

PD-ABC-384 *M. M. M. M.*

PD-ABC-384

TECHNICAL REPORT
No. S. F./6/80

PROJECT PROPOSAL

ON

SOCIAL FORESTRY FOR U. S. A. I. D.

ASSISTANCE



FORD FOUNDATION SOCIAL FORESTRY PROJECT
MADHYA PRADESH, BHOPAL
OCTOBER - 1980

91740 324

TABLE OF CONTENTS

	<u>Page</u>
1- Preface	
2- List of Abbreviation	
3- Glossary	
4- Summary	
5- Chapter -I (Introduction)	1-8
6- Chapter-II (The Back Ground)	9-25
7- Chapter-III (Project concept)	26-31
8- Chapter-IV (The Project Area)	32-49
9- Chapter-V (The Project)	50-79
10- Chapter-VI (Organisation & management)	80-91
11- Chapter-VII (Production markets & prices)	91-102
12- Chapter-VIII (Financial projections)	103-108
13- <u>Annexure:</u>	
(i) Rain fall Distribution with Rainy Days- 1975-76	
(ii) District wise area of the M.P.	
(iii) A-Abstract of Capital costs for district nursery.	
B- Abstract of Capital costs for nursery Tahsil/ Block Nursery.	
(iv) Annual Expenditure or costs for one nursery	
A- Abstract of variable costs of nursery .	

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- (v) The following types of plantations suggested for Social Forestry Project.
- (vi) Annual cost on establishment of one Dy. Director's office.
- (vii) Building & housing proposed.
- (viii) Requirement of vehicles per unit.
- (ix) Details of office requirement for one unit (Dy. Director)
- (x) 1- Cost structure of typical small timber (teak) plantation.
2- Cost structure of typical fuelwood plantation (Eucalyptus spp.)
3- Cost structure of road side plantation.
- (xi) Cost structure in case of grass land Improvement.
- (xii) Organisation of Research & Training Institute.
- (xiii) Organisation for monitoring & Evaluation.
- (xiv) Vehicles equipments & office Furniture for Research Institute.
- (xv) Contingent Expenditure.
- (xvi) Annual cost on Establishment of state level Head Quarter organisation.
- (xvii) Salient features of the Major Rivers in M.P.
- (xviii) Annual cost of Establishment on one Zonal level unit.
- (xix) A- Commercial rates of teak logs/poles for 1977-78 at Bhopal.
B- Commercial rates of teak logs/poles at Indore.

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- (XX) District wise area of waste lands in M.P.
- (xxi) Draft Agreement between Govt. & Panchayat for Social Forestry Plantations.
- (xxii) Plan of operation of Social Forestry Programme in various districts of Madhya Pradesh.

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P R E F A C E

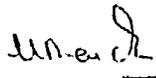
On the initiation of Government of India, the Project proposals for Social Forestry Project were originally prepared by the Resources section of the Forest Department. These proposals were submitted to the United States Of America Agency For International Development, Subsequently a project identification team visited the State and held discussions with the officers of the State Government at various levels.

USAID team after going through the proposals and visiting some of the social forestry works in the State suggested certain modifications in the project proposals vide their letter dated 14th April 1980. The present proposals have been prepared keeping in view the suggestions made by the team.

The revised proposals have been prepared under the guidance of Shri V.K.Seth, Principal Chief Conservator of Forests Madhya Pradesh. Shri M.B. Peter, Chief Conservator of Forests (Development), gave valuable suggestions and effective guidance in preparation of the project.

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In preparation of the project proposals, Shri A.P.Dwivedi, Dy. Conservator of Forests (Resources) had to share major responsibility. Many weaknesses of the formal nature still remain in the project which can be explained by the constraints under which the project proposals have been prepared.


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(K.K.R.Naidu)

Conservator of Forests & Director,
Ford Foundation Social Forestry
Project, M.P. BHOPAL.

(B) List of abbreviations

A.C.F.	Assistant Conservator of Forests.
A.D.M.T.	Air dry metric ton.
Cm	Centimetre.
CWR	Coppice with Reserve.
D.F.O.	Divisional Forest Officer.
Dy.C.F.	Deputy Conservator of Forests.
Dn.	Division.
gm.	Gram
gbh	Girth at breast height.
ha.	Hectare
I.R.R.	Internal Rate of Return.
Kg.	Kilogram
Km.	Kilometre
Km ²	Square Kilometre.
M	Metre
M ²	Square metre
M ³	Cubic metre
mm	millimetre
N.C.A.	National Commission on Agriculture.
N.P.V.	Net present value
O.B.	Over bark.
R.F.	Reserved Forests
RS	Rupees.
SRD	Social rate of discount.

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Glossary

(A) Local terms

- Adivasi : Aboriginal
- Collector: A Revenue Officer who is head of the revenue district.
- Gram Panchayat: A village corporation having powers to acquire, hold or transfer property, moveable and immoveable, to enter into contracts and do all things necessary for the purpose of performing duties entrusted to its.
- Khasra-Khatoni: A revenue record.
- Katha : A product obtained from Acacia catechu heartwood.
- Kharif crop : Crops sown in rainy season.
- Malguzari Ex-proprietory forests.
forests :
- Murum : Lateritic reddish soil.
- Nistar : Bonafide requirements of villagers for house hold and agricultural purposes.
- Patwari : A revenue official incharge of a village or group of villages.
- Rabi crop : Crop sown in winter.
- Rupee : Indian currency.
- Tehsil : A sub-unit of a civil-district formed for administrative purpose.

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SUMMARY

1.1 India's most important forest State, Madhya Pradesh is gradually approaching towards desert condition particularly in north and north-western region because of accelerated deforestation, excessive grazing and faulty tillage practices. This has adversely affected the productivity of the land resources leaving behind 7.5 million hectare of waste lands almost 17% of the total geographical area of the State.

1.2 The study carried out by the Forest Department to assess fuel wood supply against demand indicates that 26 out of 45 districts are already facing the fuel wood crises and by the end of the century the number of districts facing crises would increase to 39 engulfing about 90 percent of the total population of the state. Vast tracts of barren and waste lands are exercising an adverse effect not only on ecological and environmental conditions but also on economical well being of the local population. A situation may come when food will be burnt to cook meals. To remedy this situation, to protect the major river valley catchments from excessive erosion and soil loss, to regulate the stream

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flow, to minimise floods, to generate gainful employment opportunities for rural labour force and to provide adequate fodder for the vast cattle wealth it is absolutely essential to take afforestation, grass and fodder development and soil conservation programmes on large scale on all the available wastelands and degraded forest lands. Besides that tree planting on a massive scale on private lands, along roads, canals, railway lines, has also to be geared up substantially in an organised manner.

1.3 The State Govt., realising the gravity of the situation, have already started the Social-Forestry programme on a very small scale and nuclear organisation has been set up. This is merely a drop in the ocean and unless massive investments are made in Social Forestry Programme the situation would soon be out of control.

2. Project area consists of the following types of lands ;
- (a) Waste lands
 - (b) Degraded forests
 - (c) Road, rail and canal side areas
 - (d) Community lands, panchayat lands, village common lands.

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3.1 The project proposals consist of the following components :-

- (1) Survey, mapping, site assesement and formulation of the management plan, for waste lands and degraded forests.
- (2) Establishment of nurseries
 - (a) Departmental
 - (b) By school and colleges
 - (c) By private individuals.
- (3) Plantation of suitable species
 - (a) Fuel wood plantation
 - (b) Small timber plantation
 - (c) Mixed plantation
 - (d) Road/rail/canal side plantation
 - (e) Plantations in community lands.
- (4) Improvement of grass lands.
- (5) Forest extension in farm lands,
 - (a) Extension service
 - (b) Free distribution of seedlings.
 - (c) Raising of demonstration plots in the villages.
 - (d) Plantation in private lands
 - (e) Information service
- (6) Development of infrastructure.
- (7) Research and development
- (8) Staff training and fellowships.
- (9) Supervision and administration.
- (10) Evaluation and monitoring.

4.1 Project costs :

Year-wise total project cost is given in the table below :-

TABLE-A

Year-wise total project cost		in thousand Rs.
Year	Total	
1st year	37490	
2nd year	69552	
3rd year	88831	
4th Year	102750	
5th Year	106359	
Total	404932	

4.2 Component-wise total cost is indicated in table B,

TABLE -B

Project cost component-wise		in thousand Rs.
S. No.	Project components	Total
1.	2.	3.
1.	Survey, mapping site assessment and formulation of management plan	1800
2.	Nruseriy works	67992
	(a) Departmental	
	(b) By school & colleges	
	(c) Private individuals	

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1.	2.	3.
3.	Tree planting in suitable areas	227670
4.	Improvement of grass land	18240
5.	Forest Extension of farm lands	11440
6.	Development of infrastructure	53400
7.	Research and Training	4890
8.	Training and fellowships	1000
9.	Supervision and administration (including evaluation & monitoring)	18550
Total		404982

5. It is proposed to create social forestry organisation for planning, executing supervising, and evaluating social forestry activities in the State. For implementation of project proposals a Social-Forestry Directorate is proposed. It will have support of adequate technical and secretarial staff.

6. The production from the project area will depend upon various factors eg. species selected for plantation, system of management, site productivity, rotation, rate of growth and various other factors. It is expected that the project will continue after the expiry of five years period. Following additional products are likely to be obtained from these areas.

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TABLE -C

Quantity of additional Product obtainable from the project area

S. No.	Item	Quantity of additional product per annum.
1.	Fuel wood	972 thousand tonnes
2.	Small timber	108 thousand m ³
3.	Green fodder	418 thousand tonnes
4.	Poles	880 thousand poles
5.	Bamboo	16 thousand tonnes
6.	Fruits	28 thousand tonnes
7.	Oil seeds	25 thousand tonnes

7.1 One of the major benefits of the project is the creation of employment opportunities to the un-employed and under-employed rural population. Direct employment provided by the project activities is indicated in table D.

TABLE-D

Year	Employment opportunities generated (million man days)
Ist year	2.5
IIInd Year	7.5
IIIrd Year	15
IVth Year	16
Vth Year	16

7.2 Besides, direct employment provided to the local population, a vast opportunity will be created in secondary and tertiary sectors.

8. The economical aspect of the project has also been considered. The internal rate of return, Benefit Cost ratio and the Net present value of different major activities is indicated in table E.

TABLE -E

I.R.R., Benefit Cost ratio and NPV for various project components.

S, No.	Particulars	I.R.R.	B.C. ratio at 10% rate	N.P.V. at 10% discount rate
1.	Fuel-wood plantation	10	1.005	+17
2.	Mixed fuelwood plantation	12	1.27	+755
3.	Small timber plantations	16	1.87	+2796
4.	Teak+Bamboo plantation	15	1.74	+2273
5.	Mixed small timber plantation.	9	0.75	-704
6.	Road side plantation	4.5	0.47	-2721
7.	Grassland improvement	17	1.25	+595

NOTE : The economic calculations do not include the benefits inform of fruits, seeds, barks, gums and other indirect benefits.

Thus the project is economically viable and socially most desirable.

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CHAPTER I

1- INTRODUCTION

A. General

- 1.1 Madhya Pradesh with geographical area of 442840km² (approximately 13% of the Indian Union) is the biggest State in the country. Main forms of land uses are agriculture and forestry with share of approximately 48 percent and 35 percent respectively.
- 1.2 Madhya Pradesh is one of the poorest States in the country. Its main sources of income are agriculture and forestry. The total population as per 1971 census was 42 million. The population for 1981 (Projected) is likely to be about 50 million.
- 1.3 Madhya Pradesh is a under developed State. About 84 percent of the population is rural. Schedule Caste and Schedule Tribe form about 35 percent of the total population. *(Amendable)*
- 1.4 Forests are under continuous pressure. During the last 25 years, about 2.2 million ha. forest land has been disforested and transferred to other competitive land uses in the State.
- 1.5 The existing forests are under various stages of degradation. The nistari forests and other forests situated near habitation are in a seriously depleted condition. Their further depletion

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will only accelerate the creation of unproductive waste lands. Once the primary source of village nutrient requirements is depleted, the villagers are increasingly turning towards Reserved Forest for meeting their requirements. Already, Forests are in seriously depleted condition in whole of western, and northern parts of the State.

- 1.6 Fuelwood is the main source of domestic energy in rural areas. There is a acute shortage of this commodity in western, northern and plains of Chhatisgarh region.
- 1.7 In absence of sufficient fuelwood people use cowdung as an alternative energy source. Cowdung is a valuable manure and its value as manure is many times more than a source of domestic energy.
- 1.8 Housing pattern in Madhya Pradesh involves use of a large quantity of small timber and bamboo particularly in rural areas. Small timber and bamboo substitutes eg. iron and cement are not easily available. These materials are also beyond the reach of rural poor.
- 1.9 Fodder supply position is also not good in many areas resulting in poor livestock economy.
- 1.10 Madhya Pradesh is situated in uplands of Central India and forms upper catchments of the major river systems of the country. Past mis-management of the

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catchment area has resulted in the occurrence of severe floods, siltation of multipurpose reservoirs, unregulated water yields, and various other calamities.

- 1.11 Waste lands and barren lands occupy about 17% of the total geographical area. These lands are lying idle and are being subjected to erosion etc.
- 1.12 It is recognised that every region must be self sufficient in fuelwood, fodder and small timber requirements, Regional shortages of food grains can be easily met with by transporting food stocks from surplus areas to deficit areas. However the transport of fuelwood, fodder and small timber over longer distances is not economically feasible.

B. Review of Social Forestry Activity in the State

- 1.13 The importance of social forestry was recognised much earlier in the country. The Vanmahotsav was started as early as in 1950. Unfortunately Vanmahotsav could not produce desired impact among people and this remained only a formality.
- 1.14 No concentrated and systematic efforts were made in the past in social forestry works. There was insignificant budget allotment of Rs.30 and Rs.70 thousand in third and fourth Five Year Plans

respectively for farm forestry schemes. The allotment during fifth Five Year Plan was increased to Rs. 600 thousand. Some work was done in waste lands in Ujjain, Katlam, Shivpuri Badwani, Gwalior, Rewa and Rajgarh areas of State under these schemes. Some funds were allotted under the rehabilitation of degraded forest scheme as well.

- 1.15 Madhya Pradesh Government in 1974 appointed a senior Forest Officer to study the relevance of Social Forestry in the State and a report entitled "Social Forestry in Madhya Pradesh a diagnostic report" was submitted to the State Government. The report suggested a large scale plantation on wastelands and degraded forest areas for meeting the needs of rural population in respect of fuelwood, forage and small timber and providing supplementary income to the local population from farm forestry and afforestation works.
- 1.16 A real work in the field of Social Forestry started during 1976-77 when Rs. 5.85 million was allotted for this purpose. One senior Forest Officer was appointed as a Conservator of Forests Social Forestry to help and coordinate field activities. Since then more and more efforts were made in this direction.

The physical and financial targets in various schemes of social forestry is indicated as under :

S. No.	Name of Scheme	Year	Target fixed	
			Physical Plantation in Hec.	Financial (Rs.)
1.	Panchvan	1976-77	-	-
		1977-78	9050	1,22,00,000
		1978-79	9050	1,11,70,000
		1979-80	9050	1,20,00,000
		1980-81 (Proposed)	9050	1,30,00,000
2.	<u>Centrally Sponsored Scheme :-</u> Reforestation of Degraded Forests	1976-77	700	3,50,000
		1977-78	670 Hec. Plantation	24,70,000
		1978-79	2500 -''-	53,50,100
		1979-80	3300 -''-	79,30,000
		1980-81 (Proposed)	3150 -''-	52,00,000
		1976-77	800 Hec. Preparation	4,00,000
3.	<u>Mixed Plantation</u>	1977-78	615 Hec. Plantation	14,50,000

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S. No.	Name of Scheme	Year	Target fixed	
			Physical Plantation in Hec.	Financial (Rs.)
3.	<u>Mixed Plantation</u>	1978-79	1000 Hec. Plantation	15,90,100
		1979-80	1000 -''-	15,00,000
		1980-81 (Proposed)	1200 -''-	<u>12,00,000</u>
4.	<u>Road side Plantation</u>	1979-80	200	29,19,600
		1980-81	200	30,00,000
5.	Van Mahotsav	1979-80	45 lakh seedlings	4,50,000
		1980-81	45 lakh seedlings	4,50,000
6.	Sowing and Planting	1977-78		
		1978-79		
		1979-80	10,790 Plant. 10,120 Prep.	1,69,29,000
		1980-81		

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1.17 Besides, schemes mentioned above, a separate project identification and formulation scheme of Social Forestry is being taken up with assistance of Ford Foundation. The project has started during 1978 and is likely to continue for a period of 4 years with total estimated cost of Rs.4 million. The project covers Dhar, Jabua, Bilaspur and Raipur districts. In addition under tribal sub plan the project formulation which has been undertaken in Tribal areas of Katlam, Mandla and Bilaspur Districts.

1.18 Road side plantations have been taken up since 1979. During 1979-80, plantation over 200 km road length was done with financial involvement of Rs.25 lakhs. The physical targets for 1980-81 have been kept 200 km.

1.19 It is proposed to create Forest Extension Organisation in the Department. A scheme is already under consideration of the Government which is likely to be sanctioned.

.8.

ORIGIN OF THE PROJECT

1.20 In spite of the larger allocation from State budget and assistance from Government of India, Social Forestry schemes did not reach at the optimum level. Efforts are therefore, made to secure assistance from the World Bank which could not materialise as World Bank was already committed with Uttar Pradesh and Gujarat. United States of America International Development Agency showed interest and visited the State during January 1980 for preliminary discussion, this resulted a further visit by another team of experts during April 1980 to identify the project.

CHAPTER IITHE BACKGROUND2.1 Land-use pattern

Madhya Pradesh is the largest State in the country. It is situated in the middle of the country surrounded by other States all around. The total geographical area of the State is 442,840 km². The distribution of the total geographical area into various land-use classes is given in Table II-1.

TABLE II-1.

Distribution of the total geographical area into important land-use classes 1

(in Sq.Km.)

S. No.	Particulars	Area as in 1976 - 77
1	Forests	1,56,380
2	Area not available for cultivation	23,161
3	Other un-cultivated land excluding fallow land :	
	(a) Permanent pastures and grazing lands	30,900
	(b) Land under miscellaneous tree crops and groves	2,000
		<u>32,800</u>
		Contd....

1. Agricultural Statistics, Madhya Pradesh 1976-77

Table II-1 Contd

S. No.	Particulars	Area in 1976 - 77
4	Culturable wastelands	20,200
5	Fallow lands	16,300
6	Net area sown	1,93,159
7	Area sown more than once	26,520
8	Gross cropped area	2,19,679
9	Geographical area (Reported area for land utilisation)	4,42,840

2.2 Forest Area

The total forest area in the State is 156386 km².

The distribution of forest area into various legal classes is given in Table II-2.

TABLE II-2.

Legal classification of forests (1976-77) 1

S. No.	Particulars	Area in Km ²
1	Reserved Forest	80197
2	Protected Forest	74421
3	Unclassed Forest	1768
Total		156386

1. Ankaron ki Paridhi Me-Forest Department Publication, 1979.

2.3 The area under important types such as teak, sal and miscellaneous is 31346,37898 and 87142 km² respectively. The growing stock and growth rate situation is not satisfactory inspite of the fact that a large area (35per cent) is occupied by forests. A large portion of the forest area consists of degraded forests and scrub growth.

2.4 Demographic features

According to 1971 census, total population of the State is 42 million. About 84 per cent of the population is rural which is one of the highest in the country. Tribal population constitutes about one-fifth of the total population. More than two third population is living below the poverty line. The number of unemployed is at about 2 million besides large unemployment and under employment in rural areas. Schedule caste and the Schedule Tribe population forms about 35 per cent of the total population. Agriculture is the main profession of the people.

The projected population for 1981 and 2000 A D is 50 and 75 million respectively.

-25-

2.5 Live stock population :

Madhya Pradesh has the second largest cattle population in India. The total cattle population according to 1972 census is 40 million. The details are given in the table No.II-4

Table II - 4

Cattle population in Madhya Pradesh
during 1972 ¹

S. No	Category	Population in million	Percent
1-	Cattle	26.4	65%
2-	Buffaloes	5.8	
3-	Goats	6.2	
4-	Sheeps	1.0	
5-	Horses and Ponies	0.2	
6-	Others	0.4	
	Total	40.0	1

¹ Department of Animal Husbandary and
Vaterinary Services publication

2.6 There has been 30.7 percent increase in the livestock population during the period from 1951 to 1977. Whereas bovine population increased by only 23.4 percent during the last 26 years. The population of sheep and goats has shown a steep rise of 40.8 percent and 91.8 percent respectively. The average number of livestock population per holding is 7.5 which indicates the important role that livestock population plays in the rural economy. High proportion of the useless cattle population is the serious problem in the State. The average milk production per cow and per buffalow in Madhya Pradesh is 36 kg, and 76 kg respectively, which are much below the all India average of 157 kg. and 504 kg per cow and buffalow respectively. The livestock density per Square Kilometre varies from 41.7 in Bastar to 172.7 in Tikamgarh. District of Bhind, Satna, Chhatarpur, Rewa have also livestock density of more than 120 per km². Ujjain, Durg, Dhar, Gwalior, Jabua, Mandasaur,

Ratlam, Shajapur, Shivpuri, Najgarh, Datia, Sidhi districts have also cattle population density above 100 ^{per} km². Forest grazing plays an important role in the feeding of cattle population.

The Economy :

- 2.7 The economy of Madhya Pradesh is mostly Agrarian. About 65% of the State Domestic Product originates from agriculture and forestry sectors. The rate of growth of State's economy is very slow. The per capita income of the State is almost stationery. The per capita income during 1960-61 was Rs.260.5 in 1974-75 it was only Rs.252.1 (at 1960-61 price level) and in 1977-78 it was Rs.258.5 (at 1960-61 price level).

Forestry in Madhya Pradesh Economy :

- 2.8 The contribution of forestry sector to the State revenue is about Rs.1200 million(1979-80). This constitutes about 50 percent of the total non-tax revenue and 15 percent of the total

revenue. This does not include the value of forest produce e.g. timber, bamboo firewood, charcoal, fruits, herbs, barks, leaves, grasses, grazing, medicinal herbs etc. taken by the neighbouring local population under rights and concessions granted by the Government or otherwise, at free of cost or at nominal or subsidised rates. The estimated value of these produce is nearabout Rs.400 million.

Forest produce demand & supply

(a) Demand

2.9 Fuel wood

Fuelwood is major energy source in rural Madhya Pradesh. According to estimates by National Council of Applied Economic Research (1965), the per capita consumption of fire wood per annum is 281 kg. in Madhya Pradesh. National Sample Survey fixes this figure at 298 kg. Fuel wood consumption studies conducted by Pre-investment survey organisation in adjoining Adilabad District (Andhra Pradesh) indicate that per capita fuelwood consumption is 230 kg. per annum. Fuelwood consumption studies carried out by Forest Resources Organisation at Bilaspur and Raigarh districts work out to 305 and 315 kg. per annum respectively.

2.10 This consumption is inspite of the fact that people are using cowdung cakes as fuel. If cowdung is to be saved and used as manure the fuelwood requirement will have to be accordingly increased. Thus it is estimated that present per capita fuelwood requirement of rural population will come to about 500 kg. per annum. Thus present fuelwood requirement is about 21 million tonnes. The requirement for 2000 A.D. will be of the order of 40 million tonnes.

Small Timber and Bamboo

2.11 Small timber and bamboo are used for construction of houses and agricultural implements. The requirements of small timber has been studied for many parts of the country and for some districts of Madhya Pradesh. It is found that per capita wood requirement for construction of houses and agricultural implements is about 0.05 m^3 per annum. Thus present requirement is about 2 million m^3 . The requirement for 2000 A.D. is estimated to be about 4 million m^3 .

30

2.12 Fodder

Total bovine population in the State is about 32.5 million. Total requirement of green fodder is estimated to about 63 million tonnes. If stall feeding is practised and better breeds are introduced, the requirement by the year 2000 A.D. may go upto about 80 million tonnes.

2.13 Supply

Most of the fuelwood from the forest is collected through head loads which remains un-recorded. The recorded fuelwood production in the State is about 2.5 million m³ (77-78). The production of timber was about 1.1 million m³. Thus, it appears that there is a large gap between demand and supply particularly in case of fuelwood.

2.14 Identification of deficit areas

Tomar and Joshi (1977) studied the demand and supply position of timber and firewood and classified the districts of the State into deficit and surplus as under :-

<u>Category</u>	<u>Districts</u>
I. Deficit both in timber and fuelwood	Bhopal, Raigarh, Ujjain, Mandsaur, Katlam, Shajapur, Indore, Dhar,

<u>Category</u>	<u>Districts</u>
	Bhind, Datia, Gwalior, Durg, Rewa and Tikamgarh (14)
II. Deficit in fuelwood but surplus in timber	Sehore, Vidisha, Jabua, Khargone, Khandwa, Bilaspur, Guna, Morena, Shivpuri, Sagar, Jabalpur, Narsinghpur, Raipur, Rajnandgaon, Satna and Chhatarpur (16)
III. Fuelwood supply equals to the Demand but timber is surplus	Hoshangabad, Dewas and Damoh (3)
IV. Surplus both in timber and fuelwood	Betul, Raisen, Raigarh, Surguja, Balaghat, Chhindwara, Mandla, Seoni, Bastar, Shahdol, Sidhi and Panna (12)

2.15 Dubey and Dwivedi (1979) considered the forest area, demographic features, present growing stock and potential yield, present level of consumption, future trends etc. and worked out PAP factor (Population, Forest area and Production factor). On the basis of this study districts have been classified into seriously deficit

38

districts, deficit districts, marginal districts and surplus districts as under:

- | | |
|---|--|
| 1. <u>Seriously Deficit districts</u>
(Where supply is only upto 50 percent of the demand) | Rajgarh, Ujjain, Ratlam, Shajapur, Indore, Dhar, Bhind, Datia, Gwalior, Rewa, Satna (11) |
| 2. <u>Moderately deficit districts</u>
(Where supply is upto 75% of the demand) | Bhopal, Vidisha, Mandasaur, Khergone, Jabalpur, Durg, Tikamgarh and Jhabua (8) |
| 3. <u>Marginal districts</u>
(Where supply is approximately equal the demand) | Hoshangabad, Sehore, Guna, Morena, Damoh, Shivpuri, Narsinghpur, Sagar, Raipur, Rajnandgaon, Chhatarpur, Khandwa, Bilaspur, Raisen, and Dewas (15) |
| 4. Surplus districts | Panna, Betul, Raigarh, Surguja, Balaghat, Chhindwara, Mandla, Seoni, Bastar, Shahdol and Sidhi (11) |

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1. Vanishing Forests Vis-a-Vis energy crisis in Madhya Pradesh 2000 A.D. by Tomar M.S. & Joshi. S.C.
 2. An approach for formulation of plantation policy in Madhya Pradesh by Dubey S.P. & Dwivedi A.P.

Fodder :- The total production of green fodder is estimated to about 35 million tonnes only. This indicates that cattle are poorly fed resulting in poor drought capacity and milk yield.

2.16 Agriculture and manurial requirement

Total area under agriculture is Rs.21.21 million hectares. The area under agriculture has registered an increase of 3.1 million hectares i.e. about 13%, over a period of 20 years. The main aims of the development in the field of agriculture are to increase per hectare yield, to take more than one crop in the same piece of land to increase, milk yield per cattle and to improve cattle health. The yield of crops can be increased by using sufficient organic manures and fertilizers. Animal dung which has high manurial value is wasted by burning as a domestic fuel. It is estimated that about 6 million tonnes of dry dung is wasted every year in Madhya Pradesh, robbing of lands of about 250 thousand tonnes of nitrogen and about 150 tonnes each of phosphorus and potassium, besides a number of other micro nutrients and a huge amount of organic

matter. If fuel wood in sufficient quantity is made available to the cultivators, the dung is likely to be saved which may result in the increase in agricultural production to a large extent.

Madhya Pradesh a guardian State

2.17 Madhya Pradesh is situated in the up-lands of Central India. It accomodates upper catchment of some of the major river systems of the country, of the 54.3 million hectare, of the upper catchments of major rivers e.g. the Yamuna the Ganga, the Narmada, the Godavari, the Mahanadi, 24.2 million hectare is in Madhya Pradesh . It is therefore, utmost importance that proper catchment management should be given higher priority not only from the angle of interests of the State but also from a national angle. If Madhya Pradesh did not take proper steps of soil and water conservation in the upper catchments, the rivers eminating from the State would carry silt in bigger proportion, reducing the life of important

reservoirs, increasing the flood risk and impairing a perpetual and regulated water supply and thereby jeo-pardising the agriculture and consequently the prosperity of the neighbouring States.

Constraints

2.18 The main constraints for rapid development of social forestry in Madhya Pradesh relate to three fields viz. (1) Finance, (ii) technical organisation and (iii) land.

2.19 (i) Finance :-

Forestry has been given lower priority in the allotment of funds. Investment in forestry has been grossly inadequate. Even for forest production programmes financial allotments so far have been very meagre which resulted in poor production from the forest. Investment in the development of forests in Madhya Pradesh has been very poor with only Rs.6.60 per ha as against Rs.141.09 in Punjab, Rs.105.5 in Haryana, Rs.45.5 in Himachal

2/0

Pradesh, Rs.26.7 in Uttar Pradesh, Rs.16.00 in West Bengal and Rs.11.5 in Karnataka.

2.20 (ii) Organisation :-

In the last few years many forest activities have been taken over by the State Government which has brought pressure on the forest organisation. Lack of sufficient training facilities has worsen the situation. For Social Forestry works there is no strong organisation at present. However, efforts are being made to have a separate organisation in the forest department for Social Forestry works.

2.21(iii) Land :-

Forest lands are under continuous pressure. About 2.2 million hectare forest has been disforested and transferred to other land uses. About 30 percent of the forest area has become degraded and unproductive where soil erosion is rampant. There is about 7 million hectare waste lands which can be available for Social Forestry. The areas available for

Social Forestry works are under various stage of degradation and therefore are less productive.

2.22 Objective of forest management in the State

The objectives of the forest management in Madhya Pradesh should be as under :-

- (a) To maintain an effective vegetative cover for the conservation of nature and the soil and improvement of water yields, reducing silt discharge in reservoirs and water streams, moderating flood peaks, providing wild-life habitat and reducing pollution hazards.
- (b) To improve the economic status of rural poor, by generating appropriate employment opportunities, including self-employment, particularly for tribals and other weaker sections of the society, and to help in achieving integrated rural and urban development.
- (c) To meet in perpetuity the domestic needs of the rural communities in respect of fuelwood, fodder, timber, bamboo and other forest products,

there by recognising the role of forestry as the foster-mother of agriculture.

- (d) To augment the supply of commercial and industrial raw material for small and big industries on an increasing scale.
- (e) To give adequate importance to the sustained production of minor forest produce such as tendu leaves, oil seeds, tannin, medicinal plants, fodder, honey, food-substance, etc.
- (f) To ensure adequate and effective participation of the community in developing and husbanding of the forest and fodder resources for the overall good of the community and of the Nation.

CHAPTER - III

Project Concept

3. Madhya Pradesh with a population of about 55 million (Projected for 1980) and a cattle population of about 40 million (1972) has the largest geographical area in the country. The people are poor and about two-third people live below the poverty line.
- 3.2 Fuel wood, cowdung and agricultural waste are the main source for meeting the domestic energy requirements. In absence of sufficient supply of fuelwood people use cowdung depriving agricultural lands of the valuable manure. Though, the State has got about 35 percent of the area under forests, they are not properly distributed. The western and northern parts of the State are devoid of productive forests. The existing forest areas of these regions are degraded and rendered tree-less due to various adverse factors. Acute shortage of fuelwood, fodder and other forest products is experienced

by the poor people of these regions. The economic level of the people is so low that they can not afford to purchase them at the prevailing high prices. These commodities for these people are non-monetised as they are used to collect them almost free or with very nominal payments from the forests.

3.3 In quantitative terms, the wide gap between the production and the supply of basic needs of the community is as follows:-

S. No.	Commodity	Present demand	Annual demand	Present supply from forests	Production for
1.	Fuelwood	21 million tonnes		2 million	
2.	Small timber	2 "	" "	.5 "	" "
3.	Fodder	60 "	" "	32 "	" "

3.4 The existing gap between the demand and supply will more widen, if necessary steps are not taken in time. The demand

S. No.	Commodity	Demand at 2000 A.D.
1.	Fuelwood	40 million tonnes
2.	Small timber	4 " "
3.	Fodder	60 " "

Handwritten notes:
3 million
40 million

3.5 This situation calls for special measures. It is estimated that about 3 million hectare forests have to be created to meet the demand of local villagers. In an attempt to solve the problem, Government of Madhya Pradesh intends to increase its present plantation activity. The present ambitious programme has therefore, been designed. The concept of Social Forestry Project is to create forests for the benefit of community through active involvement and participation of the community. In the process, economic status of rural community would improve, unemployment would ease and rural environment would improve. The proposals are based on the following concepts :-

(a) Meeting the most urgent people's

42

requirements of fuelwood, fodder and small timber in shortest possible time.

(b) Provide additional labour opportunity to vast unemployed and underemployed population.

(c) To induce the village communities to actively participate in the plantation programme and to increase the farm income.

(d) To utilize properly the existing waste lands and degraded forest areas.

(e) To promote rural cottage industries.

3.6 In order to meet these targets suitable plantation programme will be designed. The magnitude of the problem does not allow to meet with all the requirements at once. Therefore, an order of priority had to be established at least for the period of present proposals which may be a part of long term Social Forestry Project in Madhya Pradesh.

3.7 The fuelwood production requires to be given first priority as it is the most important need of the community. The scarcity of the fuelwood in larger part

of Madhya Pradesh is very acute and compels the rural population to use large quantities of cowdung for domestic purposes, which otherwise would much more profitably be used as manure. Small timber and bamboo are important component of building material in the rural housing. The production of these materials in Social Forestry plantation will get next priority. Similarly efforts would be made to develop grasslands and raise fodder trees to increase the supply of green fodder.

3.8 A large rural population is poor and land less. These persons are unemployed and under-employed in large part of the year. The Social Forestry plantation programme are aimed at creating enough jobs for rural poor as the activity is labour-intensive.

3.9 The tree plantation activity is not likely to be completely successful if village population and institutions are not.

actively involved. The villagers are to be motivated to adopt tree farming in lands which are unsuitable or marginally suitable for intensive agriculture. In fact, by this way people can meet most of their requirements. Required technical and financial support need to be provided.

- 3.10 Availability of area is an important consideration. There is an acute land hunger in the State. It is impossible to divert land from agriculture for this purpose. The areas for this project can be available from (i) revenue waste lands, (ii) degraded and other forest areas situated near habitations, (iii) Road, rail and canal side areas, (iv) Other private and community lands.
- 3.11 Suitable system of management of these plantations have to be worked out. Organisational infrastructure will have to be created.

CHAPTER IV

The Project Area

4.1 This is a long term project. The whole State forms the project area. Initially however, for first 5 years efforts are concentrated in western, northern and other forest less regions.

4.2 Availability of the area

The following types of area may be made available to Social Forestry Programmes :-

- (i) Unoccupied waste lands
- (ii) Degraded and other forest areas situated near habitations
- (iii) Road, rail and canal side areas
- (iv) Community lands
- (v) Private lands

4.3 Unoccupied waste lands

About 17 percent of the geographical area has been classified as barren and uncultivable lands, permanent pastures grazing lands and culturable wastelands. Most of these lands are unoccupied i.e.

under the control of revenue department
as evident from the table below :-

TABLE IV.-1

Area of Occupied and Unoccupied wastelands in
Madhya Pradesh *

Category	Area in hectares			
	Occupied land	Unoccupied land	Total	% State Area
1- Barren and uncultivable land	108848	2211917	2320765	5.2
2- Permanent pastures and grazing lands	558400	2662927	3221327	7.3
3- Culturable waste land	1083009	1024811	2107820	4.8
Total	1750257 (22.9)	5899655 (77.1)	7649912 (100)	17.3

Approximately 7.5 million hectares area
of the State is presently lying idle and
waste. The important feature of such areas
that 77 percent is under the possession of
the Government (Revenue Department). The
district wise area of waste lands is
given in Annex-2.

* Directorate of Land Records

4.4 Sufficient waste lands exists in various districts of Madhya Pradesh. Many areas in waste lands are encroachment by people which may not be available for taking up plantations. The exact area under encroachment is not available. Preliminary survey in some districts indicates that sufficient waste lands are available. These areas are generally in small patches. Therefore, it may not be possible to take up plantation activity in all the available areas as cost of plantation and supervision may be high in smaller areas. Villagers may be motivated and helped to take up tree plantations in these areas.

4.5 Degraded and other forest areas situated near habitations

Many forests of the State are burdened with rights and concessions. Such forests are in various stages of degradation due to continuous over-exploitation in the past particularly near habitation. It is necessary to restock the forest areas which adjoin villages with suitable

48

species, thereby meeting the requirements of villagers for fuelwood, small timber and fodder. Total area of degraded forests in the State is not precisely available but it is expected that sufficient area exists in each district for taking up Social Forestry Programme.

4.6 Road, Rail and Canal side areas

The total road length and rail length in Madhya Pradesh is approximately 60,000 km and 10,000 km respectively. The road, rail and canal sides have not been utilized for raising trees in Madhya Pradesh. If such areas are put under suitable species, these may yield substantial amount of forest produce which may go a long way for meeting the requirements of the local population. The details of road, length and available areas for plantation is as under (1979)¹

Road type	Length (km)	Equivalent approximate area (ha)
1- National Highways	2614	5228
2- State Highways	11458	11458
3- Other roads	43641	43641
	57713	60327

¹ From Public Works Department

49

4.7 Community lands

There are certain areas under the control of village panchayat in each village. The area is generally used for grazing, and camping of village cattle and for other common nistar works. These areas can be planted up with suitable species without disturbing the existing land use. The exact extent of the area under this category of land is not available. The area, however, may form important component of the Social Forestry areas.

4.8 Private lands

Villagers can meet their own requirements of small timber and fuelwood by growing trees of suitable species on their own lands, building compounds, school compounds, boundaries of the farms and various other places which are not put to intensive cultivation. For this, intensive extension activities are required to be developed. Various demonstration areas may be selected and planting of trees may be taken up. Common belief of the villagers that

growing of the trees on the boundaries of farm lands is disadvantageous to agriculture can be removed by selecting proper species. The demand of forest produce particularly fuelwood is so large that it is not possible to meet all the requirements by only Government effort. People will have to help themselves. The villagers have to raise trees on the available land on homesteads so that they are able to meet their requirements.

- 4.9 The project area in each district will consists of wastelands, degraded forest lands, road, rail and canal side areas, community lands and other private lands. The total area of waste lands under the control of Government is 5.9 million hectares. Many areas may be under the encroachments and illegal possession of the villagers. It is expected that about 20 percent of these area may be available for raising tree crops and grass land improvement. The total area thus, will available be about 1 million hectares.

The area of degraded forests in each district is also quite large and therefore, selection of area of degraded forests will not be any problem. It is expected that 1.5 million hectares will be available from degraded forests. The total road, rail and canal side area, may be about 100 thousand hectares, all of which may be made available for Social Forestry Plantation.

4.10 Total area available for proposed Social Forestry Plantation Programme may be as under :-

1- Revenue waste lands	1 million ha
2- Degraded forest areas	1.5 " "
3- Road, Rail and Canal side areas	0.1 " "
4- Community waste lands	.05 " "
	<hr/>
	2.65 " "
	<hr/>

Different types of areas in different districts is indicated in Annexure..20.

4.11 Physical features and drainage

Undulating topography characterised by low hills, narrow valleys, well defined

plateau and plains is the general physiography of the State, which separates the fertile Gangetic plains of Uttar Pradesh in the north from the broad table land of the Deccan plateau. The general elevation varies from 100 m to over 1200 m above m.s.l. The Dhoopgarh peak (1350 m) of Pachmarhi (Hoshangabad district) is the highest point in the State. The main hill ranges are the Vindhyas, the Satpuras, the Mahadeo, the Bhandar, the Panna, the Kaimur, the Maikal, the Mainpat, the Samripat and the Bastar hills. The State could be broadly classified into seven physical regions (figure 1)

(1) Northern low lying plains :

These cover parts of Gwalior, Bhind, Morena, Datia, Jikamgarh, Chhatarpur and west of Panna range and include certain parts of Rewa district between Panna hills and Kaimur hills of Baghelkhand region. The elevation varies from 150 m to 300 m above m.s.l.

(2) The Malwa and Vindhyan Plateau

The table land of Malwa with average elevation of about 475 m lies to the north of Vindhyan range and to the south of the low lying plains of Gwalior. The hilly Vindhyan plateau is situated to the north of Narmada valley to the south of low lying regions of Bundelkhand. It spreads from Malwa plateau in the west to Maikal and Korea hills of Satpura range in the east. It consists of large undulating plains of black cotton soil dotted with flat topped hills.

(3) The Narmada Valley

This is a long narrow valley stretching diagonally across the State between the Vindhya in the north Satpuras in the south. It is nearly 575 km long and about 50 km wide. It covers the districts of Jabalpur, Narsinghpur, Hoshangabad, Raisen, Sehore, Khandwa, Khargone, Dhar and Dewas.

(4) The Satpura Stretch

It runs from west to east for about 650 kms through Khandwa, Betul, Chhindwara, Seoni, Mandla, Bilaspur, and Surguja districts. Its northern spurs go into Hoshangabad and Narsingpur districts, and in the south an extensive spur of 150 km covers the entire Balaghat district. General elevation of the ridge is 600 m, but at places the peaks rise to more than 1000 m.

(5) Chhota Nagpur Plateau

It occupies the north-eastern portion of the State and is characterised by a number of plateau such as Khudia and Pandrapat in Raigarh district and Mainpat in Surguja district.

(6) Chhatisgarh Plains

These extent along the eastern face of Satpura range and lie to the north of Bastar hills. A series of detached hills from Bastar plateau enter Raipur and Rajnandgaon districts from the south.

(7) Bastar Plateau

The southern most part of the State is hilly and very much cut up. The tract lying to the north of Indravati river is a plateau 650 m above m.s.l., on which are studded chains of hills upto 160 m high. To the south of Indravati river is a plateau extending 650 m. The Bailladilla range which runs from north to south and spreads out in the south east till it reaches the Sabri river. The southern part lying along the banks of Godavari and Sabri rivers has a low altitude from 150 m to 300 m above m.s.l. The physical features are indicated in figure - 2.

4.12 Climate and Rainfall

The tropic of cancer passes through the Central part of the State. Major portion of the State thus falls within the tropics. Broadly speaking the climate can be described as a hot dry summer (March to mid June) followed by monsoon rains (mid-June to mid-October) and then a cool and relatively dry winter. The

plateau and the hilly tracts enjoy coolness throughout the year. Low lying depressions and valleys are subjected to occasional frost in December-January. Bastar, parts of Surguja, Balaghat and Mandla are wet and humid, Malwa plateau is famous for its cool and salubrious climate. The climate of Gird (Gwalior region) and Chhatisgarh plains is hot and dry. Rainfall in the State presents great variety of meteorological conditions. The monsoon usually breaks in the third or the fourth week of June in different parts of the State, heaviest rainfalls are in July and August. The monsoon starts receding in the last week of September and complete cessation occurs generally by middle of October. The south-west monsoon provides about 93 percent of the total annual rainfall.

Except for a very small area of low rainfall below 60 cm in the south of Khargone district the rainfall varies from 75 cm in the north-west increasing steadily as we go eastwards upto 200 cm in Surguja and

Bastar district with local precipitation upto 250 cm in certain sheltered valleys. Distribution of rainfall is exhibited in figure - 3. The classification of district according to average annual rainfall is shown in Table IV-2.

TABLE IV-2

Classification of districts by annual rainfall

Annual Rainfall in cm.	Districts included
75-85	Gwalior, Morena, Bhind, Datia, Chhatarpur, Tikamgarh, Guna, Shivpuri.
75-125	Raigarh, Mandsaur, Shajapur, Ratlam, Ujjain, Dewas, Indore, Jhabua, Dhar
105-125	Panna, Satna, Rewa, Shahdol, Sidhi, Surguja, Khargone
105-135	Vidisha, Raisen, Sehore, Bhopal, Sagar, Damoh
125-135	Jabalpur, Narsingpur, Hoshangabad
135-145	Seoni, Chhindwara, Betul
150-180	Durg, Rajnandgaon, Raipur, Bilaspur
160-175	Mandla, Balaghat
160-180	Bastar

58

assisted. It is proposed to give a annually financial assistance of Rs.1000 per ha of nursery. It would be guaranteed that all the planting stock would be purchased by the Forest Department at suitable rates. It is expected that 6 ha nursery would be raised by private people. Thus annual requirements of funds would be as under :

	Units	Nursery (ha)	Required fund in thousand rupees
I yr.	12	72	72
II yr.	24	144	144
III yr.	32	192	192
IV yr.	36	216	216
V yr.	36	216	216

5.5.3 Schools and Colleges :

Schools and colleges are the centre of the change. It is, therefore, necessary to involve schools and colleges in social forestry programmes in order to have maximum possible cooperation. Seed and empty polythene bags may be supplied to the schools and colleges. The nursery

will be raised by students in school compound. When the seedlings of the desired size are produced, these will be purchased by the forest department. The income from the plants derived by the schools will be used for the welfare schemes eg. for the purchase of books and grant of scholarships for poor boys. In order to make the programme a success it may be essential to contact teachers and train them in nursery raising who will guide the students afterwards. About 10 schools in a unit may be selected for the purpose.

5.5.4

Number of seedlings to be produced will depend upon the area to be planted. Annual targets for the plantation is kept at 750 ha in each unit. About 20 thousand seedlings would be distributed to farmers in each unit. Therefore, requirements of the plants during different years of the project is indicated in table V - 2.

Should be the ...
minimum ...
How do you build ...
... ..
... ..

Table No. V - 2

Annual Requirements of Seedlings

(in thousand)

Year of the Project	Annual* targets of area in ha	Requirement of seedling	For free distribution to farmers	Total requirements
I year	4500	9000	24	9024
II year	14500	29000	48	29048
III year	21000	42000	64	42064
IV year	25400	50800	72	50872
V year	27000	54000	72	54072

* (i) Spacing considered is 2.5 x 2.5 m.

(ii) Number of seedlings required would be 1600. About 400 seedlings per ha is for beating up operations.

5.5.5 Organisation :

The nurseries will be maintained by the district level organisation i.e. Dy. Director. One Forester and 6 Forest Guards will be provided in each district to maintain the nurseries. Forester will be incharge of the district unit nursery and forest guards, for tehsil or block level nurseries. One Chaukidar will be kept for watch and

ward of each nursery. The financial implication due to organisation is included in para 5.6.3.

5.5.6 Financial inputs :

Seven nurseries are proposed to be established in each district. One will be situated at head quarter of the unit while others at block tehsils head quarters. Suitable land will have to be procured on lease or outright purchase where Government land is not available. Provision has been made for the lease rent. Irrigation facility is a must for the nursery. Some buildings e.g. Forester's/Forest Guard quarter, Chaukidar hut/Labour hut are to be constructed. Details of capital costs, working and variable costs on nursery is given in annex 3 and 4 respectively. The expenditure is summarised in table V - 3.

...59/-

Table V - 3

Summary of the cost calculation on nursery for one unit

S. No	Type of Nursery	Number in a unit	Expdt. on capital costs	Expdt. on working costs	Expdt. on variable costs	Total
1	2	3	4	5	6	7
1-	Central nursery	1	90	35	119	244
2-	Tehsil/block nursery	6	240	120	153	513
	Total	7	330	155	272	75

NOTE :1/For details of fixed costs please refer to Annex 3.

2/For details of expenditure on working costs, refer Annex. 4.

3/For details of working costs refer to annex 4.A.

4/Total requirement of seedlings for one unit to plant 750 ha targetted area is 1.5 million seedlings. The central nursery will produce 0.75 million seedlings and 6 tehsil/block nurseries would produce 0.75 million seedlings. The capacity of these nurseries is to produce almost double the number of seedlings when efficiently managed.

6.5.7 The nursery activities will expand according to the plantation programme. The expenditure on departmental nursery during different years of the project works out as under (table V - 4)

Table V - 4
Phasing out of nursery expenditure

(in '000 rupees)

S. No	Year of the Project	No of units under the project	Total costs			Total
			Capital costs	Working costs	Variable costs	
1-	I year	12	3960	1880	1534	7374
2-	II year	24	3960	3720	5938	13618
3-	III year	32	2640	3960	7151	14751
4-	IV year	36	1320	5580	8648	15548
5-	V year	36	-	3580	9192	14772
Total :						66063

5.5.8 For purchasing seedlings raised by private School and individuals, colleges a fund of Rs.8 thousand will be provided to each unit. Thus the expenditure on the nurseries during different years is expected as under (table V-5)

164

Table IV - 5

Expenditure under nurseries during different years of
the project

(in '000 rupees)

S. No.	Year of Project	Departmental nurseries	Nurseries by School & college	Private nurseries	Total
1-	I year	7374	96	72	7542
2-	II year	13618	192	144	13954
3-	III year	14751	225	192	15168
4-	IV year	15548	288	216	16052
5-	V year	14772	288	216	15276
Total :		66853			67992

5.6 Tree Planting in suitable areas :-

5.6.1 This is a major project component. The survey, mapping, site assessment and preparation of the plan are completed in the first year. Tree planting in suitable areas is to be taken up in these units as per prescriptions of the plan.

5.6.2 The main types of plantations would be as under :

(i) Plantation on waste lands and degraded forest areas.

(a) Energy plantation

(b) Small timber plantation

- (c) Mixed plantation
- (d) Silvi-pasture
- (2) Road side plantation
- (3) Canal bank plantation
- (4) Railway line plantation
- (5) Community lands plantation

5.6.3 Organisation :

A Dy. Conservator of Forests will be overall incharge of the unit and will be called Dy. Director Social Forestry. There will be six Field Officer, (Range Officers) with 4 Field assistants under each field officer. Detail organisation is given in annex..6.....

5.6.4 Physical Targets :

The plantation activities will start in the second year of the project when management plan and nursery stock are ready. The annual target per unit for tree plantings are as under :

- i) Plantation of revenue waste land and degraded forest area = 650 ha
- ii) Road, rail and canal side plantation = 50 km 100 ha.

The physical targets for plantation and maintenance during different years is indicated in table .V - 6.

Table V-6

Annual targets for tree planting

S. No	Year of Project	No of units engaged in plantation work	Total area for tree planting in ha		
			I year plantation	II year plantation	III year plantation
1-	I year	nil	nil	nil	nil
2-	II year	12	4500	-	-
3-	III year	24	14500	4500	-
4-	IV year	32	21000	14500	4500
5-	V year	36	25400	21000	14500

5.6.5 Financial inputs :-

Financial inputs for the various activities c.g. salaries of staff, building and housing, vehicles, plantation activities are worked out on the basis of present prevalent rates and wages. The staff and their requirement is discussed in Annex-6. Due to shortage of fuelwood in this area it is proposed to give priority to energy plantations (Fuelwood plantation). The components of different types of plantations are as under :

- 1- Fuelwood plantation 600 ha

- 2- Small timber plantation 100 ha
- 3- Road/rail/canal side
plantation 50 ha

5.6.6 The cost of formation of these plantations will vary according to species planted, type of soil working etc. The following average cost formation of these plantations has been adopted.

- 1- Fuelwood plantation 1300 Rs./Ha.
- 2- Small timber plantation 1400 Rs./ Ha.
- 3- Road/rail/canal side
plantation 7000 Rs./ Ha.

5.6.7 The expenditure on maintenance is Rs.250 during the second year and Rs.50 during the third year. One jeep, one tractor with trolley and six motorcycles provided in each unit, (detail annex.7). Following financial inputs are required during different years of the project (table V-7)

Table V - 7

Financial inputs for different activities

S. No	Item	Year of the Project				
		I yr.	II yr.	III yr.	IVyr	V yr.
1	2	3	4	5	6	7
1-	Salaries of the staff (Annex 6)	54 60	109 20	145 60	163 80	163 80

Table V-7 Contd.....

1	2	3	4	5	6	7
2-	Vehicles and equipment(Annex7)	7000	7800	5200	2600	-
3-	Office expenses (Annex 3)	2400	4800	6400	7200	7200
4-	Expenditure on tree planting (Annex 10-1,10-2,10-3)	-	7020	21060	33760	39780
5-	Expenditure on maintenance (Annex 10-1,10-2,10-3)	-	-	1125	3850	5975
Total		15660	30540	48345	63790	69335

5 .7.1

Improvement of Grassland

Many areas of available waste lands and degraded forests may not be suitable for tree planting. Such areas, however be managed for production of grasses. Existing grasses may need replacement by better strains. Fencing will have to be provided in order to control grazing. Grass cutting only shall be allowed in such areas. No additional buildings, vehicles and staff are provided for this purpose. Provision made for staff, vehicles and buildings for tree planting is good enough to carry out the activities of this project component. Fencing shall be an essential

ingradient of this project component. Sowing and planting of improved grasses e.g. napier grass, other improved grasses will be done. The annual target for each district is 250 ha. First year no work would be done. The second year of creating the unit only $\frac{1}{2}$ of the target would be achieved.

Per hectare cost of improvement of grassland works out to about Rs.1000/ha.

The financial inputs during various years of the project is given in table V-8.

Table V - 8

Financial inputs for grass land improvement

(in '000 rupees)				
Year of the Project	Targets Ha	Formation	Mainte-nance	Total
I year	Nil	Nil	Nil	Nil
II year	1200	1200	Nil	1200
III year	3600	3600	120	3720
IV year	5600	5600	360	5960
V year	6800	6800	560	7360
Total	17200	17200	840	18240

Note : For details of cost per ha. please refer to annex 11.

5.8.1

Forest extension in farm lands :

The object is to motivate people to change their attitude towards tree planting. Tree planting in certain cases may be more profitable than agriculture. Many cultivators with large holdings may like to put certain areas of their land under trees. These farmers must be encouraged and necessary financial and technical assistance proposed to be provided. The following are the main sub-component of this activity :

- (a) Motivation with creation of suitable extension agency.
- (b) Free distribution of seedlings.
- (c) Establishment of demonstration plots
- (d) Publicity.

5.8.2

It would be necessary to create a well knit and strong extension agency who would motivate cultivators to allot a portion of their holdings to tree plantation and also render, required technical assistance. It is proposed to have one Assistant Director Extension Officer for this purpose. This organisation

71

will work under the guidance and control of Dy. Director Social Forestry. It is proposed to distribute annually about 25,000 seedlings in each unit. In each unit 5 demonstration plots are proposed to be established. Sufficient literature in form of posters, pamphlets, film shows etc. are to be provided.

5.8.3 Financial inputs for different sub-components for one unit works out as under :

(in '000 rupees)

S.No	Item	
1	Creation of Extension Agency	60
2	Free distribution of seedlings	5
3	Establishment and maintenance of demonstration plots	20
4	Publicity	25
Total		110

17

5.8.4 The total cost on these components therefore work out as under (Table V-9)

Forest extension in farm land

Table V - 9

(in '000 rupees)

S. No	Year of the Project	Target in units	Total
1-	Ist year	Nil	Nil
2-	IIInd year	12	1320
3-	IIIrd year	24	2640
4-	IVth year	32	3520
5-	Vth year	36	3960
Total			11440

Note : (i) The average size of demonstration plot is taken as 1 ha.

(ii) Average cost of raising tree in demonstration plot is taken as Rs.4000/-.

5.9.1 Development of Infrastructure :

It is proposed to construct buildings for the offices of the various category of offices. The office-cum-residence is proposed to be constructed for vanevaks,

and Forest Extension Assistants. The proposed buildings are shown in Annex.-7.. The proposed building construction is phased out and it is proposed that the buildings would be constructed in the first two years. The preference in construction of buildings would be given belonging to those of lower levels. The buildings would be constructed by the Officers/officials discussed in paragraph 5.6. There is no proposal to construct buildings for the Joint Director office and Director's office and residences of the officers of these office. The total requirements of funds for construction of buildings for one unit works out to be about Rs.1400 thousand. Cost of construction of buildings during various years of the project would be as under :-

Table V-10

Cost of construction of buildings

S ₁ No.	Year	Cost in thousand Rs.
1	I year	8400
2	II year	16800
3	III year	14000

74

Table V-10 Contd....

1	2	3
4	IV year	8400
5	V year	5800
	Total	53400

Note : In the fifth year Social Forestry Research-sum-training Institute is proposed to be constructed with cost of Rs.3000thousand.

5.11

Research :

1. The object of this component is to carry out intensive research and find out suitable species, planting techniques, intercropping, demand of local population, consumption pattern etc. For this both biological and socio-economic studies will be essential.

2. Organisation :

It is proposed to establish a separate Research Institute for Social Forestry. There would be branches of silviculture, economics, agrostology and silvi-pasture, agro-forestry, rural sociology, extension

Define information needs
Site criteria for silviculture
information needs
How questions can be answered
Research design take off from pilots which exist, exp. which are with which

4.13 There are nine districts in the State which have a history of failure of monsoon almost every third or fourth year and another 15 districts parts of which are, chronically drought affected. Six¹ districts have been declared drought prone and covered by the DPAP.

4.14 As far as groundwater potential is concerned, most of the alluvial tracts contain water bearing strata which is found in confined conditions in the layers of clay, kankar, sand, pebbles and gravel. In the alluvial region of the State, tubewells have been successfully bored. The northern region of the State also possesses favourable conditions for development of tubewells. Areas other than the alluvial contain underlying igneous sedimentary and metamorphic rock formations such as Archaean, Deccan Trap, Sandstones, Laterite, Quartzite, etc. It has been observed that underground water pockets exist in the trap as well as in other rock formations. The existence of

1. Dhar, Jabua, Sidhi, Betul, Khargone (part) and Shahdol (part)

76

Chhatarpur, Indore and Khandwa with a capacity to irrigate upto 2 hectares, and in Panna, Guna, Betul, Dewas, Shajapur districts with a capacity to irrigate about 1 hectare, shows the existance of ground water in rock formations. There is a Directorate of Tubewells and Groundwater Survey in the State. So far investigations about ground water potential have been carried out in 24 districts out of 45 districts. According to tentative estimates, about 2 million additional wells could be dug in the State.

4.15 Soil

The main soil type 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 gravelly. The classification of districts according to predominant soil types is shown below :-

<u>Soiltype</u>	<u>District included</u>
Alluvial soils	Gwalior, Morena, Bhind
Deep black soils	Narmada Valley (Narsinghpur, Hoshangabad, and part of Jabalpur district)

<u>Soil type</u>	<u>District included</u>
Medium black soils	Raigarh, Mandasaur, Shejapur, 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 and black soils	Rewa, Satna, Panna, Chhatarpur, Tikamgarh, Datia and part of Shivpuri district
Red and yellow soils	Raipur, Raigarh, Bilaspur, Durg, Rajnandgaon, Balaghat and part of Mandla, Surguja and Bastar districts
Skeletal or gravi-ly soils	The stony uplands of the Vindhya 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.

78

4.16 Legal status of the area available for plantations

- (a) The wastelands are under the control of Revenue Department of the State Government.
- (b) The degraded forests are under the control of Forest Department of the State Government.
- (c) The road side areas are under the control of Public Works Department of the State Government.
- (d) The rail side areas are with the Government of India while canal side areas are under the control of Irrigation Department of State Government.
- (e) The community lands are mostly under the Panchayats.

4.17 Present land use

- (a) The degraded forest area and revenue waste lands are generally used as grazing lands for village cattle population.

79

(b) Except for planting a row of trees, lands along road sides are not used for any other purpose.

(c) The community lands are used usually as grazing lands, though due to heavy and uncontrolled grazing, these lands are unproductive and are used as exercise ground only.

4.18 Supporting services

State Panchayat, Public works, Education, Agriculture, Animal Husbandry and Revenue Departments will be main support services for the project.

4.19 Marketing and storage

Fuelwood, small timber and bamboos will be distributed through Departmental Agency Panchayats and Cooperatives by establishing depots, to the rural population. Preference will be given to the villagers within whose boundary the plantations are raised. The grasses may be sold on concessional rates. The fruits may be allowed to be removed free for the consumption and sale.

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CHAPTER - V

T H E P R O J E C T

5.1 The Project proposals aim at meeting the domestic requirements of fuelwood, fodder, small timber, and bamboo which are in great demand by local population. For this purpose it is proposed to intensify land use on rational basis. All waste lands, degraded and marginal lands are to be utilised under tree cultivation by suitable species. It is proposed to motivate farmers to raise trees on their own holdings to meet their requirements.

5.2 Project Components :-

The proposed project consists of the following components :

- 1- Survey, mapping, site assessment and formulation of management plan for waste lands degraded forests, road, rail, and canal sides and other areas.
- 2- Establishment of nurseries.
 - (a) Departmental nurseries
 - (b) by school and colleges
 - (c) by private individuals
- 3- Plantation of suitable species
 - (a) Plantations in wastelands
 - (b) Plantations in degraded forests

- (c) Road side plantations
 - (d) Canal and rail side plantations
 - (e) Plantations on community lands
- 4- Improvement of grasslands
- 5- Farm forestry
- (a) Extension service
 - (b) Free distribution of seedlings
 - (c) Raising demonstration plots in the villages
 - (d) Plantation in private lands
 - (e) Information service
- 6- Development of infrastructure
- 7- Research
- 8- Training and fellowships
- 9- Supervision and administration
- 10- Evaluation and monitoring

5.3 These project components have to be inter-dependent. Detailed features of each component is discussed below :-

5.4 SURVEY. MAPPING. SITE ASSESSMENT AND FORMULATION OF MANAGEMENT PLAN.

5.4.1 The objectives of this component are to survey and to map the wastelands, degraded forests and areas along roads, rail and canals and

other community lands and assess the site capabilities with a view to identifying the areas suitable for tree planting, grassland improvement etc.

5.4.2

Location, survey and mapping of all lands classified as barren and unculturable waste lands are the parts of this component.

Listing, surveying and mapping of all such areas in a district have to be done with the help of Patwari maps and other revenue records. This work has to be started in advance. Ground survey will be suitable method of survey and mapping. The applicability of photo interpretation and other remote sensing techniques has to be examined for identification and mapping of these areas. A detail procedure of the survey and mapping of such wastelands has to be worked out. Road side, rail side, canal side areas will also be included. Site assessment should also be done along the survey. Land capability assessment with particular reference to tree planting and grassland development should be done. The important limiting factor/factors should be



indicated. The management plan should be prepared to indicate suitable species, planting techniques and with various other details.

5.4.3 It is proposed that all areas which are more than 2.0 ha in extent would be identified surveyed, demarcated and properly mapped. It is expected that sufficient areas would be available above this limit. The annual target for the survey, demarcation, mapping, site assessment and preparation of plan is kept at 15,000 ha per unit.

5.4.4 It is proposed that in the first year, the work of survey, mapping, site assessment and preparation of plan will be carried out. It is proposed that the above mentioned works will be completed in the 1st year. No extra staff is provided for this purpose. The organisation proposed in para 5.6.3 will complete this work in the first year. A lump sum cost of Rs.50 thousand per unit is proposed for survey, mapping, site assessment and management plan preparation works. Thus total annual requirements works out as follows :

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94

Table V - I

Cost. of Survey, Mapping, Site Assessment
and preparation of Plan :

<u>Year</u>	<u>Cost in '000 Rs.</u>
I year	600
II year	600
III year	400
IV year	200
V year	-
	<u>1800</u>

5.5 Establishment of Nurseries :

5.5.1 Departmental nurseries :

It is proposed to have a Central Nursery of about 5 ha in each district and smaller nurseries of about 1 ha at the head quarter of field officer or at Tehsil or at Block level. The total number of departmental nurseries in a district would be about 7.

5.5.2 Private Nurseries :

Private people would be encouraged to take up to raising of planting stock in their own lands. Such people would be financiall

65

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.
Indore	198.3	8	283.0	12	318.2	15	232.3	12	91.6	3	-	-	1123.4	50
Dhar	138.1	9	167.4	11	265.9	19	125.7	9	31.1	3	2.0	2	730.2	53
Jhabua	98.8	8	185.7	10	225.1	22	75.5	10	88.9	6	0.2	-	658.2	56
Khargone	105.3	7	199.7	11	268.8	16	145.5	9	44.3	4	0.6	4	764.2	48
<u>Khandwa</u>	<u>158.2</u>	<u>6</u>	<u>303.1</u>	<u>12</u>	<u>296.8</u>	<u>14</u>	<u>240.9</u>	<u>10</u>	<u>74.2</u>	<u>4</u>	<u>-</u>	<u>-</u>	<u>1084.3</u>	<u>47</u>
<u>INDORE</u>	<u>DN.</u>													
Ujjain	155.4	7	229.9	11	329.4	15	303.6	10	43.3	3	2.12	1	1062.7	47
Ratlam	126.7	6	151.1	12	313.5	15	224.7	10	48.4	4	5.9	2	870.3	49
Mandsaur	107.1	6	166.5	9	210.5	12	228.3	9	41.7	3	2.3	1	756.4	40
Dewas	86.2	7	215.9	16	264.3	14	385.3	12	63.6	5	2.3	1	1125.5	57
Shajapur	132.2	8	201.5	11	289.3	16	272.8	11	32.8	2	14.3	3	945.6	51
<u>UJJAIN</u>	<u>DN.</u>													
Bhopal	269.3	8	314.8	17	389.5	18	286.3	10	43.0	4	7.5	-	1353.6	59
Sehore	132.9	6	360.9	18	442.2	20	469.0	14	11.7	2	13.1	3	1443.8	64
Raisen	154.4	10	290.1	15	464.4	19	246.3	11	26.6	3	21.7	2	1226.2	61
Vidisha	216.5	9	377.2	18	448.8	16	203.0	11	52.0	2	19.9	4	1322.4	60

95

etc. Each branch is proposed to be headed by Specialist/Research Officers. The Institute would be headed by an officer of the rank of Joint Director, Social Forestry. Detail organisation of the proposed institute is given in Annex - 13.

The financial inputs required for the proposed institute is as under :

Table V - II

Total cost on Research

S.No.	Item	I yr.	II yr.	IIIyr	IVyr	V yr
1	Salaries (Detail Annex.)	398	398	398	398	398
2	Vehicles and office furniture (Detail Annex.)	450	450	-	-	-
3	Office Expenses	350	350	350	350	350
4	Other Contingent exp.(Office exp.)	50	50	50	50	50
Total		1248	1248	798	798	798
						4890

87

5.12 Training and Fellowship :

5.12.1 Social Forestry works proposed in the project are different than the conventional works done by the Forest Department. It is therefore, necessary to have training facilities for workers and supervisors of all the levels. The training programme should have emphasis on the following

- (i) An in-sight into socio-economic problem of the rural population.
- (ii) Effective ways of communication with rural population and how to win their confidence.
- (iii) Methods of motivation
- (iv) Proper land use particularly under retrograde condition.
- (v) Soil and water conservation
- (vi) Multidimensional forestry particularly fuelwood and small timber production, range management system, silvi-pasture agro-forestry systems etc.
- (vii) Agronomy, fruit tree cultivation and animal husbandary, dairying etc.
- (viii) Common methods of raising tree crops.

5.12.2

Fellowships :

The training of inservice officials and officers can be arranged in any one of the existing forestry colleges. The research institute can develop training facility also for lower subordinates. Selected officers of the level of Dy.Directors and Joint Directors may be sent abroad on short study tours for a period of about three months particularly to United States of America, Spain, U.K. and Japan where extension forestry has made progress. The total annual expenditure of about Rs.200 thousand per year (Rs.100 thousand local + Rs.100 in foreign) may be required for the training and education.

5.13

Administration and Supervision :

efficient.
In order to achieve/execution of the project it is unavoidable to have administrative and supervisory officials and officers as a part and parcel of the project. The Director, Additional Director, Joint Director, etc. come under this category.

87

5.13 .1 The financial inputs required on account of salaries of administrative and supervisory staff, is given in Annex 14 and 15. The details of the cost of purchase of vehicles, office furniture, equipments are discussed in Annex..17.

Total cost of administration and supervision works out as under (table V-13)

Table V-13

Total cost administration & Supervision

(in '000 rupees)

S.No.	Item	I yr.	II yr	III yr	IVyr	Vyr
1	Salaries (a)H.Q.	870	870	870	870	870
	(b)J.D.	510	1020	1190	1360	1360
2	Vehicles & Office establishment (including Joint Director's Office)	1560	600	200	200	-
3	Office expenditure (including Joint Director's office)	800	1100	1200	1390	1300
4	Other expenses	100	100	100	100	100
Total		3840	3690	3560	3830	3630
Total for 5 years		18550				

5.13.2 Evaluation and monitoring

Every investment in a project should be properly monitored and evaluated so that its usefulness or otherwise should be ascertained. The defects and bottlenecks should be identified and suitable remedial measures should be taken in time so that maximum possible benefits of the project is harvested.

5.13.3 Plantation evaluation & monitoring activity will need proper inventory of the nursery stock, assessment of plantation targets, expenditure, estimates of area, survival percent, growth rates, possible yield etc. An organisation headed by a Joint Director at the head quarter will look after this work. The detail organisation of this cell is given in Annex 17. The financial inputs are included under the head supervision and administration.

5.14 Total Project Costs :

The total project costs for a period of five years has been worked out and is given in table IV - 15.

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Table V-15

Project cost by Labour and non-Labour (material and capital goods)

(in '000 rupees)

S.No.	Project component	expenditure	Total
1-	Survey, mapping, site Assessment and formulation of management plan.		1800
2-	Nursery works		67992
3-	The planting in suitable areas		227670
4-	Improvement in grass land		18240
5-	Forest Extension in farm land		11440
6-	Development of infrastructure nistar supply for the local population		53400
7-	Research	4890	
8-	Training and fellowship		1000
9-	Administration and supervision		18550
Total			404982

10000 small in new book with data sheet

Note : All expenditure except Rs. 500 thousand is in Indian Currency. Rs. 500 thousand which is proposed for training and fellowship is in foreign currency.

92

5.14. The total project cost for a period of 5 years is Rs.404.7 million. The yearwise break up is given in table V-16.

Table V - 16
the
Yearwise cost of Project

(in '000 rupees)

S.No.	Project component	Years					TOTAL
		I	II	III	IV	V	
1-	Cost of survey mapping site assessment and preparation of plan	600	600	400	200	-	1800
2-	Expd't. under nurseries during diff.yrs. of the Project	7542	13954	15168	16052	15276	67992
3-	Financial inputs for diff.activities	15660	30540	48345	63790	69335	227670
4-	Financial inputs for grassland improvements	-	1200	3720	5960	7360	18240
5-	Forest Extension in farm land	-	1320	2640	3520	3960	11440
6-	Cost of construction of buildings	8440	16800	14000	8400	5800	53400
7-	Total cost on Research	1248	1248	798	798	798	4890
8-	Training	200	200	200	200	200	1000
9-	Total cost of Administration & Supervision	3640	3690	3560	3830	3630	18550
	Total	37490	69552	88831	102750	106359	404982

5.16 Financing :

It is expected that 50 percent of the project cost will be financed by United States of America Agency for International Development and balance percent would be shared by the State.

5.17 Procurement :

At present the equipments, vehicle etc. are purchased from authorised dealer after obtaining proper sanction from the competent authority. Certain items are also purchased by calling quotations/tenders. Buildings are designed planned and constructed by the Forest Officers in the department and therefore, they can do this work with ease. The procurement of equipment, vehicles, etc. is no problem.

5.18 Accounting procedure :

Both internal and external audit may be employed for proper utilization of resources. External audit may be taken up by the audit section of Account^{ant} General. For internal audit, the Principal Chief Conservator office will do the needful.

98

CHAPTER - VI

Organisation and Management

6.1

The works envisaged in the project are of such great importance and magnitude and involve so much liaison with the people, that these can not be implemented by the organisation functioning in isolation. An efficient organisation has to be created for the purpose, which should work in close coordination with other welfare departments such as Forest, Revenue, Tribal welfare, Social welfare, Panchayats Education etc. To ensure co-ordination and also to facilitate quick decisions and to minimise administrative delays and constraints it is suggested that organisation created for the purpose should be strong and capable of taking quick decisions. It is therefore, suggested that a separate social forestry organisation should be created in the forest department.

6.2

In order to implement social forestry programmes a Directorate of Social Forestry will have to be created in the

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95

State. It should have adequate technical and secretarial support, both at head quarters and in the field for effective implementation of the project. The organisational chart is given at figure 5 indicating various organisational components. The duties and responsibilities of the key personnel are discussed below :

6.3

(i) Director Social Forestry (Chief Conservator of Forests) :

- (i) He will be the over all incharge of the project.
- (ii) He will be responsible for planning and implementation of the project.
- (iii) He will coordinate activities with other departments and will report the progress to Government.

6.3.1

(ii) Additional Directors (Additional Chief Conservators of Forests) :

Two Additional Directors are proposed in the organisation. One would be the incharge of the execution of the management plans while other would be

incharge of plan preparation, evaluation, monitoring, training and research. The Additional Director (Execution) will be assisted by Administrative Officer, Accounts Officer and other office establishments. The Additional Director (Planning) will be assisted by Joint Director Evaluation & Monitoring and Joint Director Training and Research.

(iii) Joint Directors (Conservator of Forests)

For every four or five units, one Joint Director is proposed who will supervise the work of Social Forestry in their jurisdiction. They will supervise planning execution of the project activities.

(iv) Deputy Directors (Divisional Forest Officers)

A Deputy Director will be incharge of one unit. Dy. Director will be incharge of survey, mapping and preparation of management plans, creation of nursery, execution of management plans etc.

- (v) The functions of the Head Quarter Organization will be :-
- (a) to coordinate between forest department and other welfare departments for obtaining maximum cooperation at all levels,
 - (b) to list, survey, demarcate, map and assess the site potentials of all the unoccupied waste lands so that these may be brought under tree crop.
 - (c) to study the sites and after analysis of such specific factors as soil and the site related features (e.g. climate topography, drainage, protection from biotic factors, aspect etc.) design the plantations,
 - (d) to assess the needs of the villagers (e.g. fuelwood; small timber; pasture and fodder; etc) and relate these needs with the tree farming targets - in specific areas (e.g. districts)

- (e) To conduct a survey of the structure of employment (e.g. season of employment, employment to weaker sections, employment to women etc.) in the villages close to the social forestry programme and indicate the availability of labour to ensure the programme's success and also the likely impact of the scheme on the employment situation in the area.
- (f) to assess the level of motivation among the villagers and the preparedness of the people to involve themselves in the programme .
- (g) to study the data gathered, systematically screen the alternative areas investigated and list the areas and the sites within the broad areas where the programme has the greatest chance of success. Particular care should be taken to mount the programme in the initial years at places where the factors are conducive to achieving success.

- 99'

- (h) popularise tree planting among the cultivators.
- (i) to develop and execute a programme for communication support, extension and promotion of social forestry
- (j) to provide continuous training and motivation to part time extension workers and to regular staff.
- (k) to generate feed back information to correct programme features while it is in progress.
- (l) to evaluate the return (economic and social) to the communities.
- (m) to coordinate with Survey of India Forest Survey of India, Forest Research Institute and other organisation for efficient utilization of modern facilities.

6.4

Head Quarters of the various personnel :

The Office of Director an Additional Director Social Forestry is proposed to be at Bhopal. The zonal Directors will be head quartered at the Division (Revenue) head quarters. The head quarters of the

100

Dy. Directors will be the district head quarters. The expansion of activities in various district is given in annex 18. Details of various district headquarters, Zonal head quarter are given in table VI-1.

Table VI- 1

Head quarter of the various levels of the offices-
Head Office - BHOPAL

Office of the Director and additional Directors are proposed to be at BHOPAL :

S.No.	Head Quarters of the Zonal Directors	Head Quarters of the Dy. Directors
1	2	3
1	Ujjain	1) Ujjain 2) Shajapur I 3) Shajapur II 4) Dewas (Dewas & Sonkachh Tehsil)
2	Ratlam	1) Ratlam I 2) Ratlam II 3) Mandseur I 4) Mandseur II
3	Indore	1) Dhar I 2) Dhar II 3) Indore 4) Khargone I 5) Khargone II

101-

1	2	3
4	Reva	1) Reva I 2) Reva II 3) Satna I 4) Satna II 5) Panna
5	Gwalior	1) Gwalior 2) Bhind 3) Datia 4) Guna 5) Morena 6) Shivpur
6	Bhopal	1) Bhopal 2) Rajgarh 3) Sehore 4) Vidisha
7	Raipur	1) Raipur 2) Bilaspur 3) Durg 4) Rajnandgaon
8	Sagar	1) Sagar 2) Chhatarpur 3) Tikamgarh 4) Damoh

6.5 The work of the project would be taken up first in most seriously deficit districts though all the area included in the project need immediate afforestation.

The phasing out is as under :

Year	Circle	Division
I year	1) Ujjain	1) Ujjain
		2) Shajapur I
		3) Shajapur II
		4) Dewas
	2) Ratlam	1) Ratlam I
		2) Ratlam II
		3) Mandseur I
		4) Mandseur II
	3) Indore	1) Indore
		2) Dhar I
		3) Dhar II
		4) Khargone II
II year	4) Gwalior	1) Gwalior
		2) Bhind
		3) Datia
		4) Shivpuri
	5) Rewa	1) Rewa I
		2) Rewa II
		3) Satna I
		4) Satna II
	6) Bhopal	1) Bhopal
		2) Rajgarh
		3) Sehore
		4) Vidisha
III year	7) Raipur	1) Raipur
		2) Bilaspur
		3) Durg
		4) Rajnagar

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1	2	3
	4) Gwalior	5) Morena 6) Guna
	5) Rewa	5) Panna
	3) Indore	5) Khargone II
IV year	8) Sagar	1) Sagar 2) Chhatarpur 3) Tikamgarh 4) Damoh

6.6

The duties of the Deputy Director Social Forestry will consist of the preparation of the thorough inventory of the unoccupied wastelands and degraded forests to be taken up under social forestry programme, their survey and mapping, site assessment, preparation of the management plan, working out social and economic problems in the area, improvement of wastelands by tree planting in suitable areas, improving grasslands, motivating people for tree planting on their farms. The aim is to produce sufficient fuelwood and small timber so that the requirement of the local population is met. Each district unit will be further

104

divided into sub-units or blocks in-charge of which would be a Forest extension Officer (Range Officer). He would be assisted by Assistant Forest Extension Officer (Forester) Each block will further be divided into village level unit. The work of Van Sewak (Forest Guard) will consist of raising plantation in selected areas of wastelands and degraded forests, to obtain peoples cooperation in the maintenance of the plantation, provide technical assistance to the villagers for tree planting etc. There will be an advisory committee at all levels e.g. at State level, Division level, District level, Block level, Panchayat level consisting of prominent public personalities and respective heads of welfare departments. These committees will ensure public participation in the programme. It is obvious that the land under the social forestry programme is drawn primarily from the village wastelands, and degraded

forests, a close liaison will have to be maintained between Revenue and Forest department. Peoples cooperation has to be obtained for the success of the programme. Most of the unoccupied lands are in the control of the Revenue Department, while degraded forests are in the control of the Forest Department. Similarly road side areas are in the control of Public Works Department and rail side and canal side areas are with Railway and Irrigation Departments respectively. These areas will be transferred to the Social Forestry section. The areas will be declared forest and Indian Forest Act would be applicable in these areas also.

CHAPTER - VII

Production, Markets and Prices

The sites available for the tree planting are not good soils. In fact, these may be under various stages of degradations. The choice of species will be governed by (a) locality factors, (b) technical considerations, (c) present and projected demand of timber etc. Since site factors are not very favourable only hardy species may find favour in most of the areas. Another important factor which may govern the choice of species is method of assured regeneration. Where natural regeneration is not dependable, efficient method of artificial regeneration must be available. Besides, the species should be fairly fast grown to be economical. The present and future demands are the another important considerations. The aim is to produce wood material for the consumption of the villagers. Thus such species which

yield small timber, for house construction and repairs and agricultural implements, and fuelwood which has got good caloric value, should be selected for the plantation.

If the species can produce good fodder, it will be an additional advantage.

7.2

Production : *1- good Tectona grandis small plot management before can select species*
The production from the project area will

depend upon various factors e.g. species selected for plantation, system of management, site productivity, rotation, rate of growth and various other factors.

These factors are discussed below :-

1- Species selected for plantation :

The species which are recommended for the project area are Eucalyptus spp, Prosopis juliflora, Leucaena leucocephala, Acacia auriculiformis (all for fuelwood purposes), Tectona grandis, Acacia nilotica, Dalbergia sissoo, Bamboo (Dandrocalamus spp. and Bambusa spp), Azadirachta indica (all for small timber

and fuel purposes), Mangifera indica
and Anacardium occidentale (for fruits)
etc. Selection of species has to be
done keeping in view the soil type and
climate in the area. Eucalyptus may grow in
all types except in black cotton and waterlogged
areas. Acacia nilotica may be selected
for black cotton areas. Acacia
auriculiformis can grow easily in
lateritic areas. Mangifera indica
(seedling) and Anacardium occidentale
may require more care in drier areas.

2- System of management :

Such species which coppice easily will
be worked under coppice regeneration
systems. Simple coppice system can be
followed in case of fuelwood species
and coppice with Reserve in case of
timber species.

3- Site productivity : *Have a microcopy of available
differences & variety of village needs*
Productivity of the areas available for *at present*
plantation is not high. The areas are *in poor shape*
under various stages of degradation and
therefore normal rate of growth is not

expected. The species which are selected are hardy in nature and therefore good returns are expected. Addition of manures, fertilizers and soil amendments are likely to give better results. Soil and water conservation measures are likely to help in building up of the productivity.

4- Rotation :

It is proposed to have 10 years rotation for fuelwood species and 20 years for small timber species.

5- Rate of growth :

Eucalyptus tereticornis usually grows at the rate of 5-20 m³/ha/annum. Since the available areas are not good, the rate of growth will not be at the optimum level. Experiences of Bhata land afforestation in Chhatisgarh area indicate that the average annual rate of growth of Eucalyptus species in this tract is 5.6m³/ha. Similar studies about Albergia sissou indicate that the average annual growth rate is 4.5 m³/ha. in such areas. Acacia auriculi-
eformis grown in lateritic areas of

110

Madhya Pradesh and elsewhere indicates that average annual growth rate may be around 5m³/ha.

7.3 Production rate :

Production of material (fuelwood and timber) from the plantations raised under the project are indicated in table No. VII- 1.

Table VII-

Production of timber and fuelwood from plantations
per hectare

Yrs.	Pure Eucalyptus plantation	Mixed fuel-wood plantation	Pure Teak plantation	Teak with bamboo	Mixed plantation	Roadside plantation
1	2	3	4	5	6	7
10	40 t. fuel wood	40 t. fuel wood	640 Poles 5 t. fuel wood	532 Poles 2.1 t. bamboo	10 t. fuel wood	20 t. Fuel wood 10m ³ Poles
13	-	-	-	4.2 t. bamboo	-	-
16	-	-	-	4.2 t bamboo	-	-
19	-	-	-	4.2 t bamboo	-	-
20	40 t fuel wood	15m ³ timber 30 t. fuel wood	600 Poles 15 t. fuel wood	532 Poles	10 t fuel wood	20 t. Fuel wood 20m ³ timber

W-

Table VII- 1 Contd...

1	2	3	4	5	6	7
22	-	-	-	4.2 t. bamboo	-	-
25	-	-	-	4.2 t. bamboo	-	-
28	-	-	-	4.2 t. bamboo	-	-
30	40 t. fuel wood	20 t. fuel wood	600 Poles 5 t. fuel wood	532 Poles	10 t. fuel wood 10m ³ timber	20 t. fuel wood 10m ³ Poles
31	-	-	-	4.2 t. bamboo	-	-
34	-	-	-	4.2 t. bamboo	-	-
37	-	-	-	4.2 t. bamboo	-	-
40	35 t. fuel wood	15 m ³ tim- ber 30 t. fuel wood	600 Poles 20 m ³ tim ber 10t. fuel wood	500 Poles 5.6t. bamboo 15 t. fuel wood	70 m ³ timber 20t. fuel wood	25 m ³ timber 20t. fuel wood

- Note :
- (i) 80% survival per cent has been taken into consideration
 - (ii) 1.5 m³ is taken equal to a tonne.
 - (iii) t = tonne
 - (iv) Poles of only teak have been assumed to be saleable.
 - (v) The yield of grass in all the

Seed }
Fruit } quantity
Flower } parts
up to

plantation areas is 5 tonnes per ha/annum.

(vi) Bamboo 400 culms is ADMT (Air Dry metric tonne).

7.4 Seed and fruit production :

Plantations will yield certain amount of

*seed production
yields*

Fruits and seeds of commercial utility.

Mango, and Mahua trees start giving fruits after 10th year. Neem seeds yield oil. Ber trees produce edible fruits. Babul trees also yield gum of commercial importance.

The yield anticipated from various species given in table No. VII-2.

Table VII- 2

Yield of fruits/seeds/gum from various species

(in kg/tree)

Species age	Neem seed	Mahua seed	Mahua flower	Mango fruit	Ber fruit	Babul gum
1	2	3	4	5	6	7
5	-	-	-	-	5	-
6	-	-	-	-	6	-
7	-	-	-	-	8	-
8	-	-	-	-	10	-
9	-	-	-	-	10	-
10	2.5	5	7	20	45	$\frac{1}{2}$ upto 40 years

Table VII-2 Contd..

1	2	3	4	5	6	7
11	2.5	-	8	5	16	-
12	3	6	10	40	18	-
13	3	7	12	100	20	-
14	4	8	12	80	22	-
15	5	10	14	10	23	-
16	6	12	16	120	25	-
17	7	14	18	10	26	-
18	8	16	20	150	25	-
19	9	18	22	10	25	-
20	10	20	25	200	25	-
21 and upto 40 years	10	20	25	200	25	-

Note : Yield figures are based on the figures obtained from various sources.

7.5 Grass production from grasslands :

Annual grass production of fodder from grassland may be about 15 tonnes/ha.

7.6 Gross Production :

The project is a long term but calculation of costs etc. has been done only for

114

first 5 years. It is expected that the project will continue after the expiry of the U.S.A.I.D. period. The following additional products are likely to be obtained from these areas (table VII-3)

Table VII- 3

Quantity of Additional products obtainable
from the project area

S.No.	Item	quantity of additional product per annum
1-	Fuelwood @45 tonnes/ha	972 thousand tonnes
2-	Small timber @	108 thousand Cubic metres.
3-	Green fodder @ 15 tonnes/ha	418 thousand tonnes
4-	Poles ..	800 thousand poles
5-	Bamboo ..	16 thousand tonnes
6-	Fruits ..	28 thousand tonnes
7-	Oil seeds ..	25 thousand tonnes

- Note :
- (i) The project is continuous
 - (ii) The production figures are based on returns of the project when it is fully grown i.e.
 - (iii) Taking into consideration the site conditions and demand outlook the seven plantation patterns are selected in equal proportion.

115

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This production is likely to meet about 30 percent requirements of rural population in respect of small timber and poles. About 20 percent of the requirement of fuelwood is likely to be met with these plantations. Fodder supply is likely to have great impact on the milk production, fruit and mahua flower will supply additional edible material. Farm forestry activity is likely to motivate people to adopt to tree farming which will create extra produce and will meet the shortage to a great extent.

7.7

Markets :

The produce from the project areas is likely to be supplied to the local population through Panchayats and other similar agencies. Therefore, there is no problem of marketing.

7.8

Prices :

Prices of poles of teak, and other species vary from place to place. The variation is not large. The rate vary

.102.

considerably with the size of the material. The rates at Indore and Bhopal are given in Annex 19 and average rates for different materials are given in table No. VII- 4.

Table VII- 4

Rate of different produce

Item	Rate in rupees
Teak poles	Rs. 10-25 per piece
Teak logs	Rs. 1250/m ³
Miscellaneous poles	Rs. 8-16 per piece
Miscellaneous logs	Rs. 850/m ³
Fuelwood	Rs. 100/tonne
Bamboo	Rs. 600/ADMT
Grass	Rs. 20/tonne
Mango fruit	Rs. 1.00/kg
Ber fruit	Rs. 0.50/kg
Babul gum	Rs. 10/kg.

CHAPTER - VIII

FINANCIAL PROJECTIONS ::

A. Project Cost :

- 8.1 The project is labour intensive. The minimum daily wages differ from district to district and is fixed by the Collector of the district. Uniform rate of Rs.4 per day has been adopted for calculations.
- 8.2 The total project cost for five years works out to be Rs.404 millions. Out of this total operating costs are estimated at Rs.106 millions. This includes a foreign exchange component of Rs 1.0 million equivalent to about US \$0.125. About 59 percent of the total project cost will be paid as wages to labour engaged on various project activities. About 20 percent of the project cost is proposed to create a strong Social Forestry organisation responsible for planning, executing, monitoring and evaluating various social forestry activities.

118

8.3

Additional Products :

Additional products e.g. timber, fuelwood, fodder, seeds, fruits etc. will be available after plantations are mature. The annual productions of materials at final stages of the project has already been worked out and is given in table VII-3.

8.4

One of the major benefits of the project is the availability of employment opportunities to the unemployed and under employed rural population. Tree planting and other activities are mostly labour intensive. Direct employment generated due to various activities of the project is indicated below in table VIII-1.

Table VIII-1.

Year	Employment opportunities generated (million mandays)
I year	2.5
II year	7.5
III year	15
IV year	16
V year	16
Total	57

119

8.5

Besides direct employment provided to local unemployed and under-employed population, a vast opportunity will be created in secondary and tertiary sectors. Indirect employment opportunities in form of trade, service class transport, distribution etc. would be developed to a large extent which will be helpful in bringing the integrated development of rural society. The magnitude of indirect employment generated by project activities is indicated in table No.VIII-2.

Table VIII-2

Quantum of indirect employment generated by the project

Item	Employment in thousand mandays
Felling fo timber and fuelwood	30
Collection of seed	100
Expelling of oil	80
Fruit collection	10
Transport distribution of timber and fuelwood	10
Collection of gum etc.	5
Total	235

120

8.6

Other Benefits :

Other benefits the yield indicated above, the project is likely to conserve soil and water from large areas. The flood situation will greatly improve. At present large areas are flooded every year causing a great loss to property. The improvement activities in the waste lands is likely to reduce the intensity and magnitude of the floods resulting in large areas available for sowing.

8.7

Economic justification :

The proposed project is not a purely commercial project. The project has socio-economic considerations. However, economic analysis has been carried out for various project activities. The Internal Rate of Return, B.C.Ratio and Net Present Value has been worked out for different major project activities separately and jointly for the

entire project. The internal Rate of Return is calculated using the discounted cash outflow and inflow from the first to 40th year covering the period of 5 years of the project. The following assumptions are made;

- (i) The market price of the product e.g. timber, pole and fuel wood etc. has been based on the current market rates.
- (ii) The grasses from the grass birds would be sold at the prevalent market rates.
- (iii) The fruits, seeds and fodder leaves would be given free.
- (iv) Seedlings would be distributed free of cost to farmers.
- (v) Free grant is proposed to schools and individuals for raising nurseries on their lands.

....108...

8.8

The analysis has been carried out
for the following activities :

- (i) Fuelwood plantations
- (ii) Timber (teak) plantations
- (iii) Timber (teak & bamboo) plantations
- (iv) Mixed fuelwood plantations
- (v) Road, canal and railway line
plantations
- (vi) Grassland improvement.

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TABLE - VIII - 3 (a)

Cost-Benefit analysis

(i) Fuelwood Plantation:-

Years	Costs	Benefits	Balance	Results
1	2226	-	-2226	
2	273	50	-223	
3	67	50	-17	
4 to 9	17	50	+33	
10	617	4000	+3383	(i) I.R.R.= 10%
11	17	50	+33	
12	117	50	-67	
13 to 19	17	50	+33	(ii) B.C.ratio (at 10%) =
20	617	4000	+3383	1.005
21	17	50	+33	
22	117	50	-67	(iii) NP.V. (10%) + 17
23 to 29	17	50	+33	
30	617	4000	+3383	
31	17	50	+33	
32	117	50	-67	
33 to 39	17	50	+33	
40	617	3500	+2883	

TABLE - VIII-3 (b)

Cost-Benefit analysis

2. Timber (Tonk) plantation.

Year	Cost	Benefits	Balance	Results
1	2208	-	-2208	
2	273	50	-223	
3	73	50	-23	
4	17	50	+33	
5	117	50	-67	(i) I.R.R.=16%
6 to 9	17	50	+33	
10	617	6900	+6283	(ii) B.C. ratio at 10% discount rate= 1.87
11 to 19	17	50	+33	
20	917	10500	+9683	(iii) N.P.V. (10% discount) = +2796
21 to 24	17	50	+33	
25	117	50	-67	
26 to 29	17	50	+33	
30	617	6500	+5883	
31 to 34	17	50	+33	
35	117	50	-67	
36 to 39	17	50	+33	
40	1617	20,000	+18383	

TABLE VIII-3(c)

Cost-Benefit analysis

3. Timber (Teak with bamboo) plantation.

Year	Cost	Benefit	Balance	Results
1.	2208	-	-2208	
2	273	50	-223	
3	73	50	-27	
4	17	50	- 33	
5	67	50	-17	
6 to 9	17	50	+33	
10	17	5530	+4813	(i) I.R.R. =15%
11 to 12	17	50	+33	(ii) B.C. ratio
13	117	420	+ 303	(10% discount
14 to 15	17	50	+33	rate)=1.74
16	117	420	+303	(iii) N.P.V. at(10%
17 to 18	17	50	+33	discount rate)
19	117	420	+303	=+2273
20	617	7980	+7363	
21	17	50	+33	
22	117	420	+303	
23 to 24	17	50	+33	
25	117	420	+303	
26 to 27	17	50	+33	
28	117	420	+303	
29	17	50	+33	
30	617	7980	+7363	
31	117	420	+303	
32 to 33	17	50	+33	
34	117	420	+303	
35 to 36	17	50	+33	
37	117	420	+303	
38 to 39	17	50	+33	
40	817	10400	+9683	

TABLE - VIII-3 (d)

Cost-Benefit Analysis

4. Mixed Fuelwood plantation

				Rs./ha
Year	Cost	Benefit	Balance	Result
1	1983	-	-1983	
2	246	50	-186	
3	56	50	-6	(i) I.R.R. = 12%
4 to 9	17	50	+33	
10	317	2050	-1733	(ii) B.C. ratio at 10% discount rate = 1.27
10 to 19	17	50	+33	
20	817	10500	+9683	
21 to 29	17	50	+33	(iii) N.P.V. (10%) = + 735
30	317	2000	+1683	
31 to 39	17	50	+33	
40	817	10500	+9683	

TABLE -VIII-3(e)

Cost - Benefit analysis

V. Road Canal and Railway line plantations :

				Rs/ha
Year	Cost	Benefit	Balance	Results
1	5491	-	-5491	
2	293	50	-243	
3	148	50	-98	
4	121	50	-71	(i) I.R.R.=4.5%
5	121	50	-71	(ii) B.C.ratio =0.47
6 to 9	121	50	-71	
10	121	4000	3879	(iii) N.P.V.(at 10%) = - 2721
11 to 19	121	50	-71	
20	121	4000	+3879	
21 to 29	121	50	-71	
30	121	3000	+2879	
31 to 39	121	50	-71	
40	1721	17000	+15279	

TABLE -VIII-3(f)

Cost - Benefit analysis

VI. Grassland improvement :

				Rs/ha
Year	Cost	Benefit	Balance	Result
1	1876	50	-1826	
2	150	500	+350	
3	100	500	+400	
4	17	500	+483	
5	117	500	+386	
6	17	500	+483	(i) I.R.R. = 17%
7	117	500	+383	(ii) B.C.ratio at
8	17	500	+483	10% =1.25
9	117	500	+383	(iii) N.P.V. at 10%
10	17	500	+483	=+595

TABLE VIII-4

.....Financial consideration of the plantation project.....

S. No.	Plantations/grassland improvement	F.I.R.R. %	B.C.ratio at 10%	N.P.V. at 10% rate interest of interest
1.	Fuelwood plantation	10	1.005	+17
2.	Mixed fuelwood plantation	12	1.27	+735
3.	Small timber plantation	16	1.87	+2796
4.	Teak + bamboo plantation	15	1.74	+2273
5.	Mixed small timber plantation	9	0.75	-704
6.	Road-side plantation	4.5	0.47	-2721
7.	Grass-land improvement	17	1.25	+595

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Note:-(i) Calculation for grassland improvement has been done only for 10 years for other it has been calculated for 40 years.

Organisational Chart of Social Forestry

Director Social Forestry 1 (Chief Conservator of Forests)

Additional Director (1) (Additional C.C.F.)

(Administration)

Zonal Directors 8 (Conservator of Forests)

Dy. Directors Social Forestry 36 (Dy.C.F.)

Assistant Director Social Forestry 36 (A.C.F.)

Van Vistar Adhikari 288

Sahayak Van Vistar Adhikari 756

Van Sevak 1728

Additional Director (1) Additional C.C.F.)
(Planning Evaluation Monitoring Training & Research

Joint Director (1) (C.F.)

Joint Director (1)

Evaluation & monitoring

Research & Training

Evaluation officer (1)

Publicity officer (1)

Technical Assistant 10

Technical Assistant 10

Silviculturist (1)

Agres-tologist (1)

Rural Sociologist (1)

Extension Specialist (1)

Programmer (1)

Research Assistant 15

121

ANNEX -- 1

RAINFALL DISTRIBUTION WITH RAINY DAYS 1975-76

MADHYA PRADESH														
District.	June	Days	July	Days	August	Days	Sept.	Days	Oct & Nov.	Days	Dec. to March	Days	Total Rains	Total rainy days
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.
Durg	162.4	5	396.3	14	305.4	16	186.8	11	168.7	8	0.5	-	1220.1	54
Rajnandgoan	173.3	7	236.1	15	474.5	19	262.0	12	136.0	9	2.9	2	1298.1	66
Bastar	275.3	8	239.9	19	411.3	19	351.7	17	170.2	9	-	-	1628.6	75
<u>DURG DN.</u>														
RAIPUR DN.	177.8	8	400.6	17	310.5	14	241.0	12	97.8	6	-	-	123.6	58
Bilaspur	149.9	7	446.8	21	463.4	19	206.0	11	62.2	6	-	-	1342.5	66
Raigarh	217.4	10	540.0	20	492.8	19	191.7	12	107.8	6	6.4	1	1561.5	70
Surguja	179.9	10	500.0	18	552.0	17	183.0	12	138.5	7	2.8	1	1562.4	66
<u>BILASPUR DN.</u>														
Jabalpur	88.2	4	329.8	14	62.2	20	119.8	9	81.0	4	7.7	3	1269.0	56
Balaghat	309.4	8	412.0	20	392.6	20	215.5	12	161.4	3	3.1	2	1503.0	67
Chhindwara	212.5	9	192.0	14	365.3	18	211.5	11	75.4	7	23.1	2	1094.7	64
Narsimmpur	216.9	9	313.4	15	873.5	20	232.6	10	117.0	6	11.4	1	1728.8	61
Seoni	260.0	8	288.7	24	369.4	16	175.1	9	107.1	6	3.2	1	1203.3	64
Mandla	220.6	8	470.9	17	621.9	13	224.5	14	137.3	6	11.6	3	1707.4	67
<u>JABALPUR DN.</u>														

192

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.
Sagar	245.5	10	411.7	15	490.4	13	204.2	10	623.2	3	28.2	4	1459.0	72
Damoh	30.2	8	325.3	14	503.1	20	216.8	10	41.9	3	21.7	2	1213.9	60
Tikamgarh	187.0	10	364.5	16	592.1	24	112.1	9	53.8	5	50.9	6	1402.4	72
Chhatarpur	107.3	6	365.8	15	452.2	21	119.4	8	60.2	4	30.3	3	1169.6	59
<u>Panna</u>	<u>141.3</u>	<u>8</u>	<u>401.2</u>	<u>16</u>	<u>599.1</u>	<u>19</u>	<u>107.3</u>	<u>9</u>	<u>58.5</u>	<u>3</u>	<u>20.12</u>	<u>2</u>	<u>1333.6</u>	<u>59</u>
<u>SAGAR DN.</u>														
Rewa	153.3	6	372.3	13	397.2	16	111.4	8	47.7	4	3.2	2	1108.1	51
Sidhi	165.5	6	414.0	16	429.3	17	124.8	7	105.3	6	18.3	3	1275.2	58
Satna	249.0	7	420.2	16	440.8	21	138.1	9	69.0	3	19.3	3	1348.0	59
<u>Shahdol</u>	<u>54.2</u>	<u>6</u>	<u>444.2</u>	<u>12</u>	<u>463.8</u>	<u>18</u>	<u>125.3</u>	<u>8</u>	<u>157.5</u>	<u>6</u>			<u>1084.3</u>	<u>47</u>
<u>REWA DN.</u>														
Gwalior	135.6	7	237.1	12	267.0	12	277.6	9	169.9	1	17.6	3	958.6	42
Shivpur	161.8	9	384.7	12	408.5	17	100.5	9	41.7	2	14.8	2	1121.3	52
Guna	143.0	8	317.0	14	342.2	17	227.2	11	113.8	5	14.6	2	1184.5	59
<u>Datia</u>	<u>76.6</u>	<u>6</u>	<u>225.4</u>	<u>11</u>	<u>432.9</u>	<u>6</u>	<u>123.3</u>	<u>10</u>	<u>32.7</u>	<u>2</u>	<u>11.8</u>	<u>1</u>	<u>903.9</u>	<u>25</u>
<u>GWALIOR DN.</u>														
Morena	68.5	3	325.1	12	300.2	13	151.9	8					903.9	25
<u>Bhind</u>	<u>55.4</u>	<u>5</u>	<u>153.8</u>	<u>10</u>	<u>292.0</u>	<u>14</u>	<u>137.7</u>	<u>9</u>	<u>46.5</u>	<u>2</u>	<u>46.2</u>	<u>3</u>	<u>713.3</u>	<u>44</u>
<u>MORENA DN.</u>														

33

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1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.
Betul	167.8	8	257.6	16	465.4	18	348.3	15	65.6	5	32.6	3	1353.9	66
Raigarh	160.2	7	218.2	13	367.1	15	219.8	11	40.8	5	8.6	2	1035.7	55

BHOPAL DN.														

HOSHANGABAD DN.	167.2	9	292.8	18	578.8	22	374.0	14	44.6	4	4.9	2	1469.6	70

M. P. STATE														
	160.7		317.2		414.9		203.7		74.4		10.6		1199.6	

134

ANNEX- 2

S.No.	District.	Geographical area in Km ²	Forest area in Km ²	Forest % land area	Total population of the district in 000.	Perceptial forest area in hectarea.
1.	2.	3.	4.	5.	6.	7.
1.	Betul	10061	4514.30	44.86	736	0.61
2.	Rajgarh	6163	286.85	4.65	644	0.04
3.	Sehore	9015	1688.22	23.62	1085	0.20
4.	Bhopal	-	440.99	22.53		
5.	Shajapur	6201	57.86	0.93	678	0.006
6.	Vidisha	7433	1447.39	19.47	658	0.21
7.	Raisen	8395	3124.2	37.21	553	0.56
8.	Bilaspur	19905	7926.67	39.82	2441	0.33
9.	Raigarh	12910	5213.21	40.38	1279	0.41
10.	Surguja	22337	11786.76	52.77	1326	0.89
11.	Bhind	4467	91.11	2.04	794	0.01
12.	Gwalior	5213	2026.64	38.87	856	0.23
13.	Datia	2034	267.93	13.17	255	0.11
14.	Guna	11017	4265.95	38.72	784	0.54
15.	Murena	11586	6980.06	60.25	985	0.71

1.	2.	3.	4.	5.	6.	7.
16.	Shivpuri	10285	6173.58	60.05	677	0.91
17.	Hoshangabad	10016	3723.40	37.00	806	0.46
18.	Dewas	7014	2504.61	35.7	594	0.42
19.	Dhar	8149	1663.04	20.41	843	0.20
20.	Jhabua	6781	2803.00	43.34	668	0.41
21.	Khandwa	10705	4726.60	44.16	879	0.54
22.	Khargone	13441	5061.54	31.66	1285	0.39
23.	Indore	3910	820.57	20.98	1025	0.08
24.	Mandsau	9726	2252.73	23.16	962	0.23
25.	Ratlam	4859	1248.44	25.63	627	0.19
26.	Ujjain	6001	42.01	0.69	863	0.01
27.	Balaghat	9245	4832.15	52.27	978	0.49
28.	Chhindwara	11824	4560.24	38.57	989	0.46
29.	Jabalpur	10164	2316.84	22.80	1586	0.14
30.	Mandla	13257	6471.96	48.82	874	0.74
31.	Narsinghpur	5138	1383.89	36.94	519	0.27
32.	Seoni	8752	2904.23	33.14	668	0.44

126

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1.	2.	3.	4.	5.	6.	7.
33.	Bastar	39060	22252.14	56.97	1516	1.47
34.	Durg	-	1962.52	-	1469	0.13
35.	Rajnandgoan	19670	3247.96	26.49	993	0.21
36.	Raipur	21251	7723.77	36.35	2611	0.20
37.	Rewa	6315	1053.94	16.49	978	0.11
38.	Satna	7495	2237.16	29.84	914	0.24
39.	Shahdol	14028	5526.98	29.40	1030	0.54
40.	Sidhi	10532	4527.11	42.98	777	0.58
41.	Chhatrapur	8690	2691.00	30.97	712	0.38
42.	Damoh	7301	3115.17	42.67	563	0.54
43.	Panna	7122	4583.23	64.35	429	1.07
44.	Sagar	10246	2817.77	27.50	1062	0.28
45.	Tikamgarh	5047	815.86	16.17	569	0.14
Total		166161.60	442886	37.52	41654	0.40

Source :- 20 years Forestry in Madhya Pradesh.

ANNEX - 3(A)

Abstract of capital costs for district nursery

(in thousand Rs)

S. No.	Item	Expenditure per nursery		Total
		Labour	Non- Labour	
1.	Site clearance & land development	5	-	5
2.	Road inspections paths, constructions	5	-	5
3.	<u>Building</u>			
	(a) Foresters quarters	10	10	20
	(b) Chowkidar hut	4	6	10
	(c) Labour shed	3	2	5
4.	Diesel pump/Engine etc.Motor etc	20	-	20
5.	Fencing	12	3	15
6.	Hand tools eg. pick axe, phowras, and others	5	-	5
7.	Others	3	2	5
	Total	67	23	90

28

ANNEX - 3(B)

Abstract of Capital cost for nursery tahsil/
block nursery

(in thousand Rs)

S. No.	Item	Expenditure		Total
		Labour	Non- Labour	
1.	Site clearance & land development	3	-	3
2.	Approach road, inspection path constructions	2	-	2
3.	Building			
	(a) Forest Guards Quarters	10	5	15
	(b) Chowkidar	3	2	5
4.	Diesel pump/engine etc motor etc.	-	6	6
5.	Fencing	4	1	5
6.	Hand Tools eg. pick axe, Dhomara etc.	1	-	1
7.	Others	2	1	3
	Total	25	15	40

ANNEX - 4

Annual expenditure or costs for one nursery

(In thousand Rs)

S. No.	Item	Cost:		Total
		Labour	Non-Labour	
1.	Rent of the land @rs. 1000/ha	-	2	2
2.	Maintenance of roads	1	1	2
3.	Maintenance of buildings	1	1	2
4.	Maintenance of irrigation systems	8	2	10
5.	Cost of consumable items eg.roaps, tools,buckets etc	-	2	2
6.	Running and maintenance of engine	5	10	15
7.	Other charges	1	1	2
Total		16	19	35

Note :- For Tahsil or Block level
Nurseries expenditure would
be Rs. 20 thousand.

ANNEX- 4 A

Abstract of variable costs of nursery

S. No.	Item	Rs. per 1000 plants			Total Rs. 1000/ plant.
		Labour	Non Labour		
1.	Cost of seed collection, transport upto nursery	15.0	-	15.0	
2.	Pre-treatment seeds	0.20	-	0.20	
3.	Cost of nutrient solution in germination beds	-	3.0	3.0	
4.	Sowing in germination beds	0.20	-	0.20	
5.	Preparation of germination beds	0.20	-	0.20	
6.	Watering of germination beds	1.75	-	1.75	
7.	Pricking out in germination beds	1.80	-	1.80	
8.	Cost of insecticide and weedicides	-	0.07	0.07	
9.	Cost of application of insecticides and weedicides	0.20	-	0.20	
10.	Raising of transplant beds including soil preparation in polythene bags	9.00	-	9.00	
11.	Weeding in transplant beds and polythene bags	8.00	-	8.00	
12.	Cost of polythene bags	-	52.50	52.50	
13.	Cost of filling polythene bags	8.50	-	8.50	
14.	Cost of transplanting of seedlings in polythene bags	8.50	-	8.50	
15.	Watering in polythene bags	30.00	-	30.00	
16.	Cost of fertilizers in polythene bags.	-	5.00	5.00	
17.	Cost of application of fertilizers	0.35	-	0.35	
18.	Preparation of polythene bags for transportation including material	8.00	2.00	10.00	
19.	Miscellaneous	9.17	6.25	15.42	
Total		100.87	68.52	169.69	
or say		101	69	170	

Assumptions - One ha nursery = 500 beds
 1 Bed = 600 seedlings

Total seedlings= 300000
 in One ha-Nursery.

ANI EX -5

1. The following types of plantation are suggested in Social Forestry Project.

1.2 Fuelwood Plantation -

(a) Pure Eucalyptus Plantation

(b) Acacia auriculaeformis + Acacia nilotica + Prosopis juliflora mixed plantation.

1.3 Small timber plantation

(i) Pure teak

(ii) Teak+ bamboo

(iii) Acacia nilotica + Dalbergia Sissoo + Azadirachta indica plantation

1.4 Small timber and fuelwood plantation

(i) Teak + Eucalyptus

1.5 Road side plantation

Eucalyptus teriticernis is widely accepted species which grows on variety soils and climate. Nursery and plantation techniques of Eucalyptus are well standardised. Plants raised in polythene bags will be planted- Spacing may be kept at 2.5m x 2.5m 25 plants of mango or cashew nut may also be planted. Rotation proposed is 10 years.

→ 3. Mixed fuelwood plantations :

In proper areas plantation of Acacia auriculaeformis + Acacia nilotica + Prosopis juliflora are suggested. This plantation may be raised by seed sowing in thalies. The spacing may be kept 2.5m x 2.5m. The rotation may be kept at 20 years with thinning at 10th year.

+ 1000 kg/HA

142

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4. Pure teak plantation :- Teak is proposed to be raised in better sites to supply poles for meeting the demand of small timber. Spacement may be kept at 2.5m x 2.5m with standard techniques of plantation and care during first three years. Cleaning operation at 5th year. Thinning will be done at 10th year. Felling will be done at 20th year, retaining about 50 trees/ha as standards to be felled with second coppice rotation.

5. Teak with Bamboo :- Teak at 2.5m x 2.5m and bamboo at 6m x 6m in substitution of teak. Teak planting by stumps as discussed above. Bamboo seedlings raised in polythene bags may be planted in 45 cm cub pits. Tending as in case of teak with additional cultural operation for bamboo in the 7th year. Felling of bamboo on a three year cycle commencing from the 10th years. Final fellings at 40th year suggested.

→ 6. Small timber mixed plantations :- In proper and drier areas mixed. Plantation of babul, mahua, neem and sissu may be raised.

Plantation may be done by nursery raised seedlings/stumps at distance of 3m x 3m. Tending operation may be done at 7th year, may be done 15th and 30th year. Final felling on 40th year.

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143-

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7. Teak + Eucalyptus plantation :- In suitable areas teak and Eucalyptus may be raised together. The spacing may kept 2.5m x 2.5m both for teak and Eucalyptus. The plants of teak and Eucalyptus required will be 800 for each species Eucalyptus will harvested in 10th year and teak at 20th year. The next coppice crop of teak will be harvested at 40th year alongwith Eucalyptus which will be harvested at 10th, 20th, 30th and 40th year mango may be planted at 20m x 20m.

8. Road side plantation :-

Road side and rail side plantations will be done on both sides of the road in order to -

- (i) Utilize fully the economic potential offered by the roads for marketing the goods produced on either side.
- (ii) To provide shade along the road side,
- (iii) To meet the grass, leaf fodder, small timber fuelwood and fruit requirements of local population.

Design of plantation :-

Two km long stretch of road is supposed to be equal to one ha.

+ 1st row of trees of neem to provide shade fodder, oilseeds and ultimately timber and fuelwood.

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104

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- Other rows of Eucalyptus
- Ber grafts as under ground .

Total number of plants per ha may be -

125 trees of neem

500 trees of Eucalyptus

20 Ber grafts

Eucalyptus and neem may be raised by nursery raised seedlings. Grafting of better variety of ber may be undertaken on the existing ber trees. Eucalyptus may be harvested at 10, 20, 30 and 40 years. Neem can also be removed at 40th year.

ANNEX -6

Annual cost on establishment of one Dy. Director's Office

S.No.	Name of the post.	Scale of pay	Av.pay	Special pay	D.A./ A.D.A.	Total	No.of posts	Total
1.	Dy. Director	1100-1600	14400	1800	5520	21720	1	21720
2.	Van Vistar Adhikari	280-480	3600	600	3360	7560	6	45360
3.	Van Vistar Sahayak	195-252	1860	-	2280	4140	21	86960
4.	Van Sevak	131-172	1572	-	1908	3480	48	157040
5.	Head Clerk	246-460	3600	-	3360	6960	1	6960
6.	Accountant	205-375	2460	-	2676	5136	2	10272
7.	Drafts man	280-480	3600	-	3360	6960	1	6960
8.	Stenographer	280-480	3600	-	3360	6960	1	6960
9.	L.D.C.	169-300	2028	-	2280	4308	10	43080
10.	Driver	152-252	1800	-	2160	3960	2	7900
11.	Orderlies/Peon	131-172	1572	-	1908	3480	8	27840
12.	Choukidar/Khalashi	200/ Fixed	-	-	2400	2400	10	24800

455072

OR

Rs. 455000

1/11/16

ANNEX - 7

Building and housing proposed

S. No.	Name of the Building	Cost of the building in thousand Rs	No.	Total cost in thousand Rs
1.	Deputy Director - Office	150	1	150
2.	Deputy Director - Residence	100	1	100
3.	Assistant Director - Residence	70	1	70
4.	Van-Vistar Adhikari	35	8	280
5.	Van Vistar Sahayak	20	16	320
6.	Van Sevak	10	48	480
				1400

147

Requirements of Vehicles per unit

(in thousand Rs)

S. No.	Name of the Vehicle	App. Cost	No.	Total Cost.
1.	Jeep with trailer	75	2	150
2.	Tractor with trolley	70	6	420
3.	Motor Cycle	10	8	80
Total				650

148

ANNEX - 9

Details of Office requirement for one unit
(Deputy Director)

S. No.	Item	In thousand Rs. Cost
1.	Office furniture	60
2.	Telephone	10
3.	Electricity	5
4.	Office Stationary	35
5.	Office Equipments Typewriters, Duplicating machines	25
6.	Petrol expenses of the Vehicles	50
7.	Other expenses	15
	Total	200

147

ANNEX 10-1

Cost structure of typical small timber (teak)
plantation.

S.No.	Item	Rs./ha		Total
		Labour	Non labour	
<u>Ist year</u>				
1.	Inspection and identification of area.	1	-	1
2.	Fencing			
(a)	Layout of fencing	8	2	10
(b)	Digging of pits 40 cm x 20 cm	44	-	44
(c)	Carriage of posts at the site	10	15	25
(d)	Fashioning of posts by coal tar treatment etc.	24	-	24
(e)	Fixing of pending posts	20	-	20
(f)	Cost of fencing material (fencing posts, barbed wire u.nails, coal tar etc.)	-	512	512
(g)	Stretching and fixing of barbed wire.	20	-	20
3.	Staking including the cost of staks	24	10	34
4.	Carriage of stumps on the site	40	-	40
5.	Planting of stumps	100	-	100
6.	Application of insecticides	44	-	44
7.	Cost of insecticides	-	40	40
8.	Application of fertilizers	48	-	48
9.	Cost of application of fertilizers	-	40	40
10.	Watering, hoeing, weeding, etc. (2 operations in a year)	200	-	200
11.	Special chemical and works required to reclaim waste lands	48	-	48
12.	Sowing of Babul and Prosopis along the boundary of the field	24	26	50
13.	Miscellaneous items	50	50	100
Total		705	695	1400
<u>IIInd year</u>				
(i)	Replacement of casualities	10	-	10
(ii)	Cost of fertilizers	-	50	50
(iii)	Application of fertilizers	30	-	30
(iv)	Weeding, watering, hoeing (2 operations)	160	-	160
		206	50	250
<u>IIIrd year</u>				
Weeding and hoeing (one operation)		50	-	50

Note:- Daily wage has been taken as Rs.47/day/labour.

150

ANNEX 10.2

Cost structure of typical fuelwood plantation
(Eucalyptus spp.)

S.No.	Item	Rs/ha		Total
		Labour	Non-Labour	
<u>1st Year</u>				
1.	Inspection and identification of area	1	-	1
2.	Layout of cattle proof trench	10	-	10
3.	Digging of 1.5 x 1.2 x 1m trench	422	-	422
4.	Staking including cost of stacks, preparation etc.	37	15	52
5.	Digging of pits 30 cm x 30 cm x 30 cm	200	-	200
6.	Transport of seedlings at the site planting of seedlings	20	50	70
7.	Addition of insecticide	40	-	40
8.	Cost of insecticide	-	40	40
9.	Application of fertilizers with cost of fertilizer	25	40	65
10.	Watering, heeing, weeding etc.	200	-	200
11.	Special chemical and works required to reclaim the wastelands	50	-	50
12.	Sowing of babul and prosopis along the boundary of the field	44	6	50
13.	Miscellaneous item	50	50	100
		<u>1099</u>	<u>201</u>	<u>1300</u>
<u>2nd Year</u>				
	(i) Replacement of casilities	10	-	10
	(ii) Cost and application of fertilizers	40	50	90
	Weeding, watering & heeing (2 operations)	150	-	150
		<u>200</u>	<u>50</u>	<u>250</u>
<u>3rd Year</u>				
	Weeding and heeing	50	-	50
		<u>50</u>	<u>-</u>	<u>50</u>

Note:- Daily wage has been labour as Rs.4/-day/labour

151

ANNEX 10-3

Cost structure of road side plantation

S. No.	Item	Rs/ha		
		Labour	Non-Labour	Total
<u>1st Year</u>				
1.	Fencing, barbed wire 4-strand (cattle proof)	800	3385	4185
2.	Land preparation	175	-	175
3.	Transport of seedlings	20	30	50
4.	Planting of seedlings	150	-	150
5.	Application of manures, fertilizers, insecticides including costs of of the material	60	40	100
6.	Weeding, hoeing, soil working and watering etc. (2 operations)	200	-	200
7.	Ber grafts 20 @Rs. 2000 per graft	-	40	40
8.	Watch & Ward	100	-	100
		1505	3495	5000
<u>2nd Year</u>				
(i)	Replacement of casualties	50	-	50
(ii)	Soil working, weeding	100	-	100
(iii)	Watch & ward	100	-	100
		250	-	250
<u>3rd Year</u>				
(i)	Replacement of casualties	-	-	-
(ii)	Watch & Ward	100	-	100
		100	-	100

Note :- Daily wages - Rs. 4/- day

152

ANNEX - 11

Cost structure in case of grass land improvement

S. No.	Item	Rs/ha.		Total
		Labour	Non-Labour	
<u>1st Year</u>				
1.	Inspection and identification of area	1	-	1
2.	Fencing layout	4	-	4
3.	Fencing (barbed wire fence 3 strands, wooden posts)	150	600	750
4.	Soil working	100	-	100
5.	Collection, storage, carriage, and sowing of seeds of improved grass	10	-	10
6.	Planting of tussocks of napier grass and other important grasses (500 tussocks)	55	-	555
7.	Weeding, (Removal of inferior herbs, shrubs and inferior grasses)	80	-	80
		400	600	1000
<u>2nd Year</u>				
1.	Weeding	100	-	100

Organisation of Research and Training Institute

Name of Post	Pay Scale	Average Pay	D.A. & A.D.A.	Special pay	Total Salary	No. of post	Total
1.	2.	3.	4.	5.	6.	7.	8.
1. Director	1800-2000	22,800	4500	200	27,500	1	27,500
2. Silviculturist	1100-1600	18,800	4116	200	18,716	1	18,716
3. Agrostologist	1100-1600	18,800	4116	200	18,716	1	18,716
4. Economist	1100-1600	18,800	4116	200	18,716	1	18,716
5. Rural Socio- logist	1100-1600	18,800	4116	200	18,716	1	18,716
6. Extension specialist	1100-1600	18,800	4116	200	18,716	1	18,716
7. Programmer	425-900	10,800	3300	100	18,200	1	18,200
8. Research Assistants (R.Os)	280-480	3,600	1980	75	5,655	15	84,825
9. Office Superintendent	350-650	6,000	3000	-	9,000	1	9,000
10. Stenographers	250-600 280-480	3,600	1980	-	5,580	1 5	33,480
11. U.D.C.	246-460	3,600	2028	-	5,628	2	11,256
12. Accountants	205-375	2,880	1848	-	4,728	4	18,912
13. L.D.C.	169-300	2,250	1728	-	3,978	8	31,824
14. Drafts man	205-375	2,280	1848	-	4,728	2	9,456
15. Drivers	155-252	1,920	1668	-	3,588	4	14,352
16. Peon	125-150	1,500	1536	-	3,036	10	30,660
17. Chowkidar	125-150	1,500	1536	-	3,036	5	15,180
						64	3,97,925 OR 3,98,000

154-

ANNEX - 13

Organisation for Monitoring and Evaluation

Name of Post	Pay Scale	Average Pay	D.A. & Special A.D.A. Pay	Total Salary	No. of posts.	Total	
1.	2.	3.	4.	5.	6.	7.	8.
1. Joint Director	1800-200	22,800	4500	200	27,500	1	27,500
2. Evaluation Officer	1100-1600	18,800	4116	200	18,716	1	18,716
3. Technical Assistants	280-480	3,600	1980	75	5,655	10	56,550
4. Stenographers	280-480	3,600	1980	-	5,580	2	11,160
5. Head Assistant	280-480	3,600	1980	-	5,580	1	5,580
6. U.D.C. I	246-460	3,600	2028	-	5,628	2	11,256
7. Computers	195-330	3,144	1800	-	4,944	4	19,776
8. L.D.C.	169-300	2,250	1728	-	3,978	4	15,912
9. Driver	155-252	1,920	1668	-	3,588	2	7,176
10. Peon/ Khalasi	125-150	1,500	1536	-	3,036	4	12,144
						31	1,85,770

155-

ANNEX - 14

Vehicles equipment and office furniture for
for research Institute

in thousand Rs.

1.	Jeeps	-5 @ 60	= Rs. 300
2.	Office furniture & Laboratory furniture		= Rs. 200
3.	Office & lab equipments		= Rs. 200
4.	Typewriters Duplicators etc.		= Rs. 100
5.	Office Stores		= Rs. 100

= Rs. 900

* This expenditure is proposed to be incurred
in two years.

ANNEX -15

in thousand Rs.

1.	Annual rent of the buildings	= 30
2.	Office stationery	= 50
3.	Telephone & electricity	= 20
4.	Expenditure on POL	=200
5.	Other expenses	= 50

=350

ANNEX - 16

Annual cost on Establishment of State Level Head Quarter Organization

S. No.	Name of the Post.	Scale of Pay	Average Pay	Spl. pay.	D.A./ A.D.A.	Project Allowance.	Total	No. of posts.	Total for 12 months.
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
<u>A. Headquarter- Administration & CoOrdination.</u>									
1.	Director, Social Forestry	2500.2750	30,000	3000	-	6000	39000	1	39,000
2.	Additional Director	2250-2500	25,000	2400	3636	4560	35560	1	35,560
3.	Chief Accounts Officer.	1100.1600	14,400	1800	4106	2880	23196	1	23,196
4.	Administrative Officer	425.950	7,200	1200	3600	1920	13920	1	13,920
								<u>4</u>	<u>1,11,675</u>
<u>B. Headquarter- Management Planning, Research, Monitoring & Evaluation.</u>									
5.	Additional Director	2250-2500	25,000	2400	3600	4800	34800	1	34,800
6.	Joint Director Evaluation	1800-2000	22,800	2400	3600	3600	32400	1	32,400
7.	Publicity Officer	1100-1600	14,400	1800	4106	2880	23196	1	23,196
8.	Evaluation Officer	1100-1600	14,400	2400	3636	4560	24996	1	24,996
9.	Technical Assistants	280-480	3,600	900	1980	720	7200	10	72,000
10.	Cartographer/Draftsman	280-480	3,600	900	1980	720	7200	5	36,000
								<u>19</u>	<u>1,83,396</u>

158

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
<u>C. Office Establishment</u>									
9.	Office Superintendent	400-675	6600	900	3600	1200	12300	2	24,600
10.	Head Assistant	280-480	3600	600	1980	720	6900	4	27,600
11.	U.D.C.I	280 -480	3600	600	1980	720	6900	4	27,600
12.	Accountant	205-375	2880	360	1848	576	5664	10	56,640
13.	U.D.C.II	205.375	2880	360	1848	576	5664	10	56,640
14.	L.D.C./Typist	169-300	2220	240	1728	444	4632	25	115800
15.	Stenographer	Sl.Gr. 400-800 Sr.Gr. 350-600	3600	360	1980	720	6660	3 1 6 9	66600
16.	Driver	280-480 155-252	1920	240	1668	384	4212	9	37,908
17.	Orderly-peons	125-150	1500	-	1536	-	3036	30	91,080
18.	Chowkidar/Khallasi	125-150	1550	-	1536	-	3036	9	27,324
Grand Total									8,68,859 OR 8,70,000

159

ANNEX. 17.

Salient Features of the Major Rivers in M.P.

Name of River	Drainage area with- in M.P. (Sq.km.)	Forest area (Sq.km.)	%of forest area to total dra- inage area.	Average annual run-off (m.cu.m.)
1. Yamuna River Basin				
Chambal	22,600			4441
Parvati				
Sindh	90,662			25656
Betwa)				
Ken	23,490			9374
	1,36,752	47592		
2. Ganga Basin				
Tons	14,170			6537
Son				
Rihind	42,436			21883
	56,606	23583		
3. Mahanadi				
	77,192	28944		39471
4. Godavari Basin				
Indravati				
Wainganga				
Sabari	65,265	29430		34537
Pench				
5. Narmada				
	85,946	38444		37004
6. Tapti				
	9,496	300		1974
7. Mahi & other Basins				
	8,229	200		2467
GRAND TOTAL:	4,39,486	1,68,393		1,83,294

ANNEX- 18

Annual cost of Establishment on One Zonal Level Unit

S. No.	Name of the post	Scale of pay	Average pay	Spl. pay	DA/ ADA	Project Allowance	Total	No. of posts.	Total for 12 Months
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1.	Joint Director	1800-2000	22800	2400	3636	4560	33,396	1	33,396
2.	Technical Officer	425-900	10800	1260	3300	2160	17,520	1	17,520
3.	Stenographer	350-600	4900	480	2028	960	8,268	1	8,268
4.	Head Clerk (Office Supdt.)	246-460	3600	360	2028	720	6,708	1	6,708
5.	UD.C.I	280-480	3600	600	2028	720	6,900	2	13,800
6.	Accountant & D.M.	205-375	2880	300	1848	576	5,604	4	22,416
7.	L.D.C.	169-300	2220	240	1700	444	4,632	8	37,056
8.	Driver	155-252	1520	240	1668	384	4,212	1	4,212
9.	orderlies /peon	125-150	1500	-	1536	-	3,036	5	16180
10.	Chowkidar /Khallasis Dak Runner	125-150	1500	-	1536	-	3,036	3	9108
Total								27	168462 or 169000

161

ANNEX -19 (a)

Commercial rates of teak logs/poles for 1977-78 at BHOPAL

Girth & length	Commercial Depot rates		Commercial depots	
	ZONE I	ZONE II	ZONE I	ZONE II
upto 20 cm	2-3	1-50 1-25	1-50	1-10
21 to 30 cm	3-4	3-00	2-50	2-00
	4-5	4-00	3-00	2-80
	> 5	6-00	5-00	3-25
31 to 40 cm	2-3	6-10	5-50	4-00
	3-4	5-00	5-50	5-00
	4-5	7-00	6-00	5-50
	> 5	9-00	8-00	6-50
41 to 50 cm	2-3	10-00	9-50	8-00
	3-4	10-00	9-50	7-00
	4-5	11-50	11-00	9-00
	> 5	14-00	13-50	11-00
51 to 60	2-3	18-00	16-00	13-00
	3-4	14-00	12-00	9-00
	4-5	18-00	16-00	14-00
	> 5	23-00	19-50	18-00
		26-00	22-00	21-50
				20-00

ANNEX 19(b)

Commercial rates of teak logs/poles at INDORE.

Girth	Length	Zone I	Zone II	Zone III
Upto 20 cm	2-3	1.65	1.70	1.75
	↗ -3	2.00	2.10	2.15
21 to 30 cm	2-3	2.45	2.50	2.60
	3-4	3.30	3.40	3.50
	4-6	4.90	5.00	5.20
	↗ -6	6.45	6.50	6.60
31 to 45 cm	2-3	5.00	5.10	5.20
	3-4	7.40	7.50	7.60
	4-6	9.75	9.90	10.00
	↗ -6	13.00	13.10	13.20
46 to 60 cm	2-3	20.30	20.50	20.70
	3-4	22.75	23.00	23.10
	4-6	24.40	24.50	24.70
	↗ -6	28.25	28.50	28.70

ANNEX -20

District-wise area of waste lands in Madhya Pradesh

S. No.	District.	Barran and Uncultivable land.	Permanent pasture and other grazing land.	Under misc. tree crops and groves.	Total
1.	2.	3.	4.	5.	6.
1.	Betul	267	221	-	488
2.	Hoshangabad	303	639	1	943
3.	Bhopal	26	406	-	432
4.	Raisen	25	280	-	305
5.	Rajgarh	281	847	-	1128
6.	Sehore	48	743	-	791
7.	Vidisha	153	465	-	688
8.	Ujjain	115	747	-	862
9.	Mandsaur	958	752	-	1710
10.	Ratlam	268	528	-	796
11.	Shajapur	520	776	-	1296
12.	Dewas	157	885	-	1042
13.	Indore	27	350	-	377
14.	Jhabua	1044	547	-	1591
15.	Dhar	821	898	-	1719
16.	Khargone	51	1104	-	1155
17.	Khandwa	223	179	-	403
18.	Bilaspur	487	1332	1	1819
19.	Raipur	1128	998	-	2126
20.	Surguja	481	1602	73	2156

1.	2.	3.	4.	5.	6.
21.	Bhind	309	239	-	548
22.	Datia	33	69	2	104
23.	Guna	1064	856	-	1920
24.	Gwalior	578	277	-	855
25.	Murena	2081	696	-	2777
26.	Shivpuri	1025	664	33	1722
27.	Balaghat	153	370	4	527
28.	Chhindwara	372	589	4	965
29.	Mandla	650	490	-	1140
30.	Seoni	96	395	-	491
31.	Jabalpur	704	1125	3	1832
32.	Narsimpur	16	460	-	476
33.	Damoh	336	633	3	972
34.	Sagar	159	1079	1	1239
35.	Bastar	1206	1860	-	3066
36.	Raipur	218	1334	-	1552
37.	Durg	81	855	-	936
38.	Rajnandgaon	208	55	-	764
39.	Chhatarpur	1049	658	-	1707
40.	Panna	970	163	-	1133
41.	Rewa	426	421	2	849
42.	Satna	848	238	24	1110
43.	Shahdol	697	820	1	1518
44.	Sidhi	1291	-	-	1291
45.	Tikamgarh	404	813	-	1217
Total:		22357	29959	152	52468

ANNEX- 21

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

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 Officer acting on
behalf of Government shall, if so required
by such Forest Officer, bind itself by a written
instrument to perform such contract.

...2...

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 Panchayat 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 Officer 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 hundred 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 ".

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The SAID CONDITIONS are as follows, namely :-

1. The Panchyat shall perform the following duties and acts that is to say :-
 - (a) that the Panchyat shall set apart a plot of village grazing/nistar 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.

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168

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- (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.

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169

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(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.

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170

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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.

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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-operative 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.

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172

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- 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 and

ANNEX. 22

PLAN OF OPERATION OF SOCIAL FORESTRY PROGRAMMES IN
VARIOUS DISTRICTS OF MADHYA PRADESH.

Year of the Project	District to be taken under the Project.	Operation to be carried out in these districts.
Ist Year	<u>Dy. Director's office</u>	(i) Preparation of Plan
	Ujjain, Shajapur I, Shajapur II, Dewas, Ratlam I, Ratlam II, Mandsour I, Mandsour II, Indore Dhar I, Dhar II, Khargone.	(ii) Nursery works (iii) Building works.
	<u>Zonal Director</u>	
	(i) Ujjain (ii) Ratlam (iii) Indore.	
IIInd Year	<u>8 old districts</u>	(i) Plantation of suitable tree species. (ii) Improvement of grass land. (iii) Extension in farmland. (iv) Nursery. (v) Research evaluation monitoring. (vi) Information service.
	<u>10 New District</u>	(i) Preparation of the plan. (ii) Nursery works. (iii) Building works.
	<u>New Zonal Director's office</u>	
	(i) Rewa (ii) Gwalior (iii) Bhopal.	

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1 2 3
4 New Districts

Sagar, Chhattarpur,
Tikamgarh, Damoh.

- (i) Survey, & Preparation of plan
- (ii) Nursery
- (iii) Building.

Zonal directors office

(i) Sagar

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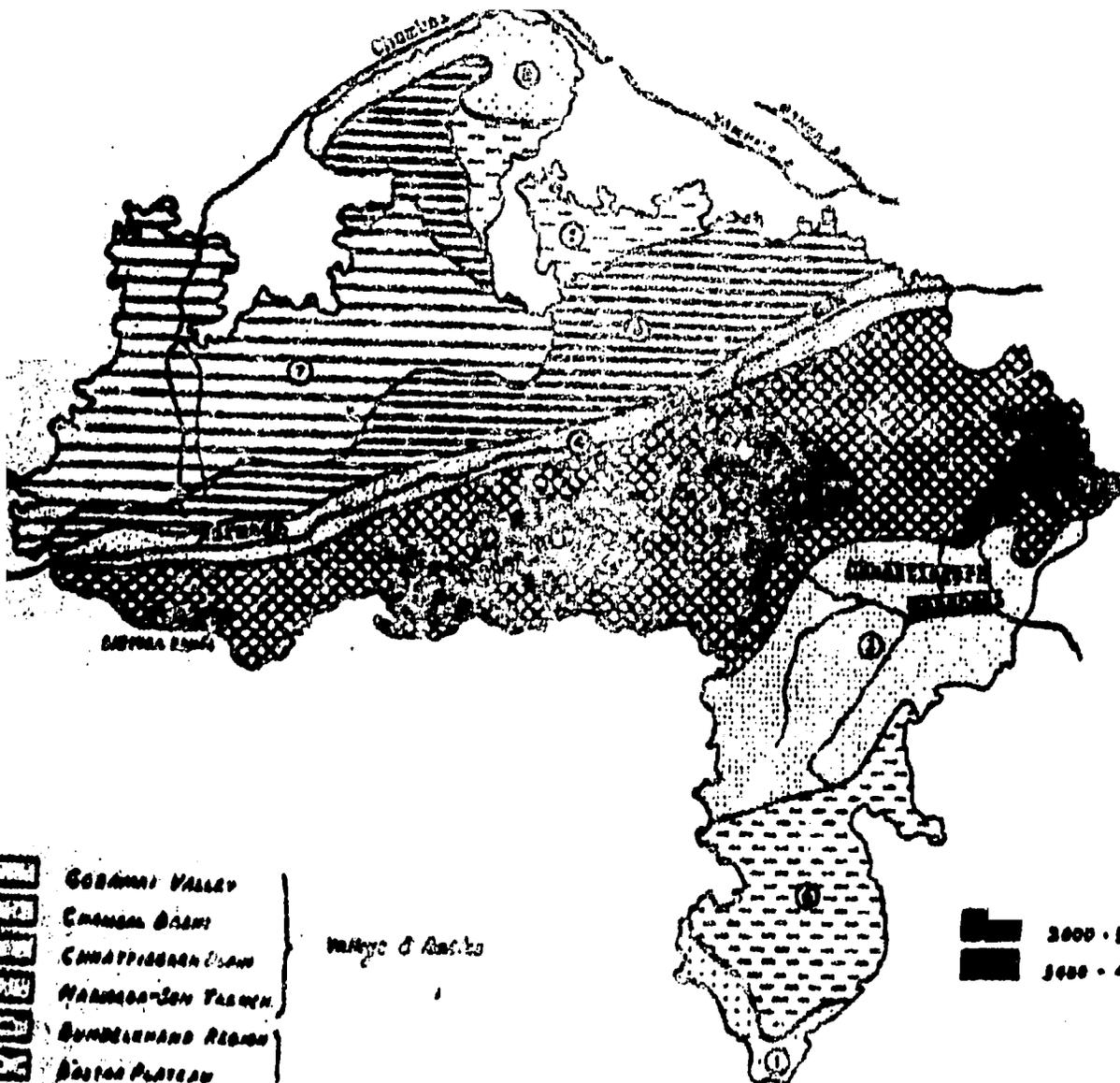
Vth year

29 old districts

- (i) Plantation of suitable Tree species.
- (ii) Improvement of grass land.
- (iii) Forest extension in farmland.
- (iv) Nursery
- (v) Maintenance of old plantation.
- (vi) Information service
- (vii) Research evaluation and monitoring.
- (viii) Training and fellowships.

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NATURAL REGIONS OF MADHYA PRADESH



-  **BUNDELKHAND REGION**
-  **VINDHYA PLATEAU**
-  **MALWA PLATEAU**
-  **DECCAN LAVA ZONE**
-  **SATPURA, AMARKANTAK & VINDHYA RANGES**

Valleys & Basins

Plateaus

 3000 - 5000 ft
 5000 - 4000 ft

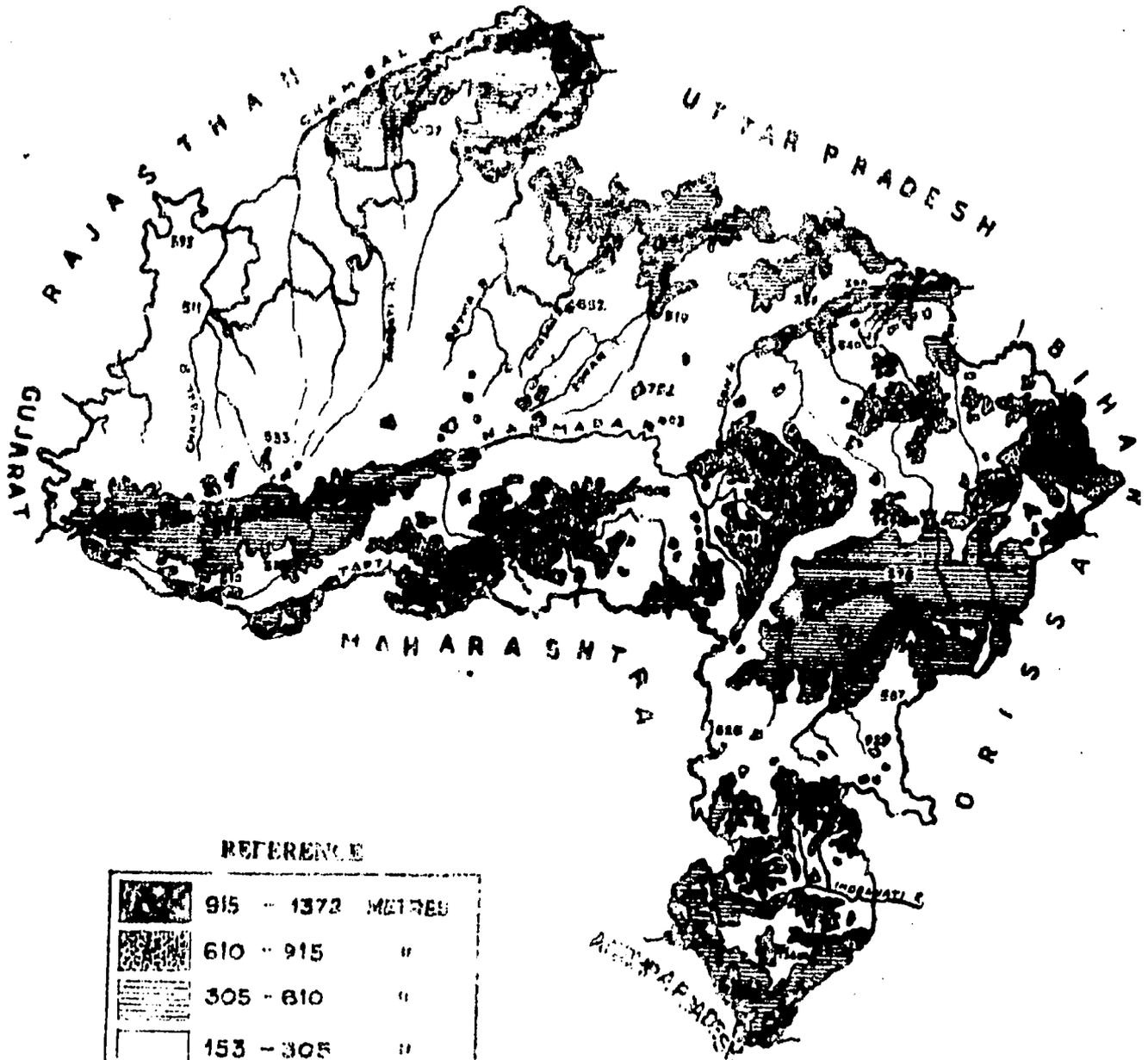
**MADHYA PRADESH
CATCHMENT AREAS**



REFERENCE:

STATE BOUNDARY	—————
CATCHMENT BOUNDARY	—————
RIVERS	—————
HILLS	—————

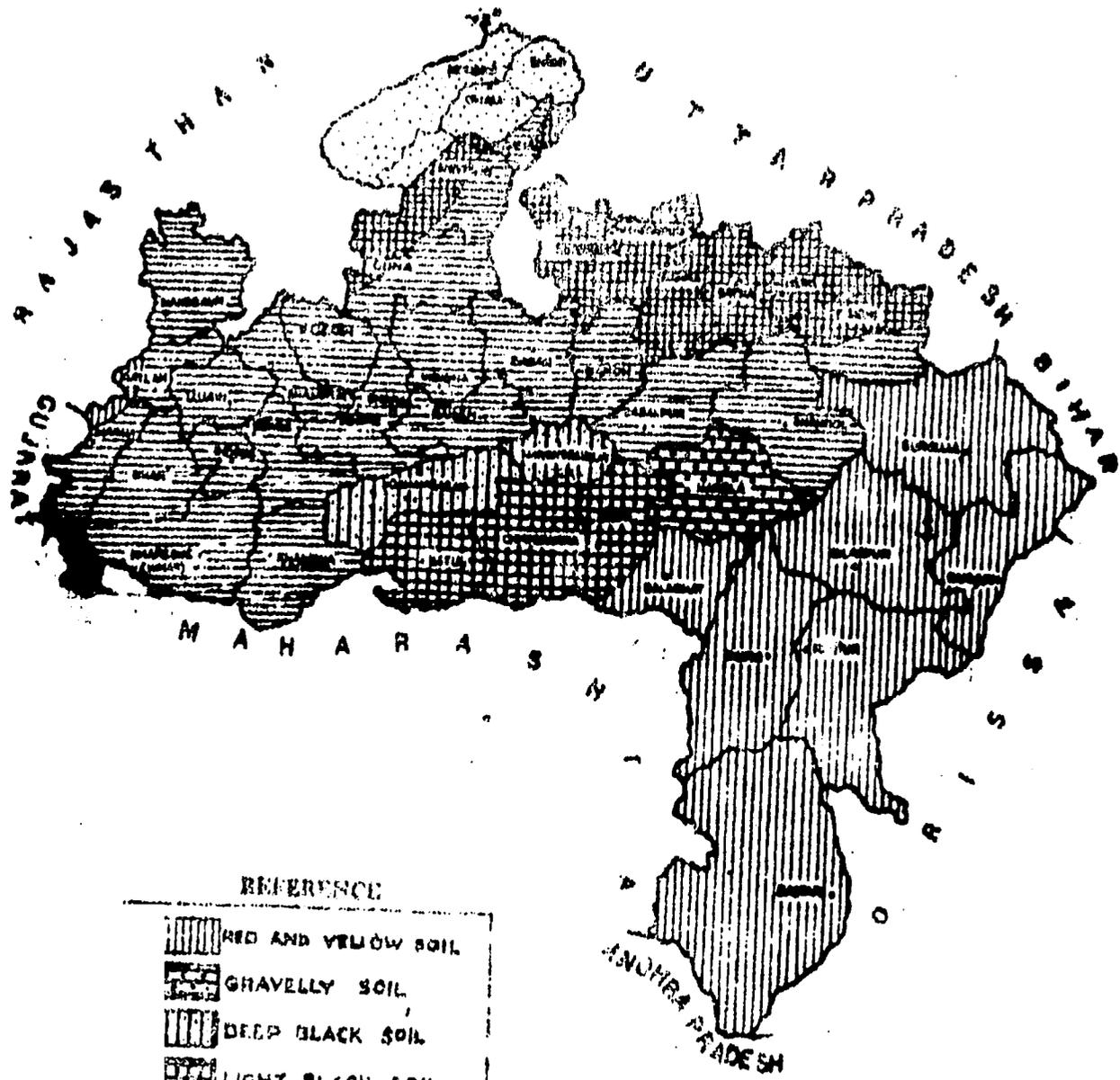
MADHYA PRADESH PHYSICAL FEATURES



REFERENCE

	915 - 1372 METRES
	610 - 915 "
	305 - 610 "
	153 - 305 "
	0 - 153 "
ABOVE SEA LEVEL	
SOURCE - DIRECTORATE OF LAND RECORDS, M.P.	

MADHYA PRADESH SOIL TYPES



REFERENCE

	RED AND YELLOW SOIL
	GRAVELLY SOIL
	DEEP BLACK SOIL
	LIGHT BLACK SOIL
	MEDIUM BLACK SOIL
	ALLUVIAL SOIL
	MIXED RED & BLACK SOIL

