and other disadvantaged groups and mechanisms of participation that reflect the democratic Panchayat structure and yet do not exclude role for traditional leadership. In terms of scope, ability to reach small villages, and provisions for equity at the national, state, and district levels and within households the project was given high marks. Intentions exceeded concrete mechanisms, however, for dealing with diversity and ensuring active participation, although local Panchayats were seen as the crucial institution in the context of long-term project viability. Analysis also revealed that participation and project support will depend on the full involvement of women and other disadvantaged groups that might gain less or lose more from the program than others. The need for both early and active experimentation with varying modes of participation and a systematic program of action-research were combined with a proposal for a pilot implementation and socio-economic monitoring program to begin prior to project implementation.

COMPARATIVE STATISTICS:

INDIA and MADHYA PRADESH

Indicator	MADHYA PRADESH		INDIA		NOTES
	No.	%	No.	%	
Population	652 million	100	51.2	7.9	
Pop. Density/km^2	116		198		low
Rural Pop.		83.7		80.1	4th hi'st
Scheduled Castes & Tribes		33.2		21.5	2nd hi'st
Rural Poverty Ratio		52.3		47.6	4th lowest
Per capita income, average	Rs.896		1163		5th lo'st
Growth Rate		0.2		1.2	4th lo'st
Physical Quality of Life Index	19		29		lowest
Rural Crude Birth Rate/1000	40.1		36.1		
Rural Crude Death Rate/1000	18.1		16.5		2nd hi'st
Rural Infant Mortality/1000	165				2nd lo'st
Land Distribution (Gini ratio)	0.61		0.66		
Size of holdings, avg. ha.	4.00		2.3		4th hi'st
Landless/near landless HH	2.82 million	5.5%	55.27 mil.	8.5%	2nd lo'st
Infrastructure Dev't Index	64		100		lowest
Area under Irrigation		9.6%		24.3%	lowest
Fertilizer Consumption/ha in kg	9.0		29.8		2nd lowest
Growth rate of Foodgrain product		0.9%		2.6%	lowest
Villages	70883 75554		575936		
Gram Panchayats	15274		225832		
Village under 200	19754	27.9%	1150072	26.9%	
200 - 499	27276	38.5	1168561	29.3	
500 - 999	16516	23.3	1132990	23.1	
1000- 1999	5952	8.4	81973	14.2	
2000- 4999	1292	1.8	36005	6.3	
5000- 9999	492	1.4	4974	0.9	
10000 plus	7	0.2	1358	0.2	

Indicator	MADHYA PRADESH		INDIA		NOTES
	No.	%	No.	%	
Village revenues					
Local Taxes, fees	382.22 lakh		11313. 48 lakh		
Disbursements/Land	Rev.582. 75.		5060.4		
Departmental funds	157.87		25208.		
Average/Panchayat	18797 (7352)		21713	(7749)	

APPENDIX 2

BASIC FACTS ON VILLAGES, BLOCKS, & THE PANCHAYAT SYSTEM

MADHYA PRADESH AND INDIA

	M P	INDIA
Blocks:	458	4974
Gram Panchayats:	15,274	2,25,832
Villages/GP:	4.7	2.6
No. villages covered by Panchayats:	71,797	5,89,626
Population covered by GP:	331.04 lakhs	4,412.56 lakhs

(97% of rural population)

Plus, Bastar District:

Gram Sabhas: 949

Covering: 3757 villages

Villages/GS: 3.9

Population covered: 14.59 lakhs

Panchayat Raj Structure: (Madhya Pradesh)

Bottom Tier: Gram Panchayat for village or group of villages

Middle Tier: Janpad Panchayat at Block level

Top Tier: None (District)

Terms of Office; 5 years

Memberhip: 10-25

Reserved seats: Women: 2 seats
Scheduled Castes & Scheduled Tribes: Minimum of one, according to population.

Mode of Election: Panches: Secret Ballot
Sarpanch: Direct election
Up Sarpanches: Direct Election

Status of MPs, MLAs, & MLCs: ExOfficio members of Janpad Panchayat with right to vote but not to hold office.

Tehsils/Blocks with Strong Traditional Organizations:

Dindori	Mandla District
Pushprajgarh	Sahdol "
Korea	Sargufa "
Jaspurnagar	Raigarh "
Narayanpur, Kondegaon, Dantwada, Konda, Beejapur	Bastar "

Gvt. waste lands vested in Panchayats: No (All India: Yes - 10) No - 12)

APPENDIX 2

Facts: Villages/Panchayats.

Incomes of Gram Panchayats from Taxes and Other Sources: (1972-73)

	MP	India
Taxes:	124.86 lakhs	3922.51 lakhs
Othersources:	257.36 lakhs	7390.97 "
Total:	382.22 "	11313.48 "
Avg. income:	2500 Rupees per Panchayat	5028
Per capita income:	Rs.1.15	Rs.2.54

Estimated disbursements to Panchayats from Land Revenue:

Estimated budget receipts (1976-77):	2331 lakhs	19907 lakhs
Estimated disbursement on basis of Act & Rules	582.75 lakhs	5060.4 "

Routing of Departmental Funds (other than CD/Panchayat) through Panchayats	Rs.157.87 lakhs	25208.

STATUTORY & REVENUE STATUS OF PANCHAYATS

Sources of Income: (General) Compulsory Taxes levied by Panchayats:

Tax on buildings based on capital value, exceeding 1000 rupees;

Tax for cleaning private latrines;

Profession Tax;

Fees on Registration of animals sold;

Market fees for stall (bazaars) and for goods brought for sale in the market;

Royalty/fees for fish farming on tanks.

Other Sources of Income:

Tax on building of capital value of total Rs. 1000;

Fees for sale of goods and animals in Panchayat Markets;

Tolls on vehicles and pack animals used for riding, driving draught, or burden, or on dogs or pigs;

Tax on carts plying for hire, bicycles, rickshaws;

Fees for use of Serais, Dharamshalas, Rest Houses, slaughter houses and encamping grounds;

Fees from persons practising the calling of buyers, brokers, weigher, measurers;

Water rates;

Drainage fees, sanitary cess;

Fees on cart stands;

Grazing fees;

Fees on erection on any public street or place

Any other tax which the State Legislature has power to impose under the Constitution of India

Agency to collect:

Gram Panchayat itself, or any other person who has entered into contract with the Gram Panchayat

Measures adopted for collection of taxes from defaulters:

The Panchayats and social education organizers at the Block level have been given the powers of the Additional Tehsildars, empowering them to recover the arrears of Gram Panchayat taxes as arrears of land revenue.

Land Revenues and Panchayats:

(Panchayats are partially responsible for collecting land revenue).

Share of land revenue given to Panchayats:

25% of the land revenue is transferred to the Panchayats - (distributed to Gram Panchayats only, or to Janpad Panchayats, as well, is not clear.)

Rate of Cess on Revenue:

10 paise per rupee Janpad Panchayat can impose cess of 15% of land revenue. At the initiative of Janpad Panchayat the maximum 90% cess can be levied.

Distribution of cess:

Entire receipts to Panchayats. Amount received as a result of enhanced cess can be divided between Janpad Panchayat and Gram Panchayat in 3:2 ratio.

ISSUES AND QUESTIONS FOR SOCIOLOGICAL RESEARCH FOR SOCIAL FORESTRY

Building on the impressive progress on socio-economic issues already undertaken in Tirla and the Dhar District Stueis, as well as the ongoing work under XLRI, the MP Social Forestry Project proposes establishing a permanent Research and Training Institute as well as a Monitoring and Evaluation Unit. These will be concerned, as outlined in the project proposals, with socio-economic issues relating directly to the performance of MP's Social Forestry Program. The following issues/questions--some of which are already implicit or explicit in the Dhar and/or XLRI studies--seem to relate to directly to the "social" side of the Social Forestry.

1. Demographic/Income Issues: (Already pretty well in hand)

Population		
Population density		
Income	)	
Land	) distributions/totals/medians	(See Tewari & Mascarenhas 1/79: 116-143)
Cattle/livestock	)	
Tribal/Caste composition		
Socio-economic strata - spread of rich & poor		

2. Village Problems & Priorities

What are the MAIN village problems?

For the village as a whole?
For the disadvantaged groups?
As perceived by the leaders/elites?

What are the villages priorities for land use?

What are the local aspirations, hopes, values - in general?

How do duel and fodder requirements fit into the village's patterns of other needs and priorities?

3. Leadership/Authority and Social Alignments:

Who are the village leaders?

Formal Informal Influentials	Political Social Economic Religious	Male Female	Disadvantaged Groups: Tribals Harijans etc.

Are there one or more significant factions/splits?
If so, who are the leaders of the factions?

How effective is local formal leadership?

How well respected?
How well able to represent the main interest groups?
What evidence is there of village cohesion/solidarity?

4. What is the Village's Experience with Previous Development Projects?

What previous experience has the village had with implementing projects?

Were those efforts successful or not?

What were the factors accounting for success or failure?

What lessons, in general, can be learned from these experiences that can help guide planning of a Social Forestry project?

How did the project address local problems/priorities?

How effective was local leadership?

How were any factional issues dealt with?

What attitudes to development projects and government's role, in particular, were evident?

SPECIFIC INFORMATION RELATED TO SF PROJECTS

Looking more specifically at the planning of a Social Forestry project in any given village -- and particularly at the area of land proposed for SF development -- the following issues/questions may warrant particular attention:

5. Current Use of Existing Forests

Who uses it? Socio-economic status? Men/women? disadvantaged? Wealthy? Their dependence on existing forests? Other sources of income?

Headloading: Costs in time spent, opportunities foregone, distances? Benefits in cash, kind, other? Volume of trade/sales? How organized? System? By whom controlled?

Patterns of other Activity: (as for headloading) Distances, amounts household requirements, petty sales, exchanges, time spent relative to other activities.

Attitudes to existing use of forests/? Attitudes to Government Forest Department?

6. Future Uses of Lands Proposed for Social Forestry

Who uses land now? Who is likely to use it if protected/planted?

What is it used for now? What will it be used for if in SF?

How much is it used now? How much will it be used?

Who controls current use? How? Who will control in future under SF? How?

Attitudes to current management procedures? Attitudes to future management choices/options?

7. Panchayat Capacity: (Village & Block levels)

a) Staffing: - Existing distribution of Gram Sevaks/Sevakas related to nos. of villages/panghayats?

b) Budgets: - Total budgets? (Panchayat/Block)

- Project Budgets? (" ")

- Auditing and Controls - losses - inefficiencies?

- Planned vs. actual target achievement?

c) Projects: - Types of Projects?

Infrastructure Projects? (simpler?)

Production/Employment Projects? (complex?)

- Time frames involved?

- Evidence of capacity to manage resources and provide controls over long term?

- Role of disadvantaged groups?

- Role of women?

d) Analysis of success & failure: (Related to Projects above)

- Sources/causes of success/failure?

  Who benefited? Who participated? Who worked?

  Who lost something? Who did not participate?

- Attitudes of villagers to project(s)? Structural/

  Technical issues vs. organizational/sociological issues?

8. Projects for Special Examination: (using the above criteria costs/ benefits)

a) Village Plantations - Small vs Large?

b) Roadside Plantations Memory Lanes - Major vs Village Roads?

c) Canal side Plantations - Major vs Village Canals?

d) Farm Forestry

e) Private Grass Birs

f) Village/Panchayat Grass Birs

g) Yards/Kitchen Gardens - (pvt.) esp. Fruit Trees

h) Schools/Offices/Institutions/Parking Areas

i) Private Nurseries

Village/Panchayat Nurseries

Ind Nurseries

Il Patches - Waste Lands
- Along Tracks, Paths
- Along fields
- Around wells/tanks
- Inside village area

9. Headloading

a) Costs - time - other opportunities? Distances?

b) Benefits - cash - other? Volume of trade?

c) How organized? System? By whom?

10. Linkages between S.F. and other Programs/Depts.

a) Agriculture/Livestock

b) Panchayats/Block organization

c) Collectors - District organization

d) Pvt./voluntary organizations

e) Special Programs - e.g. "Gobar Gas" Projects, Beekeeping, etc.

- REFERENCES -

1. Centre for Monitoring the Indian Economy (CMIE) 5/79 Standard of Living of the Indian People; Bombay: May 1979.

2. Agency for International Development Washington DC: August 1980 Devres, 1980 The Socio Economic Contest of Fuelwood Use in Small Rural Communities AID Evaluation Special Study No.1

3. Divisional Forest Officer, Raipur (DFO-Raipur) 11/80 Social Forestry Projects & Raipur District (Afforestation of Bhata Lands & Waste Lands); Raipur M.P.: Plantation Division, November 1980.

4. Ford Foundation Social Forestry Project (FF/SF) 6/80 Project Proposal on Social Forestry for USAID Assistance: Forest Department, Technical Report No.S.F./6/80 Bhopal Madhya Pradesh, October 1980.

5. Ford Foundation Social Forestry Project. (FF/SF) 4/80 Pilot Project Report, Tirla Development Block (Case Study) Dhar District, Vol I - III, Forest Dept. Technical Report No.SF/4/80; Bhopal: September 1980.

6. Forest Department, (FP) 2/79 Seminar on Peoples Participation in Social Forestry, Fodder and Posture Development, Indore 12-14 February 1979 sponsored by Rep. of Rural Development, Ministry of Agriculture & Irrigation., Gvt. of India; Bhopal: Forest Dept., Govt. of Madhya Pradesh, 1979.

7. Govt. of India (Mehta) 1978 Report of the Committee on Panchayat Raj Institutions. Ministry of Agricultural & Irrigation, Dept. of Rural Development New Delhi: August 1978.

8. Govt. of Madhya Pradesh (GMP) 1980 Draft Five Year Plan (1980-85): Forest, Bhopal: 1980.

9. Institute of Regional Analysis, (IRA) 1980 Study of Social Inputs in Shajapur Area Development Projects (Draft): Income Generating Activities for Women; Women and Children Welfare Services: Susner and Nalkhuda Development Blocks; Bhopal: undated (1980).

10. Planning Commission: (PC) 1978 Report of the Working Group on Block Level Planning Govt. of India, New Delhi: 1978.

11. Reserve Bank of India, (RBI) 71/2
All India Debt & Investment Survey 1971 - 72:
Statistical Tables Relating to Capital Expenditure and Capital Formation of Rural Households During the year Ended 30th June 1972; Dept. of Statistics, Bombay: October 1977.

12. USAID/India (CDSS) 1980
Country Development Strategy Statement
FY 1982, Washington: January 1980.

281